

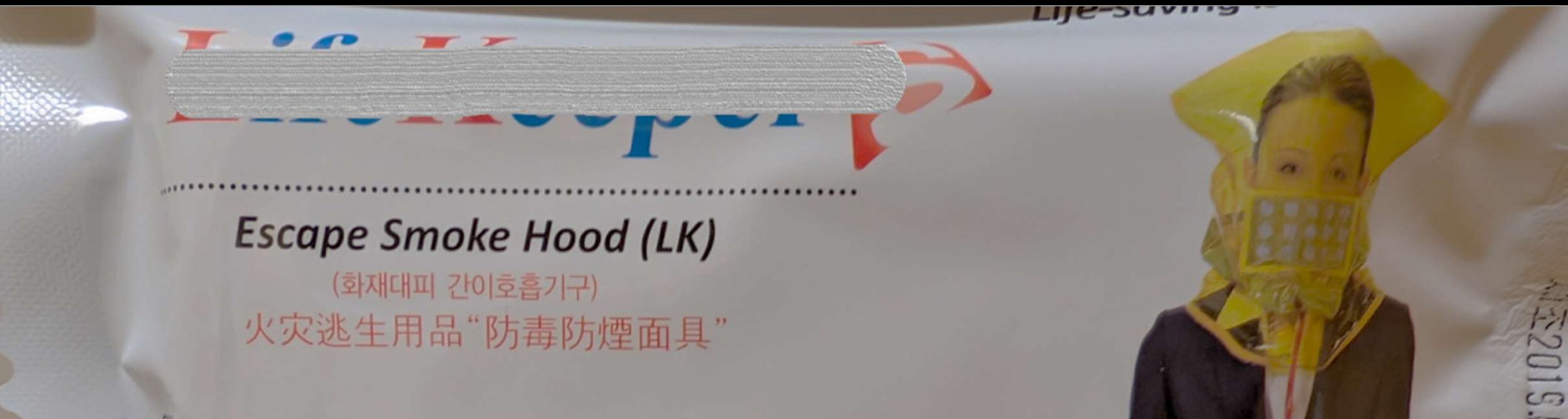
**S&P Global**

Commodity Insights

# Dance of the Titans: Unmasking the Ambivalent Consumer and Producer Symbiosis in the Global Vinyls Market

Alvin Ang  
Director, Inorganics  
Chemical Insights

31 May 2024



# Agenda

## Prologue: Consumption drivers

Act I: Trade

Act II: Supply and demand

For discussion purpose only - generated using Microsoft Copilot with the prompt: A house interior with PVC window profiles, luxury vinyl tiles, a PVC pipe, PVC wall cladding, PVC cables, PVC table and chair, a vinyl mat, and a PVC synthetic leather sofa.

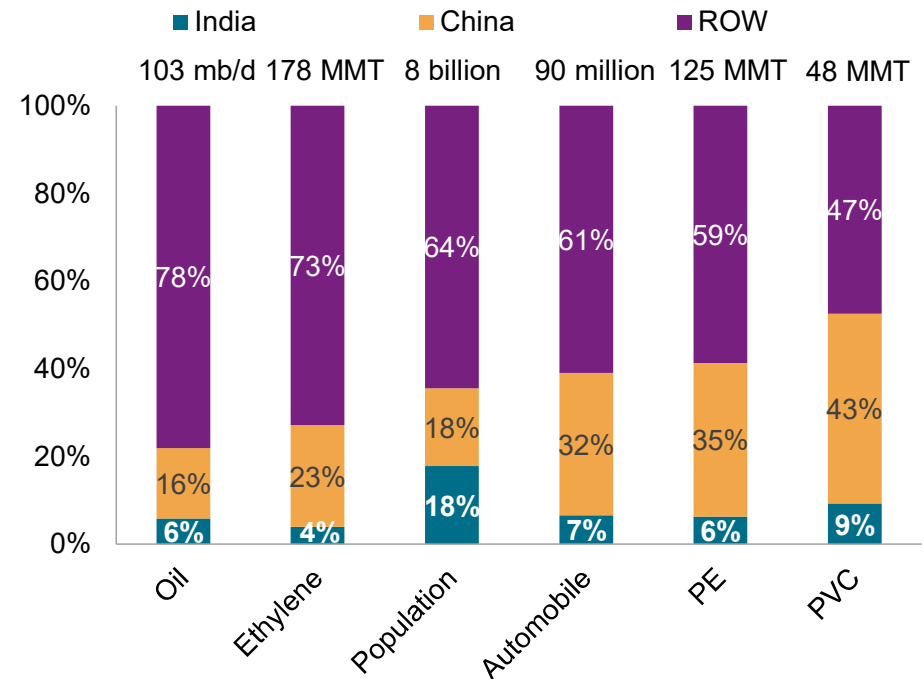


# Global GDP projection bodes well for chlor-alkali/PVC growth

China + India 2023 PVC demand = 53% of the world, driven by strong growth rates

| Real GDP (% change)   |            |            |            |            |
|-----------------------|------------|------------|------------|------------|
|                       | 2022       | 2023       | 2024       | 2025       |
| World                 | 3.1        | 2.7        | 2.6        | 2.7        |
| United States         | 1.9        | 2.5        | 2.5        | 1.7        |
| Eurozone              | 3.5        | 0.5        | 0.6        | 1.4        |
| <b>Mainland China</b> | <b>3.0</b> | <b>5.2</b> | <b>4.7</b> | <b>4.5</b> |
| <b>India</b>          | <b>7.3</b> | <b>6.9</b> | <b>6.5</b> | <b>6.1</b> |
| South Korea           | 2.6        | 1.3        | 2.2        | 2.2        |
| Japan                 | 0.9        | 1.9        | 0.8        | 1.2        |
| Vietnam               | 8.1        | 5.0        | 6.0        | 6.3        |
| Indonesia             | 5.3        | 5.0        | 5.1        | 5.2        |
| Russia                | -2.1       | 3.6        | 2.8        | 2.5        |

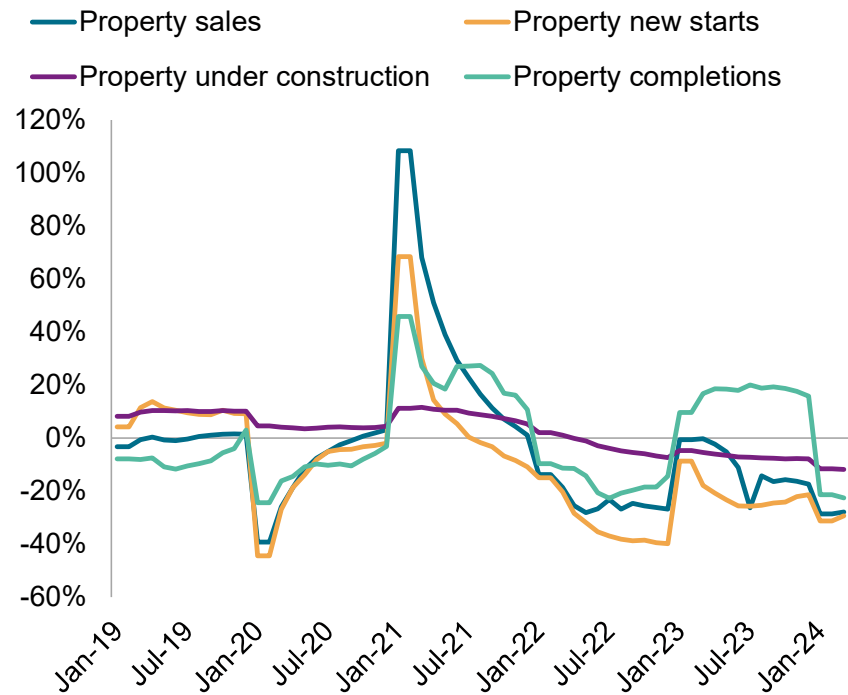
## China + India demand vs rest of the world



Source: S&P Global Commodity Insights.

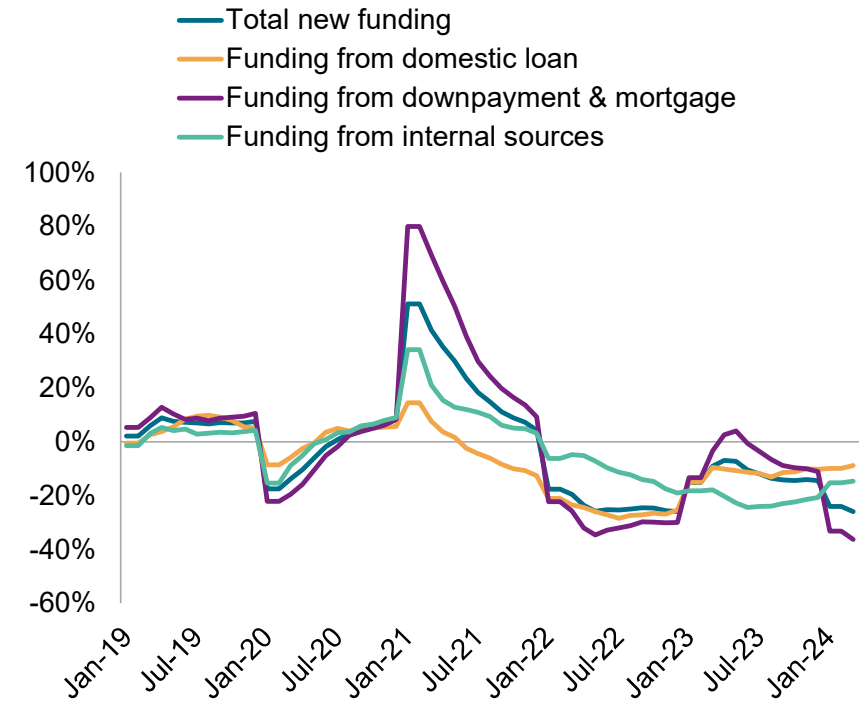
# Property completions, the remaining bright spot, had flamed out

## Residential properties (cumulative YTD, YoY)



Source: National Bureau of Statistics, China.

## Funding for property developers (cum. YTD, YoY)

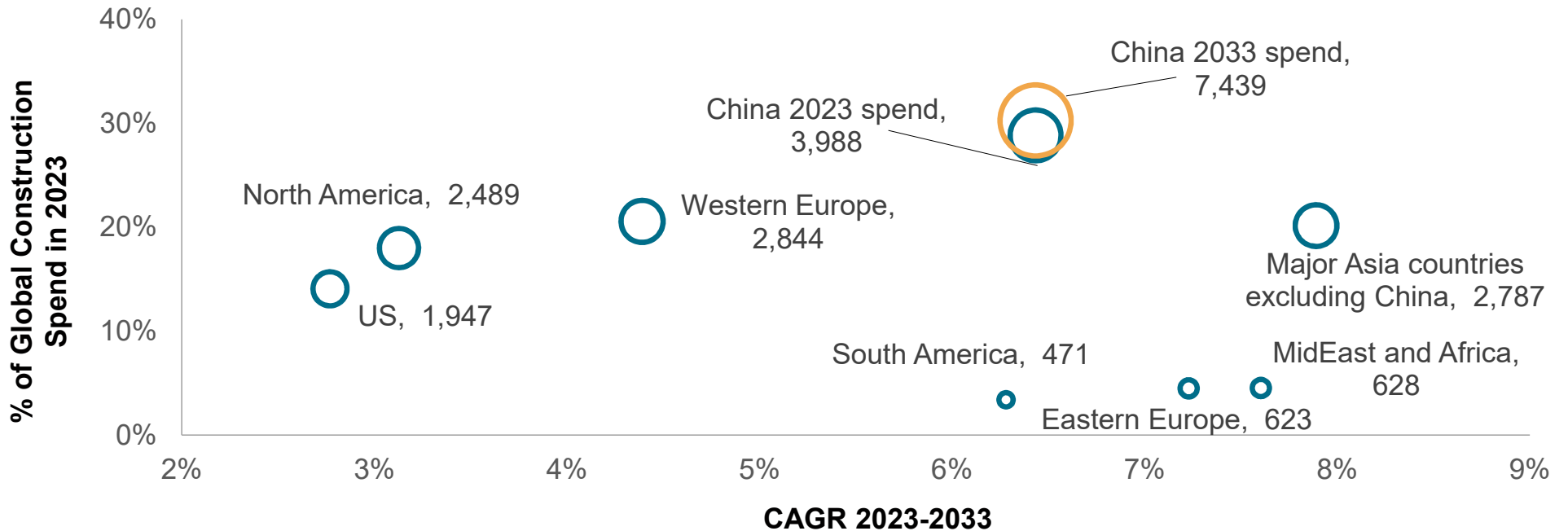


Source: National Bureau of Statistics, China.

# China remains the largest construction market in 2023 despite residential woes

China to gain in global spending share, even as emerging markets see strong growth over the next decade

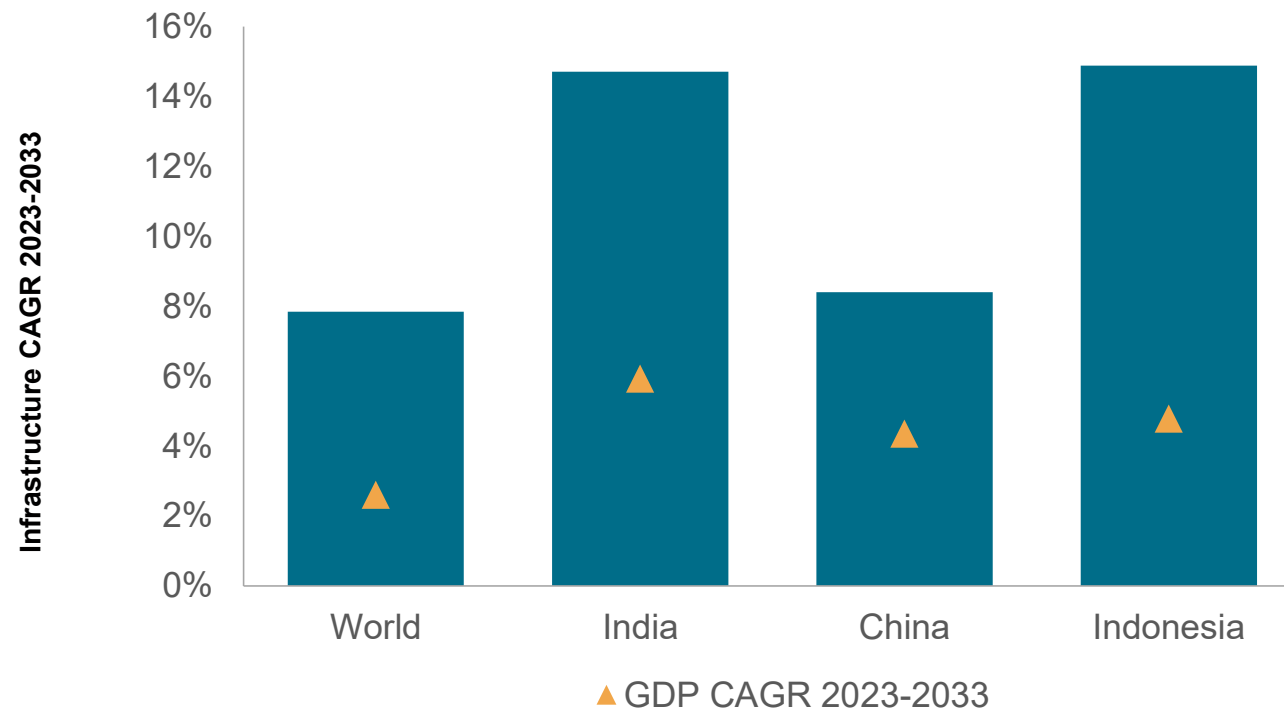
Construction Spend in 2023, Billion US\$ (represented by the size of the bubble)



Source: S&P Global Market Intelligence.

## PVC pipes benefit from higher than GDP growth in infrastructure spending

### Infrastructure spending on water and sewer



Source: S&P Global Market Intelligence.

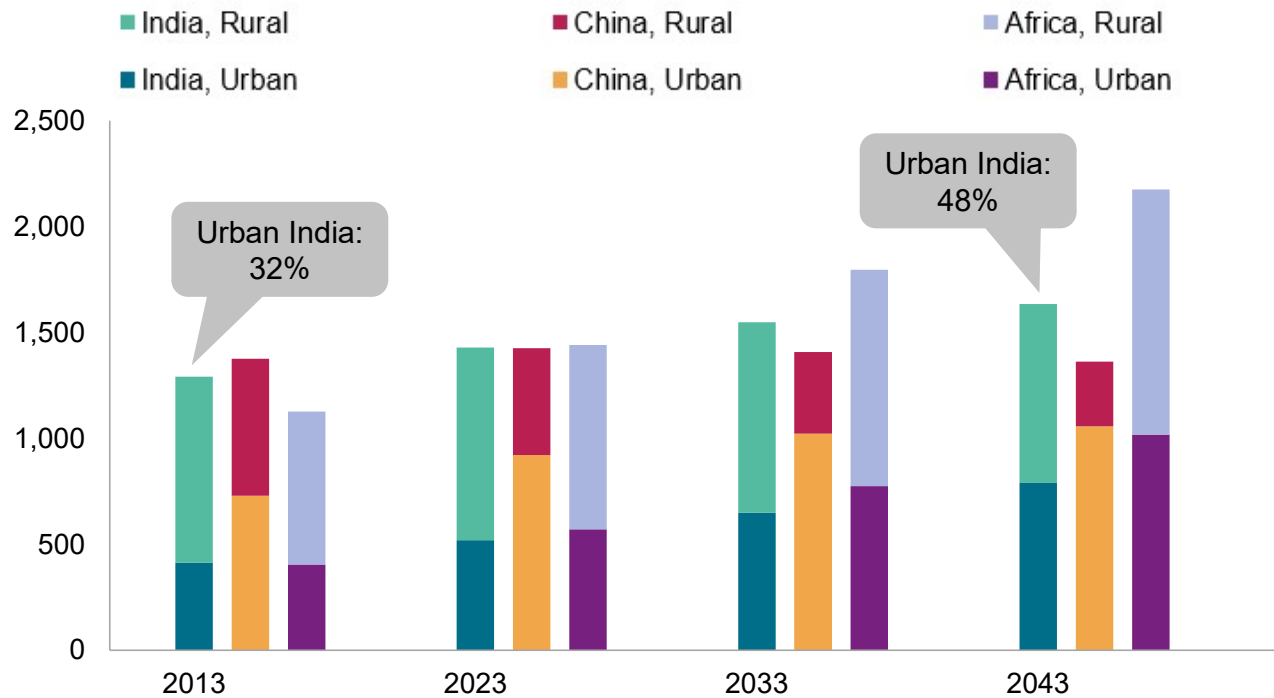
PVC is the leading material in clean water access and sewage handling projects on low failure rate.

Substantial replacement demand for pipes made from asbestos cement and cast iron.

~8% CAGR in China and the world, substantially above their respective GDP growth projections.

# Rising urbanization rates are driving construction and consumer spending

## Population, million



Source: S&P Global Market Intelligence.

Global population explosion, coupled with rising urbanization rates.

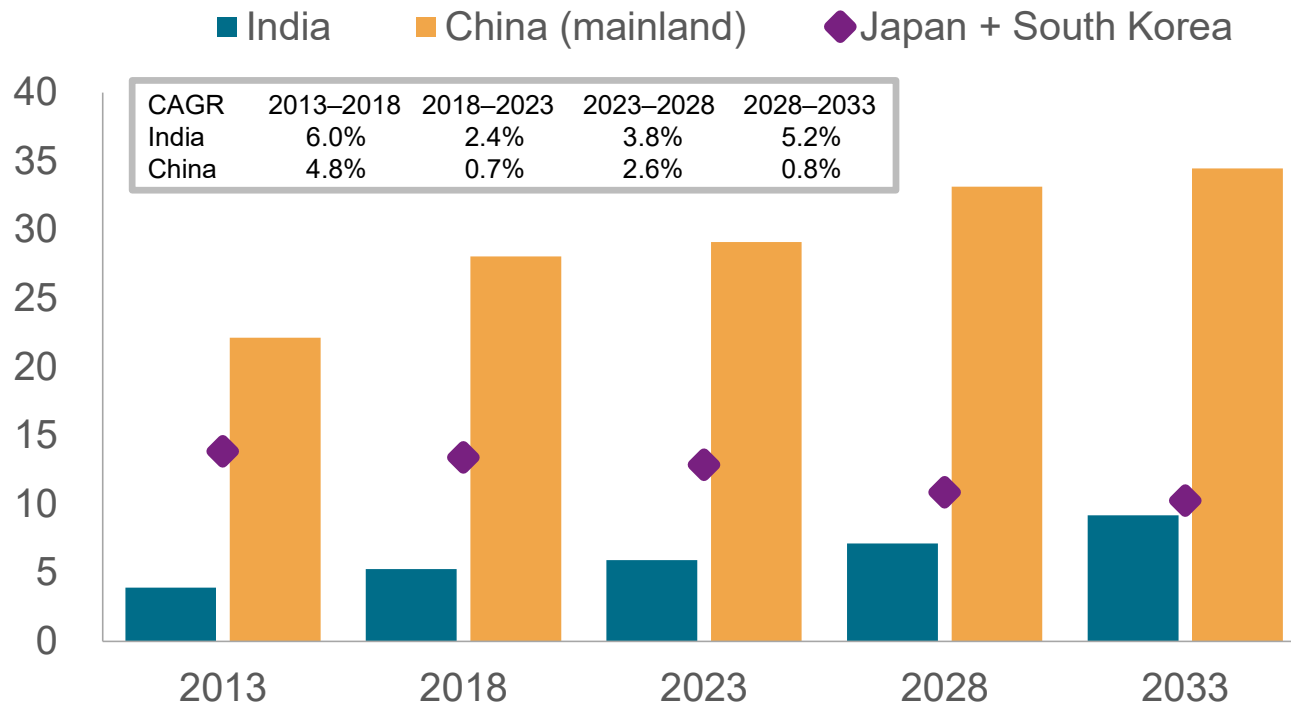
China's urban folks to rise to over three-quarters of its total population in 20 years, up from just half in 2013.

India's urbanization would jump to nearly 50% by 2043, on a population of over 1.6B.

Africa's urbanization to rise to nearly half by 2043, along with a ~50% increase in total population over the next 20 years to more than 2B.

# China and India are projected to enjoy strong vehicular output growth

**Vehicles Production, million**



Vehicular production growth supports the consumption of PVC (car interiors) and caustic soda (EV batteries).

China’s vehicular production would continue to grow from a high base, reaching nearly 35 million units.

India’s output would nearly match the total of Japan and South Korea combined (~10 million units) by 2033 and is projected to surpass the two traditional majors thereafter.

Source: S&P Global Market Intelligence.

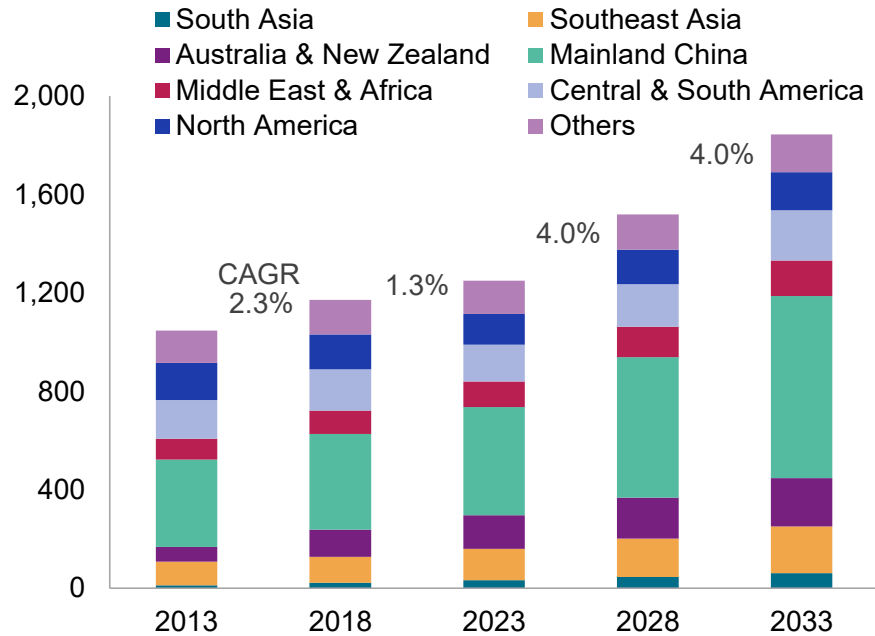


# Chlor-alkali consumption is supported by metals mining and paper making

Steady projected demand growth driven by sustainability efforts and economic expansions

## SE Asia, ANZ, and China to see substantial growth

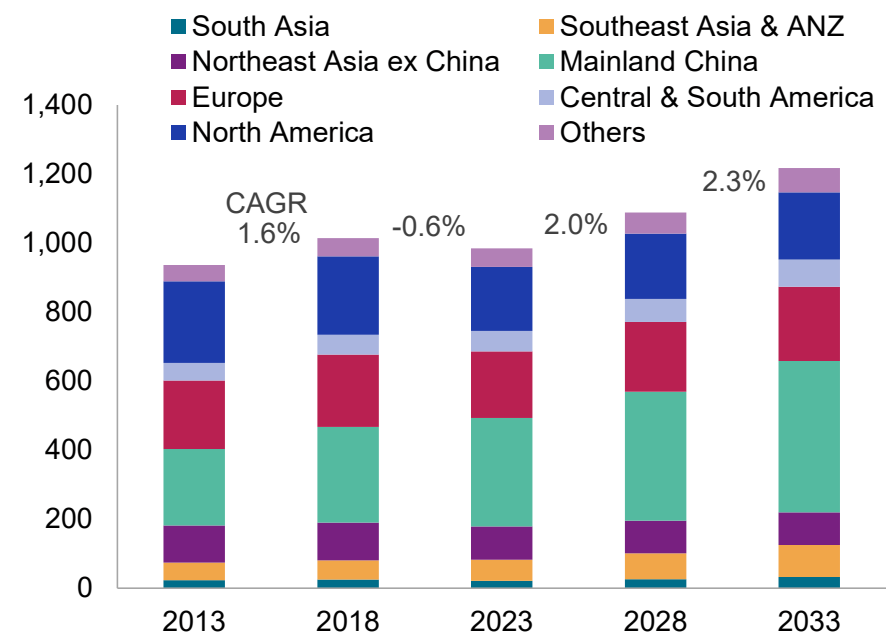
Gross output from mining of metals and stone, US\$bn, real



Source: S&P Global Market Intelligence.

## Paper-making to enjoy all-rounded growth

Gross output from paper and paper product, US\$bn, real

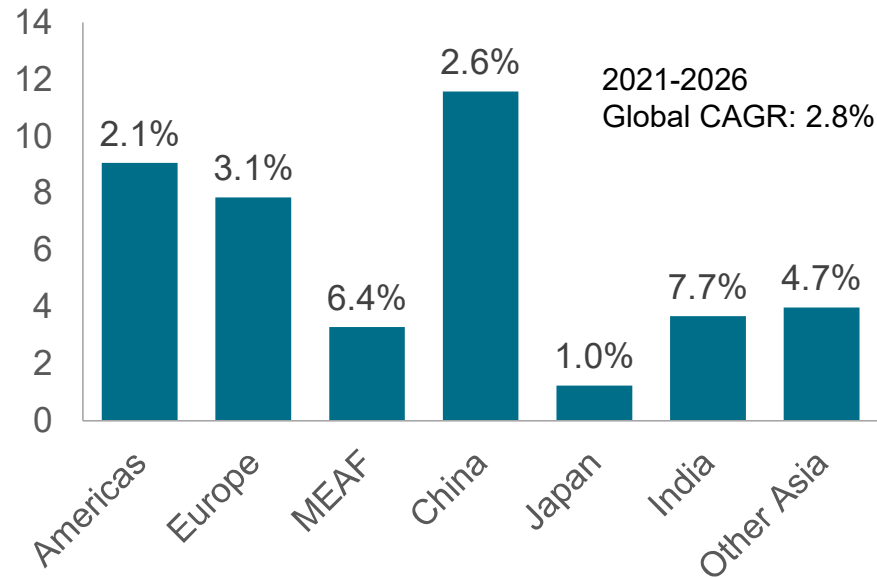


Source: S&P Global Market Intelligence.

# Respectable growth in surfactants & detergents

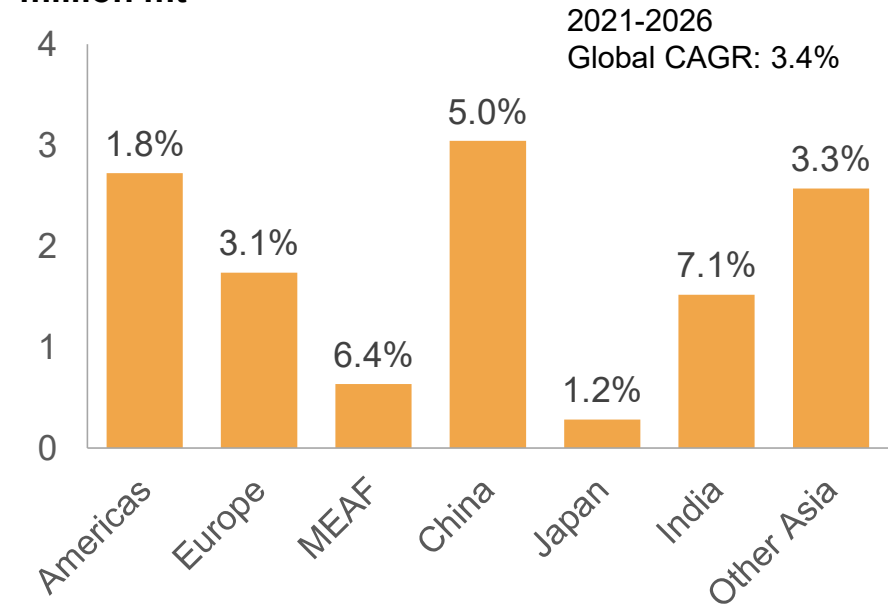
However, the segment remains relatively minor among caustic soda application

**2021 consumption of household detergents, million mt**



Source: S&P Global Commodity Insights.

**2021 consumption of household surfactants, million mt**



Source: S&P Global Commodity Insights.

# Agenda

Prologue: Consumption drivers

**Act I: Trade**

Act II: Supply and demand

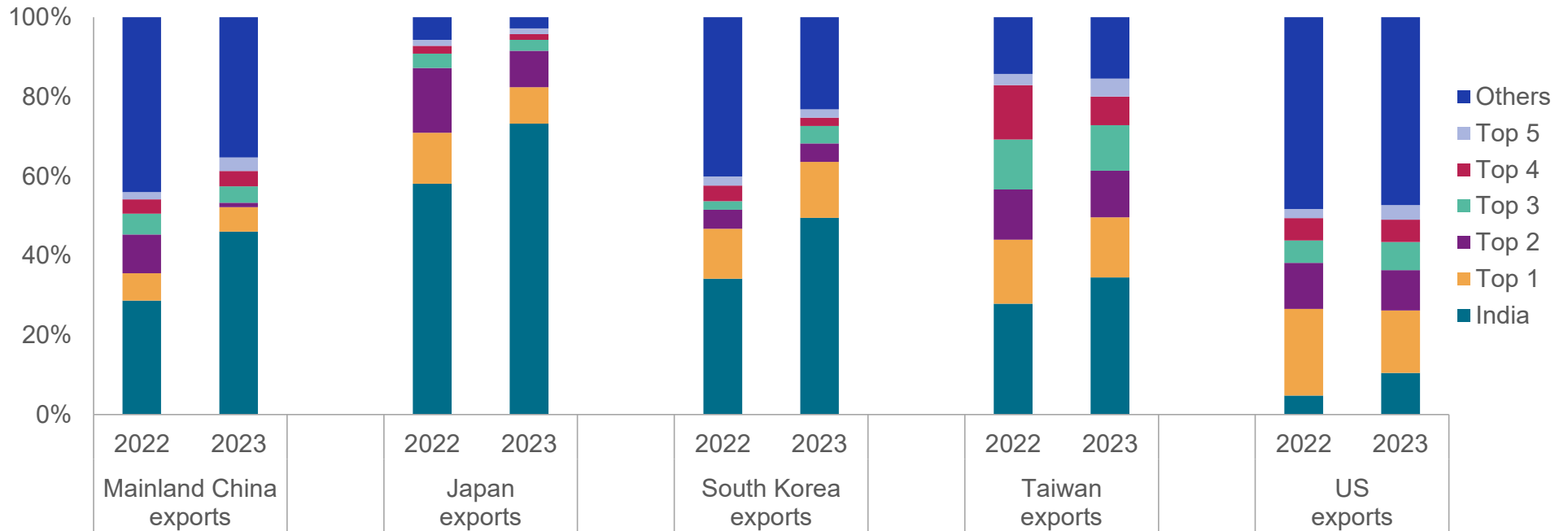
For discussion purpose only - generated using Microsoft Copilot with the prompt: someone wearing a PVC raincoat with an escape smoke hood, PVC boots and gloves, next to an entrance with PVC strip curtains and an activated CPVC fire sprinkler.



# Limited room amongst India's top PVC suppliers to replace Mainland China

Complete switching of the ex-India 2023 volumes of Japan, Korea, and Taiwan required to compensate

## Growing importance of India as a destination among top PVC exporters

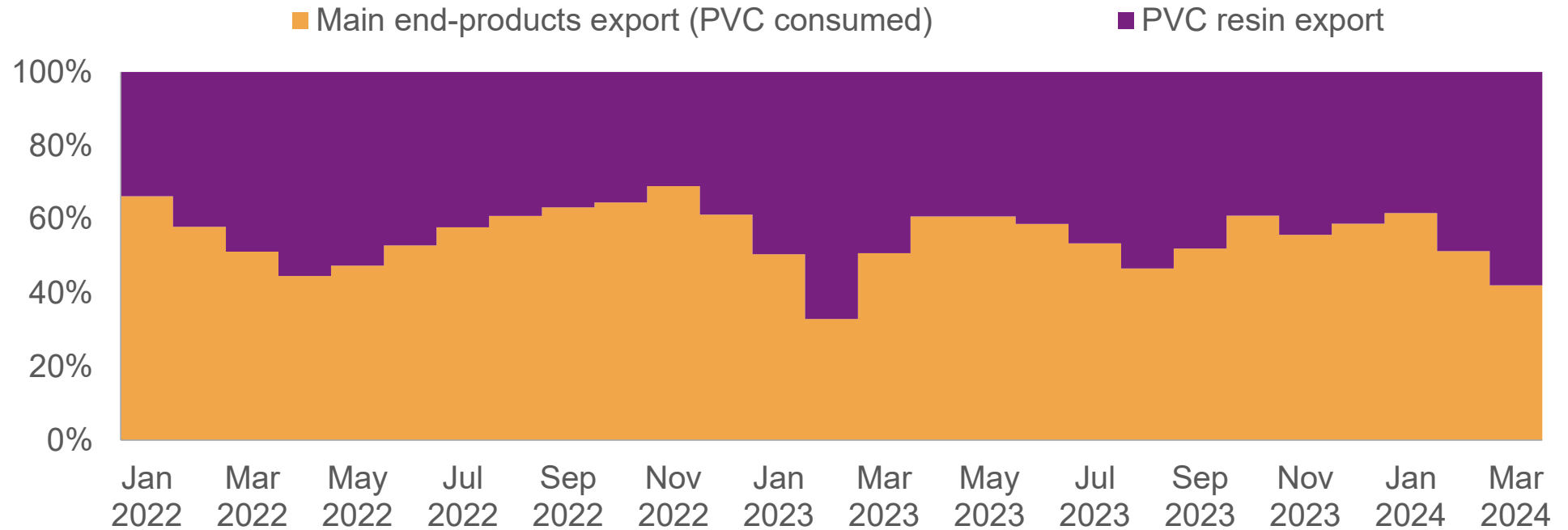


Source: S&P Global Commodity Insights.

## China's exports of PVC products have grown along with its resin exports

Export tonnage of PVC products in terms of the resin component had generally exceeded that of the resin

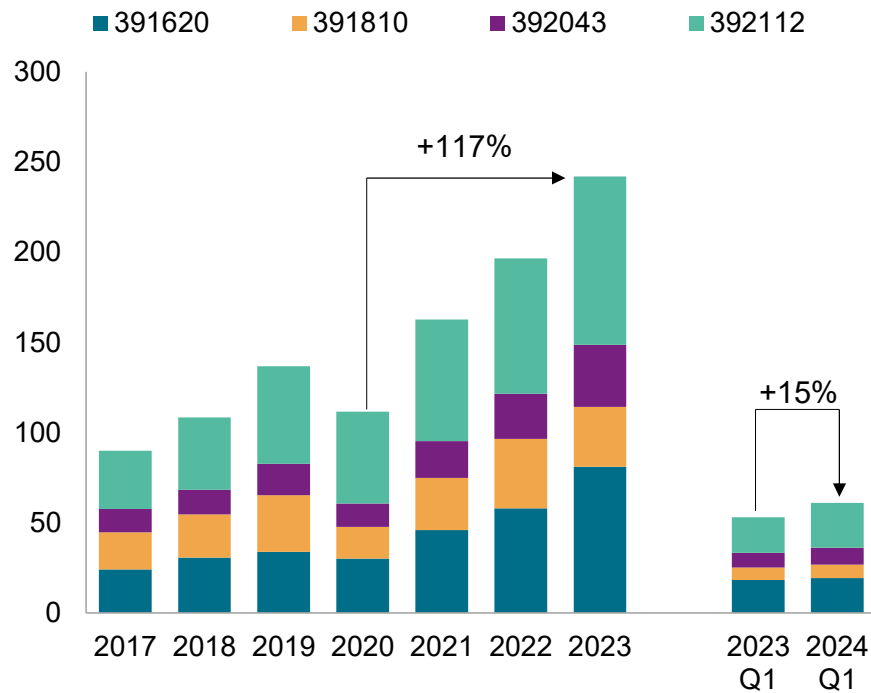
### Proportion of Chinese PVC resin exports vs. products exported (PVC consumed, estimated)



# India's voracious appetite for PVC extends beyond the resins

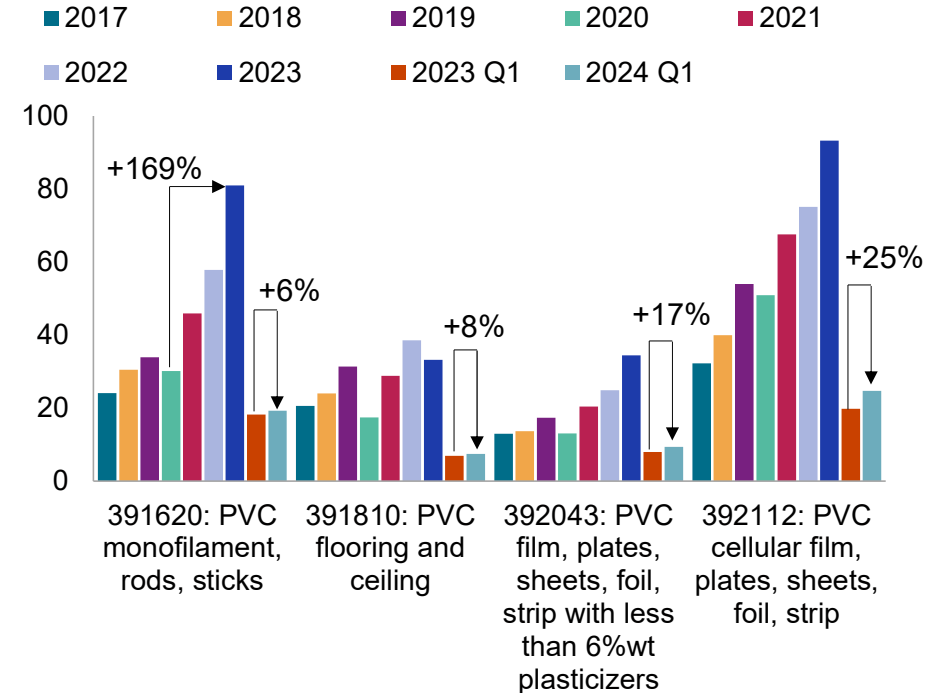
Chinese exports of key PVC products into India jumped 15% yoy in Q1 2024, even as PVC resins dipped 19%

### China exports of PVC products to India, KT



Source: S&P Global Commodity Insights.

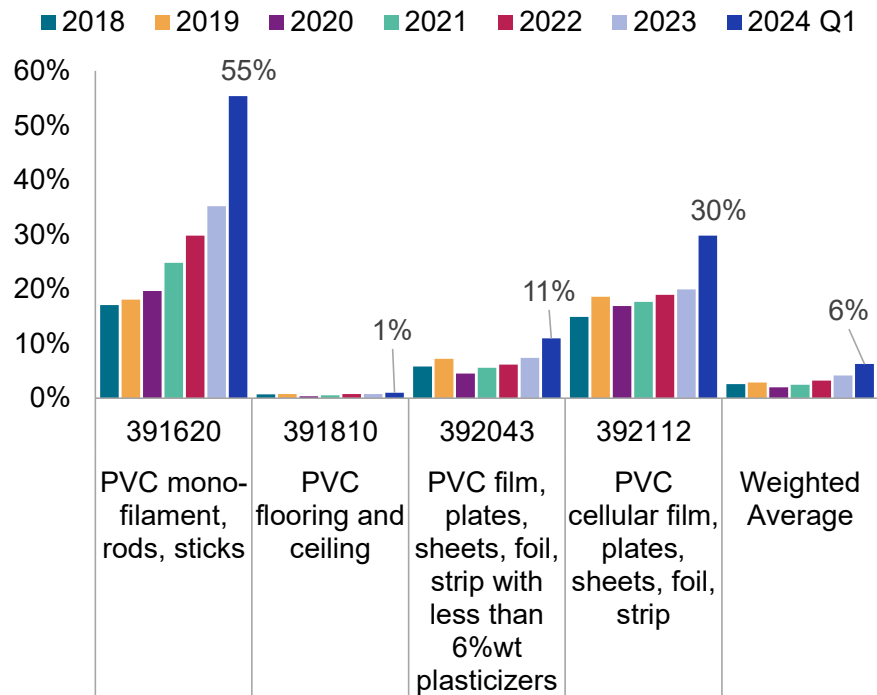
### China exports of PVC products to India, KT



Source: S&P Global Commodity Insights.

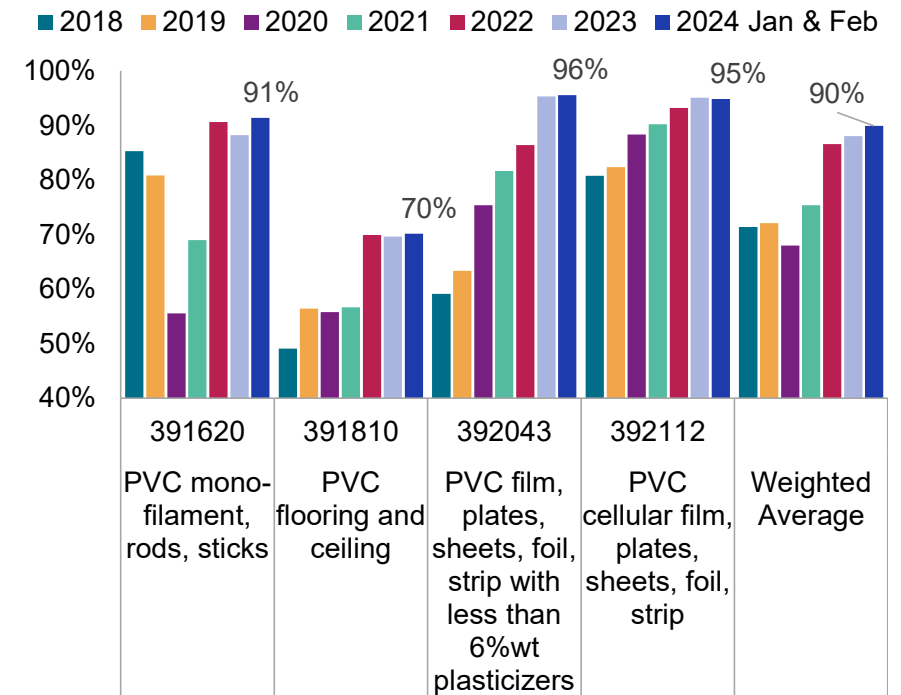
# Heavy import reliance by India on Chinese PVC products

## China's export portion of PVC products to India



Source: S&P Global Commodity Insights.

## India's import reliance on China for PVC products

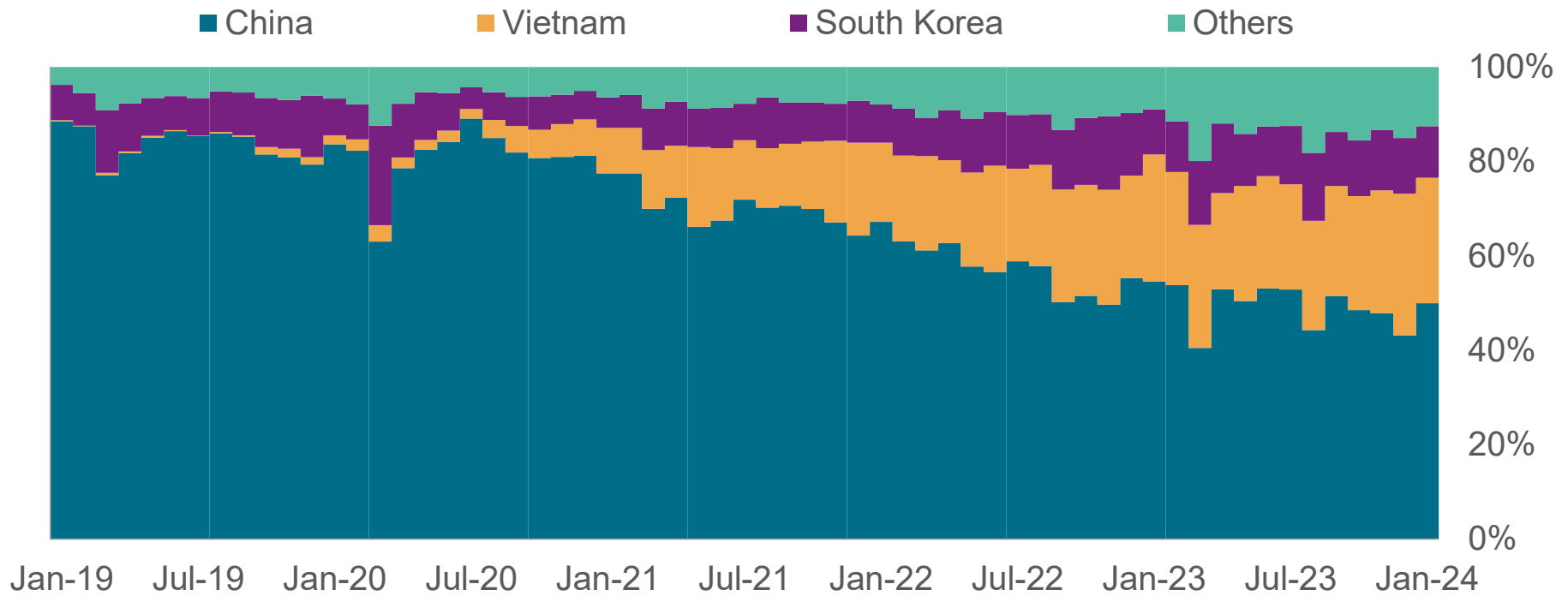


Source: S&P Global Commodity Insights.

# Vietnam is increasingly a key beneficiary of China+1 despite challenges

South Korea has held its share of the U.S. market

US PVC flooring and ceiling imports by origin (USD value)

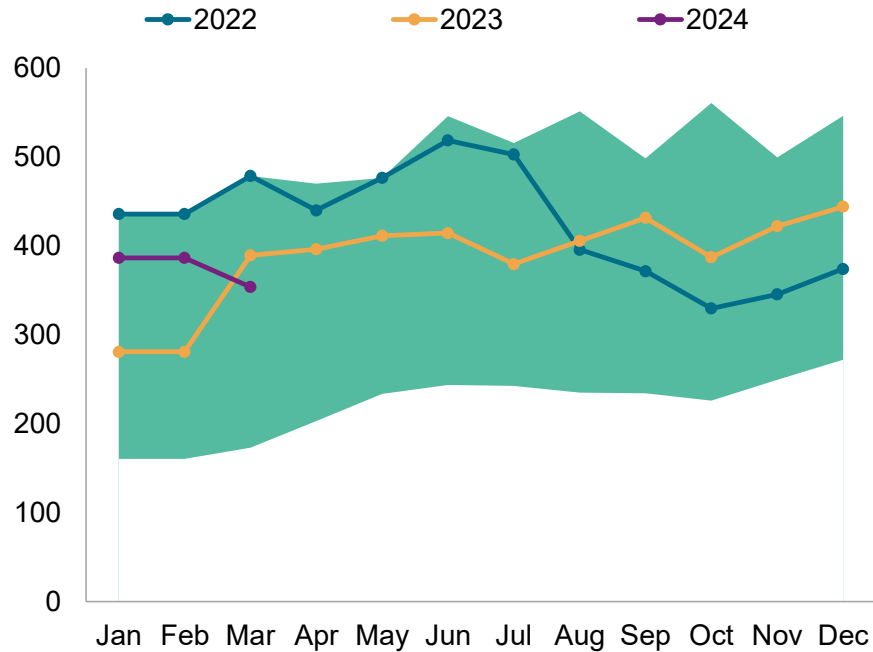


Source: S&P Global Commodity Insights.



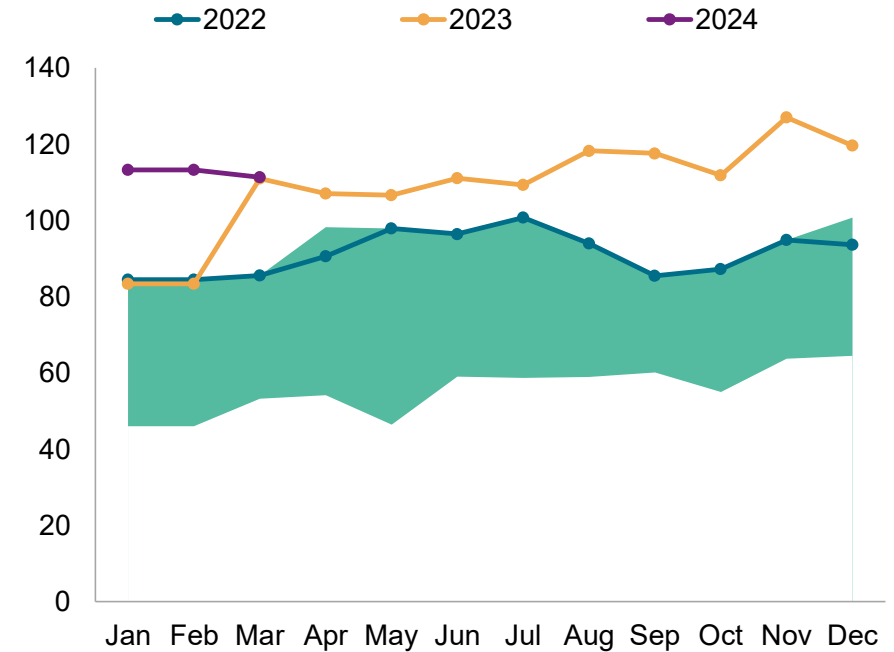
# Chinese PVC product exports are seeing substantial y-o-y growth

**Mainland China export of PVC flooring and ceiling, KT (green area = 2017-2022 range)**



Source: S&P Global Commodity Insights.

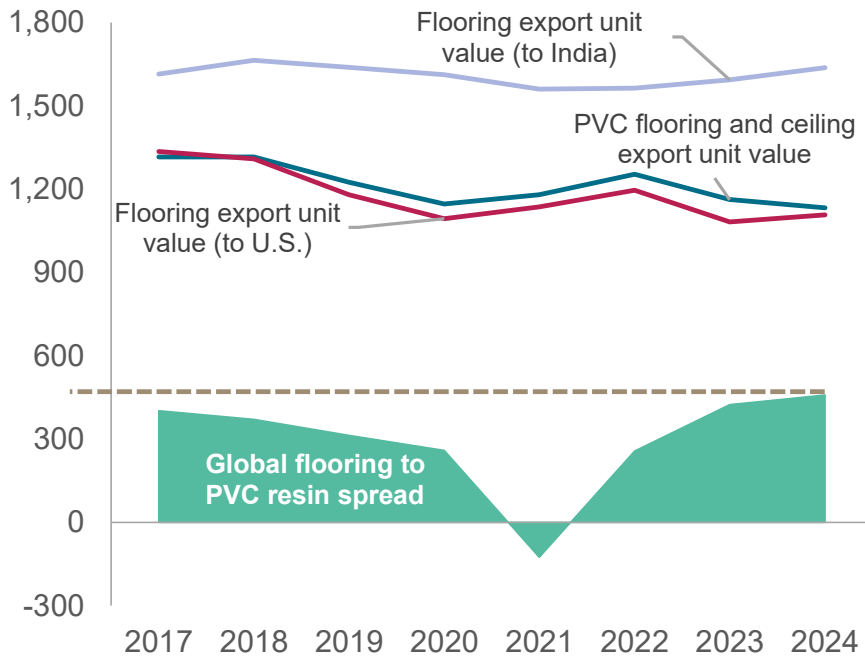
**Mainland China export of 4 other leading PVC downstream end product, KT (2017-2022 range)**



Source: S&P Global Commodity Insights.

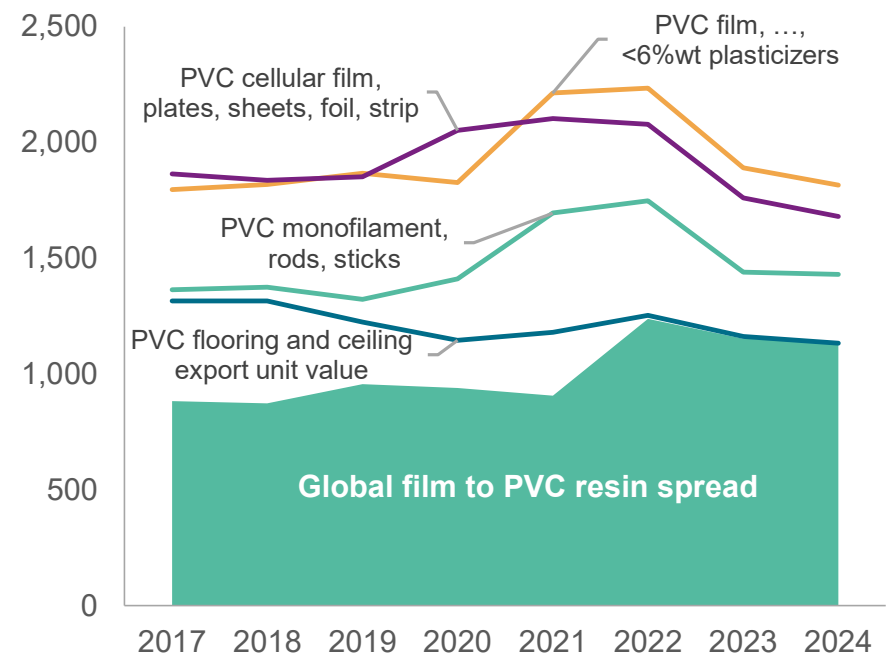
# The export values of Chinese PVC products are enjoying healthy post-COVID price spread over the resin

**China PVC flooring and ceiling export value (global weighted average) vs. PVC prices, USD/MT**



Source: S&P Global Commodity Insights.

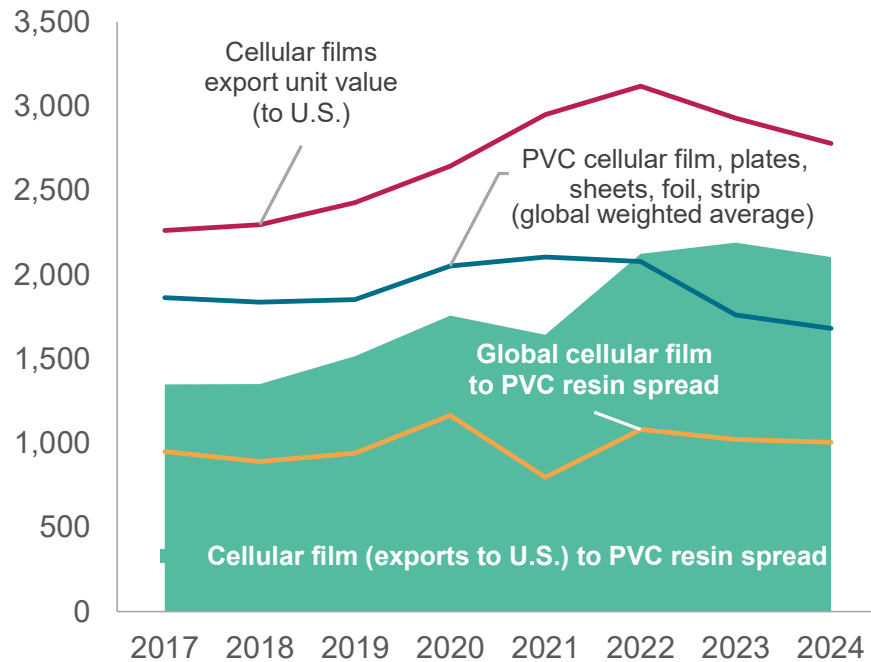
**China PVC downstream product exports unit value (global wt. average) vs. PVC resin prices, USD/MT**



Source: S&P Global Commodity Insights.

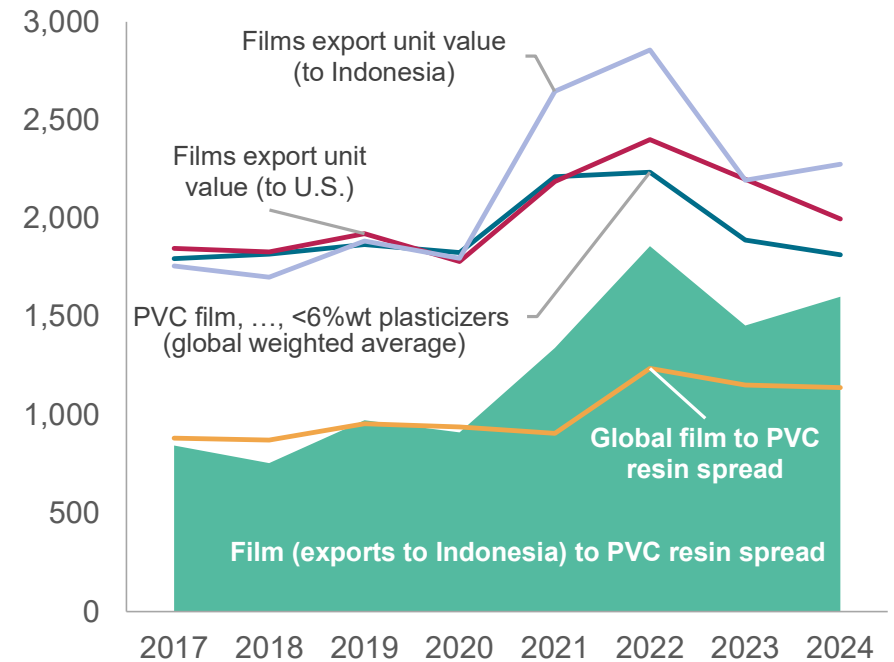
## Some destinations are proving more attractive for Chinese PVC converters

**China PVC cellular film, plates, sheets, foil, strip export value vs PVC prices, USD/MT**



Source: S&P Global Commodity Insights.

**China PVC film, ..., with <6% weight plasticizers export value vs PVC prices, USD/MT**

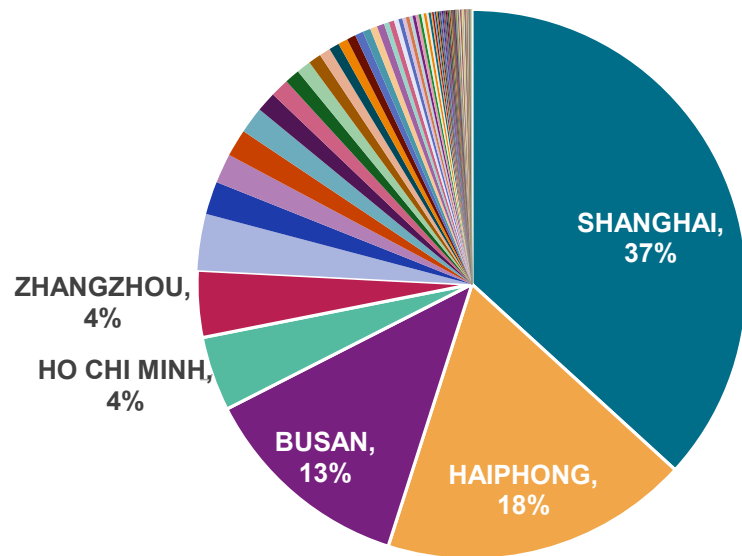


Source: S&P Global Commodity Insights.

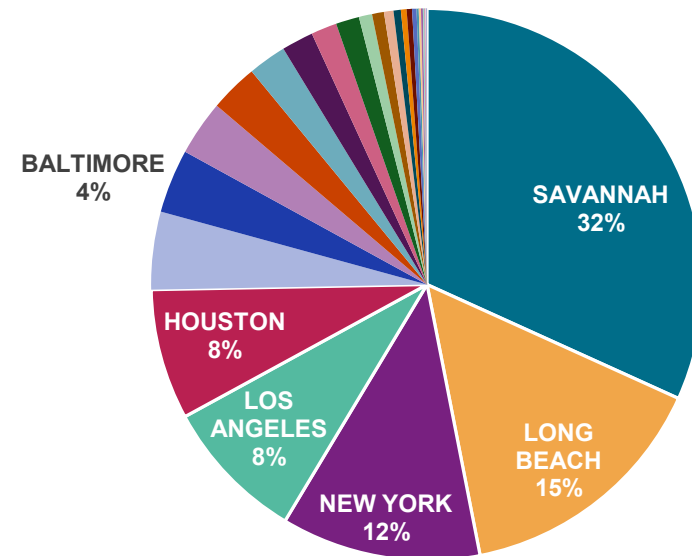
## Trade flows of PVC flooring and ceiling products majorly move via key ports

Port of Los Angeles is the top port for all kinds of imports, but Port of Savannah is top for PVC flooring by far.

Top 5 **global** ports handled 76% of the global PVC flooring & ceiling products to the U.S.



Top 5 **U.S.** ports handled 75% of the global PVC flooring & ceiling products to the U.S.

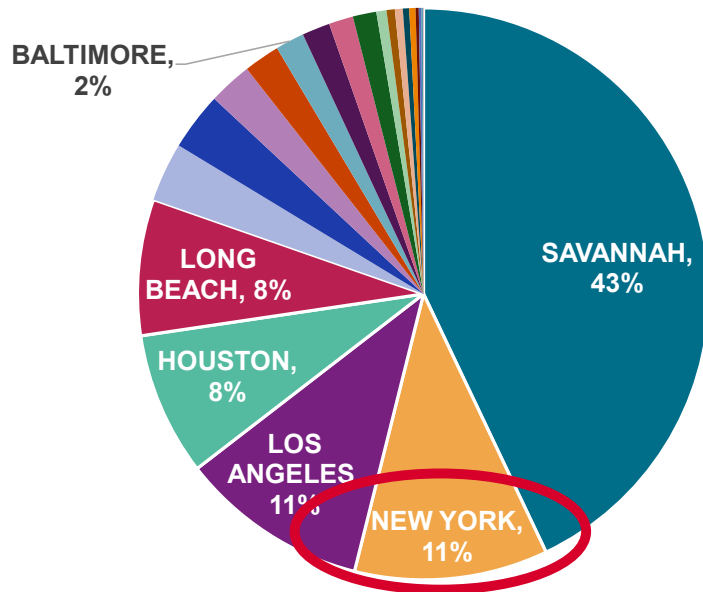


Source: S&P Global Market Intelligence - PIERS (Port Import/Export Reporting Service, data from 23 April 2023-29 February 2024)

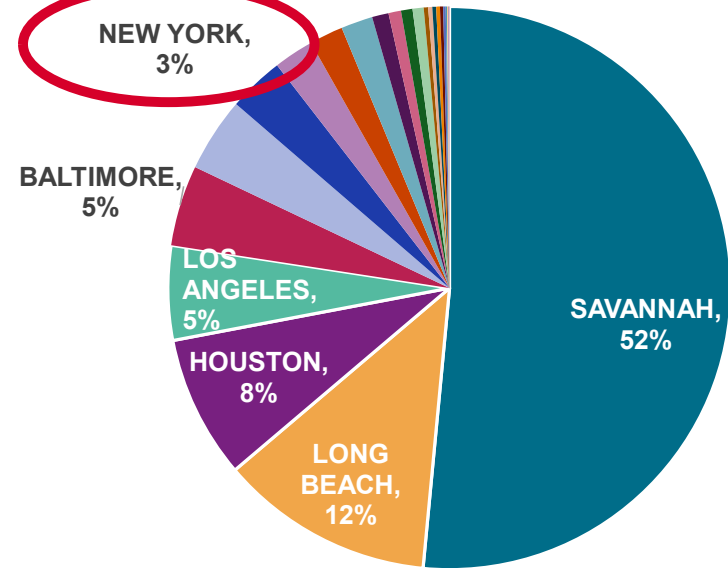
Baltimore bridge collapse has a greater impact on South Korean PVC flooring and ceiling products than Vietnamese; things could have been worse...

PIERS data enables the quick analysis of consequences following black swan events.

**U.S. Ports receiving Vietnam PVC flooring and ceiling products**



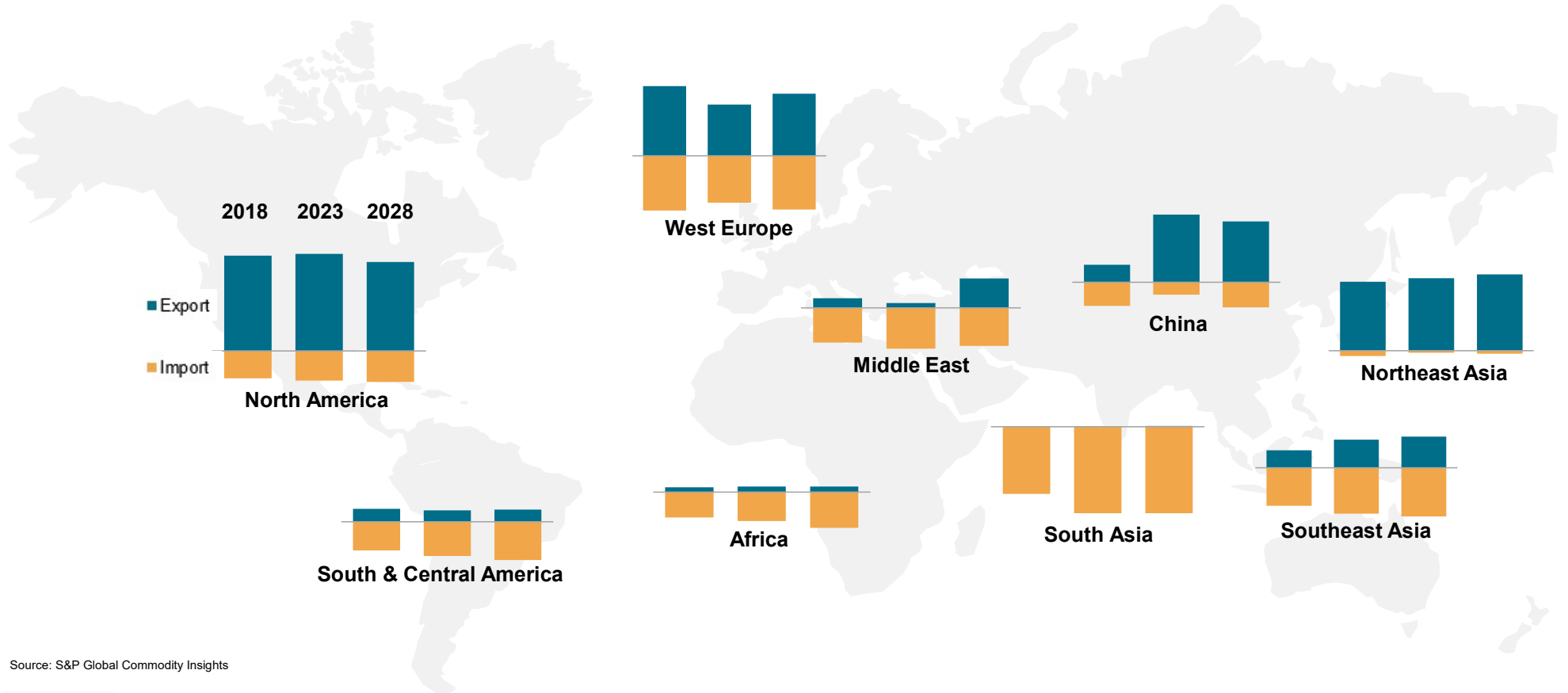
**U.S. Ports receiving South Korea's PVC flooring and ceiling products**



Source: S&P Global Market Intelligence - PIERS (Port Import/Export Reporting Service, data from 23 April 2023-29 February 2024)

# PVC trade patterns to see minor changes

North America and Northeast Asia remain key exporters, South Asia and Africa as key importers



Source: S&P Global Commodity Insights

# Agenda

Prologue: Consumption drivers

Act I: Trade

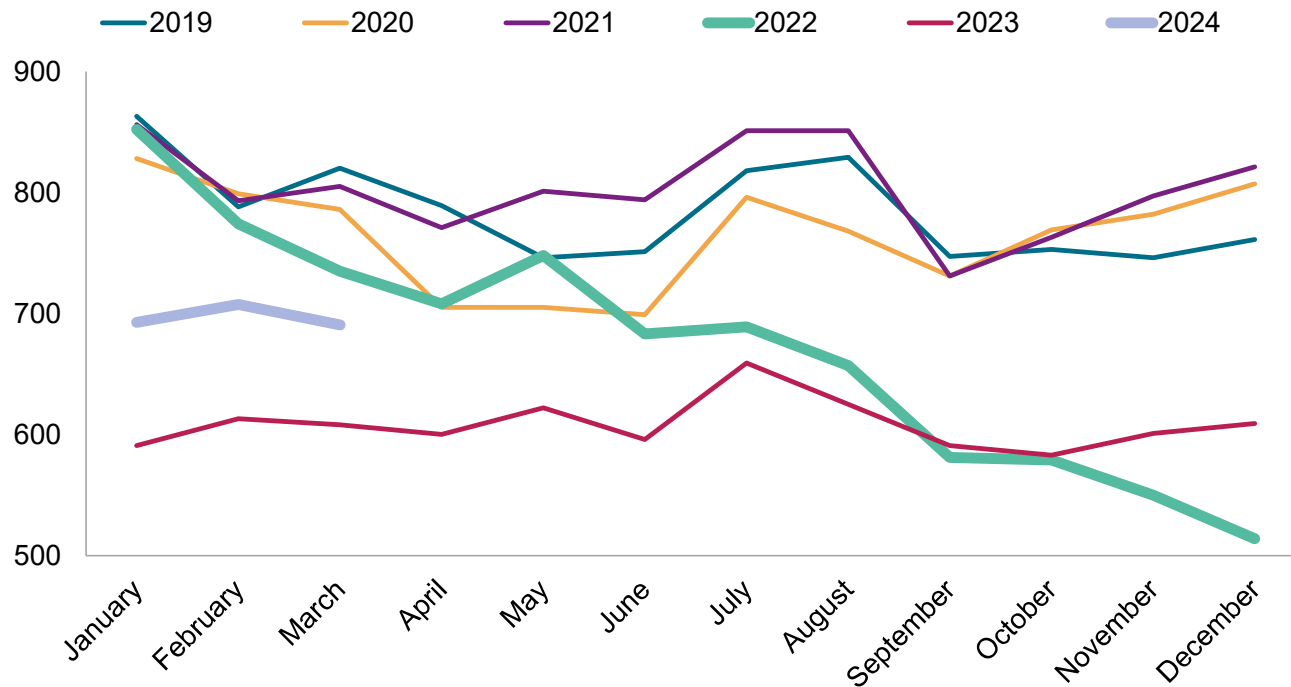
**Act II: Supply and demand**

For discussion purpose only - generated using Microsoft Copilot with the prompt: a patient with the following attached: medical tubing, blood bag, IV bag and dialysis bag, oxygen mask.



# EU chlorine/caustic production down significantly since Russia-Ukraine

**Euro Chlor - Chlorine production, KT**



Source: Euro Chlor, S&P Global Commodity Insights.

EU Chlorine output fell precipitously since 2021

EU PVC production and export volume subdued in 2022/2023

Vinyl represents 40% of EU chlorine consumption

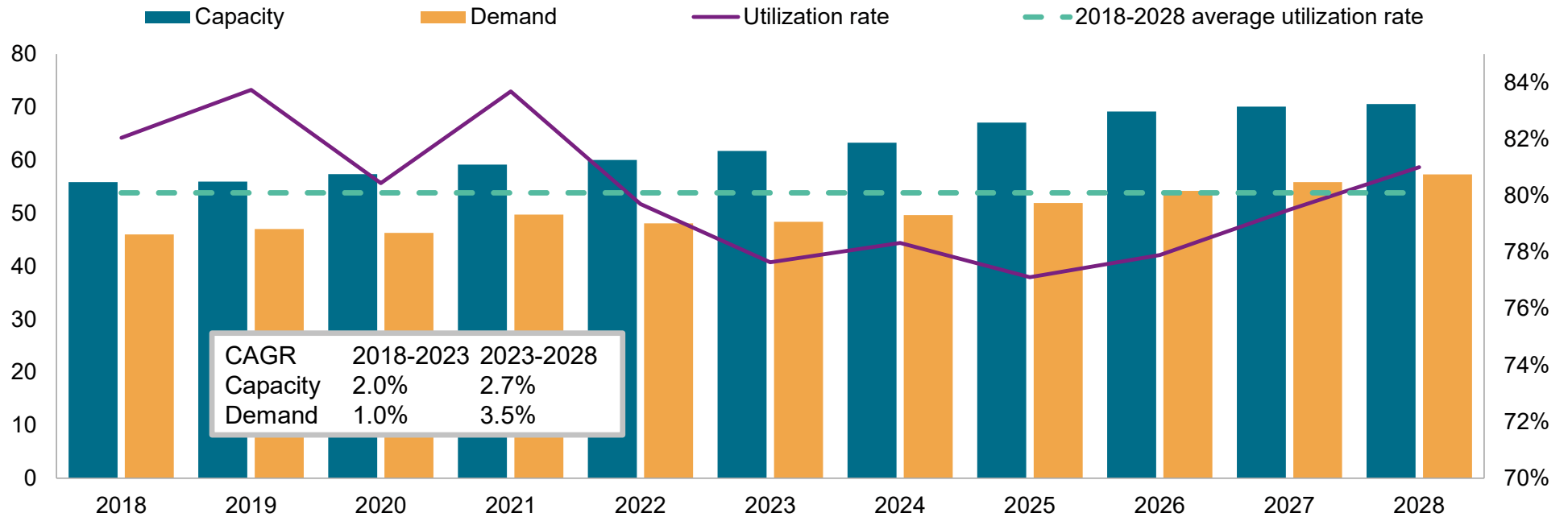
October 2023 pivot; improvement expected to continue through 2024



# PVC capacity additions to satisfy demand growth

Pace of new expansions projected to commensurate with the previous five years

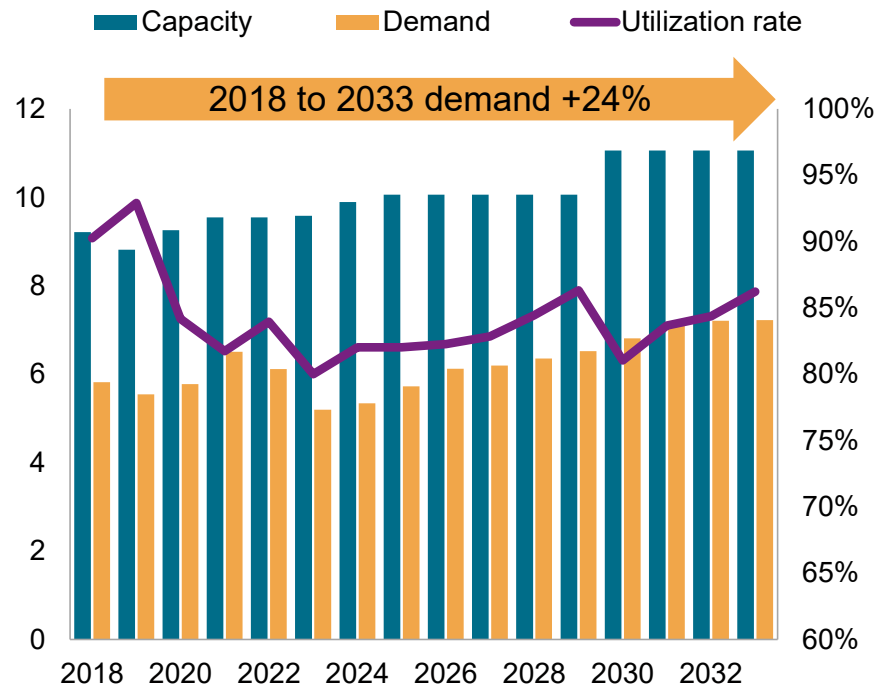
## Global PVC capacity & demand, million MT



Source: S&P Global Commodity Insights.

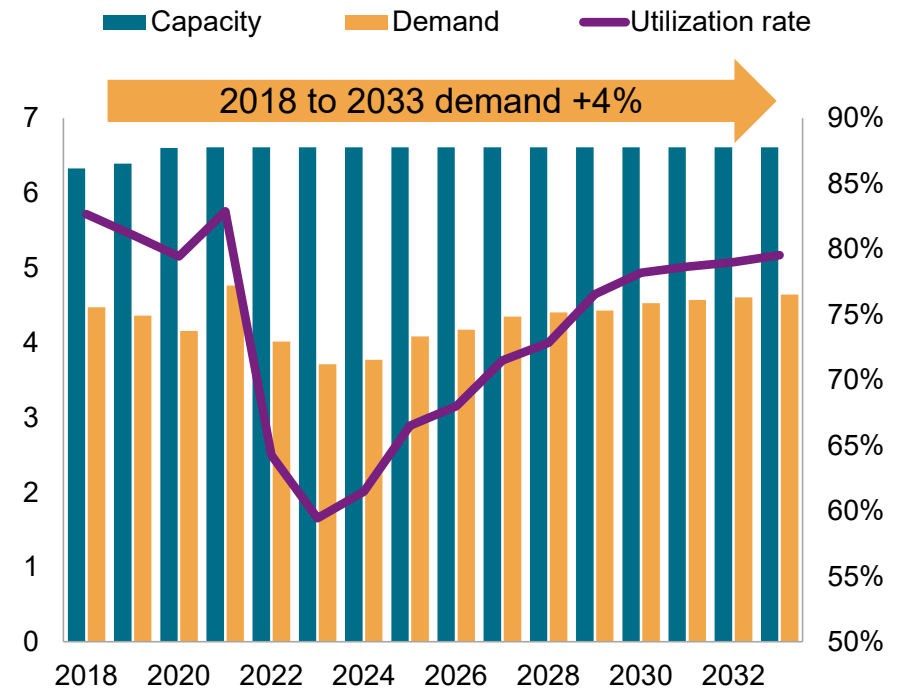
# NAM O/R to improve with demand recovery; WEP expected to normalize

## North America PVC capacity & demand, MMT



Source: S&P Global Commodity Insights.

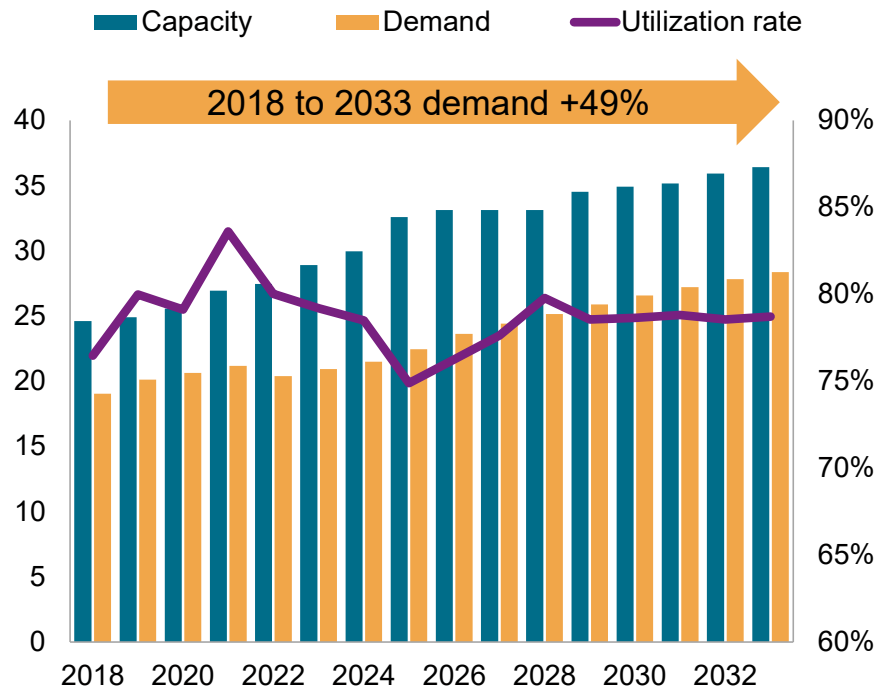
## Western Europe PVC capacity & demand, MMT



Source: S&P Global Commodity Insights.

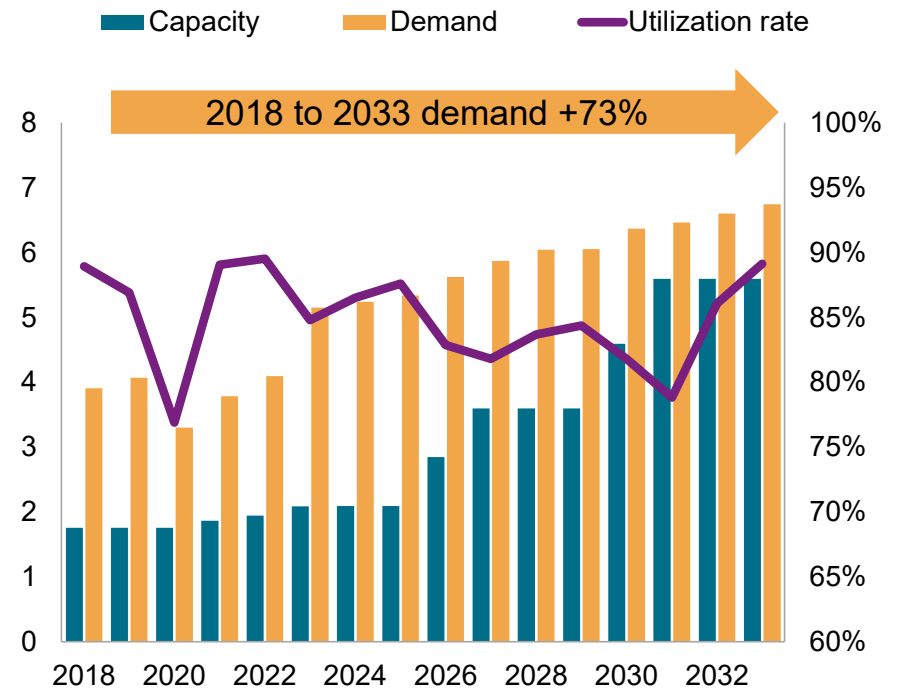
# China O/R to improve with demand; India to see long-awaited capacity adds

## China PVC capacity & demand, MMT



Source: S&P Global Commodity Insights.

## South Asia PVC capacity & demand, MMT

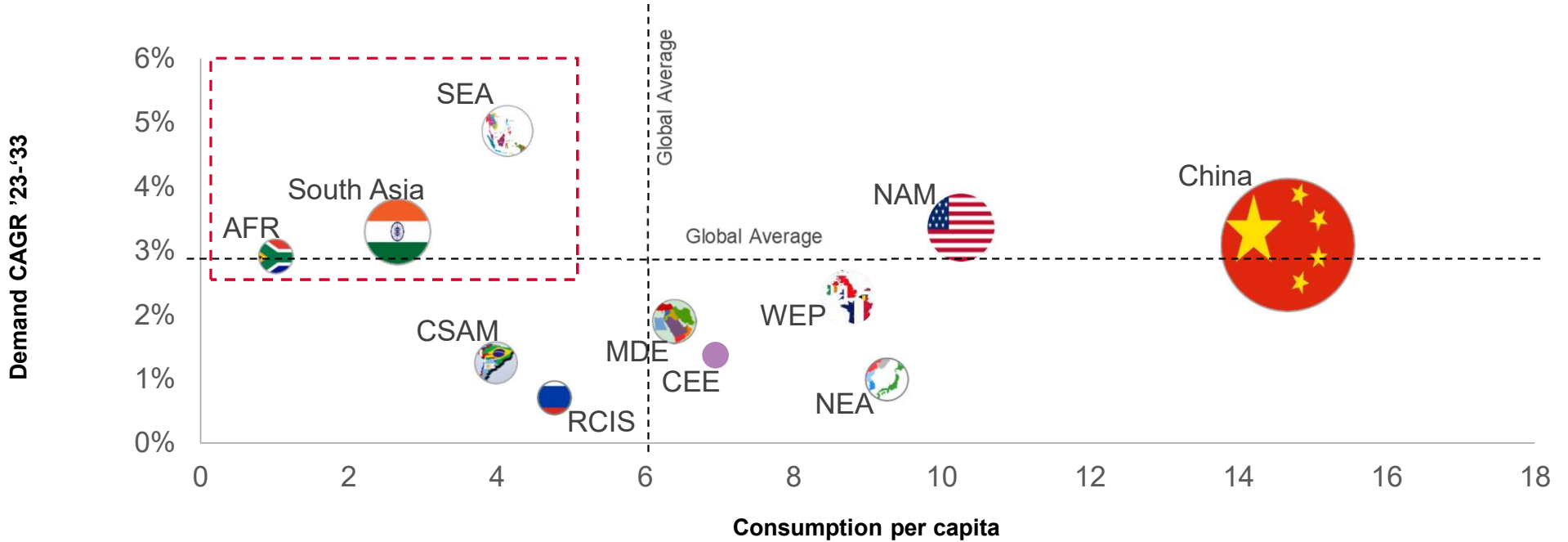


Source: S&P Global Commodity Insights.

# China leads PVC consumption per capita, high demand CAGR in SEA & India

Steady demand growth in China and North America to support base PVC consumption

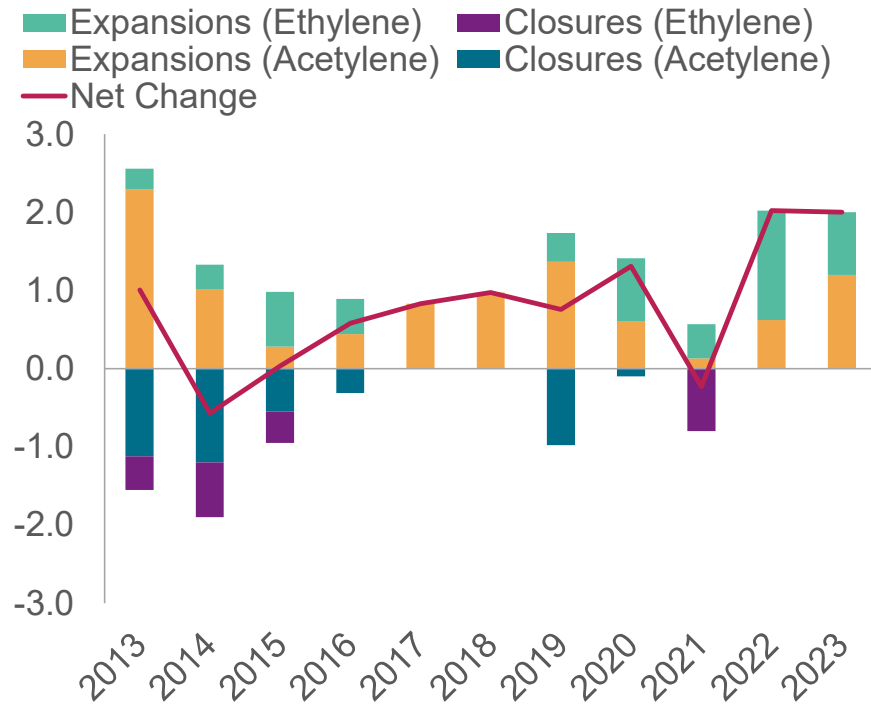
**Domestic demand 10Y-CAGR vs consumption (kg) per capita (bubble size: 2023 domestic demand)**



Source: S&P Global Commodity Insights

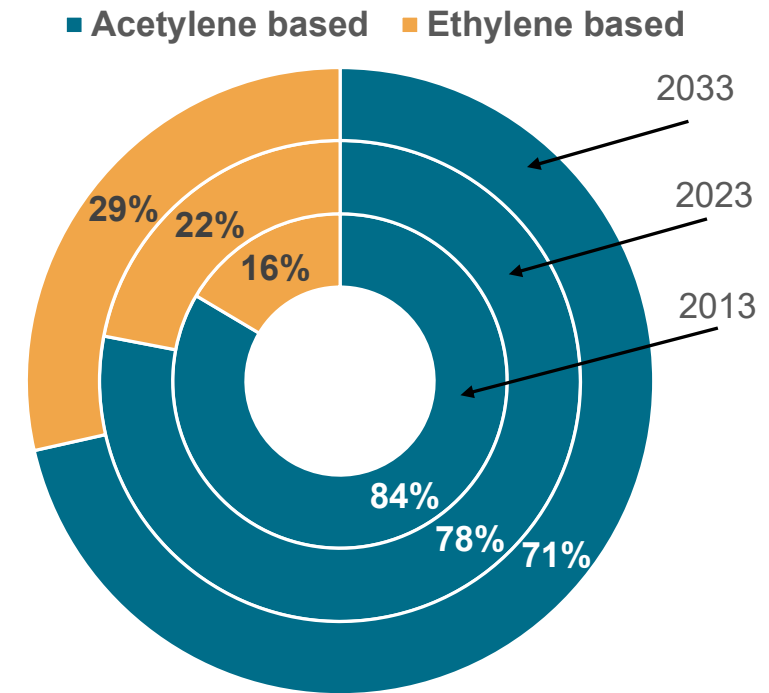
# Share of Ethylene-based PVC to keep rising, even as both production routes see expansions along with closures

**China PVC capacity growth (million MT)**



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**China plants**



© 2024 S&P Global Commodity Insights

# Global chlor-alkali & vinyl: 2024 challenges before growth resumption this decade



Reinvestment level returns more attractive



Expanding capacity and demand growth for 2024 - 2028



Recovery in traditional applications and favorable megatrends



PVC advantages: Durability, resistance, versatility, ease of installation, cost-effective



Higher raw material costs ahead



Environmental/Incidents/ Canal impact to supply chain/other polymers



Geopolitical dynamics and risks are rising

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