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# Development Trajectory and Evolution of China Styrene Industry amid Capacity Expansion

Elyssa from SCI

2025.5.16

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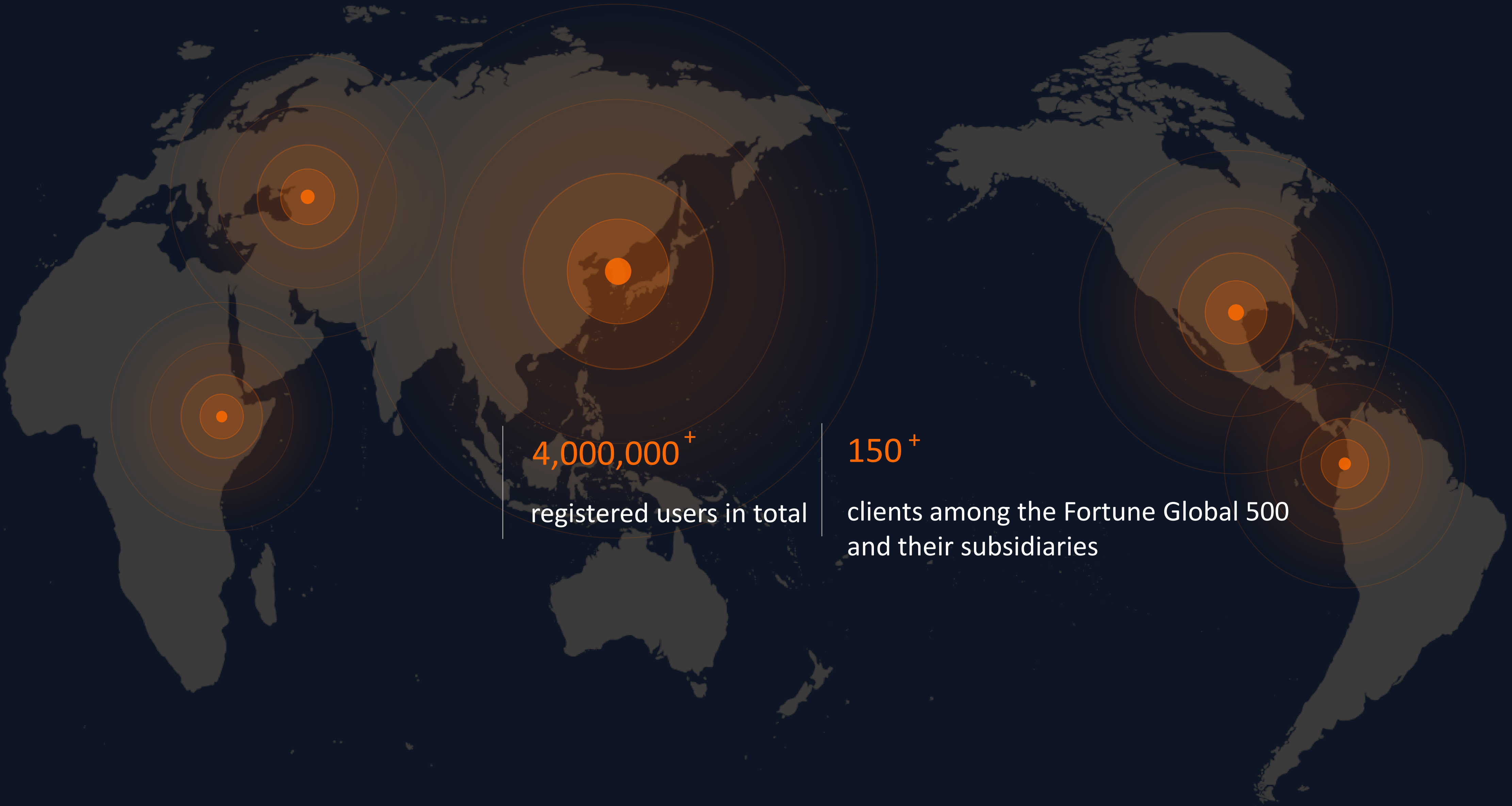

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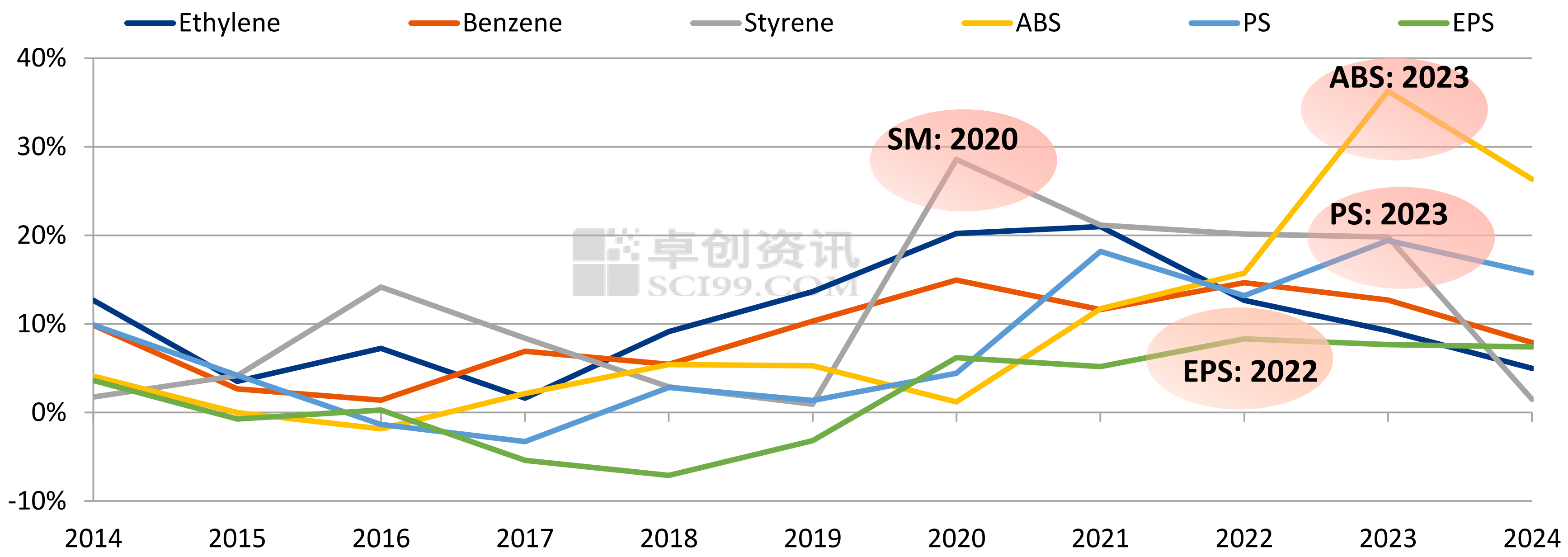
# CONTENTS

# PART 01

## 2020-2024 Evolution and Development of China Styrene Industry

# Capacity Expansion Across the Styrene Industry Chain Accelerates




Source: sci99

**2014-2024 China Styrene Industry Chain Capacity Growth**

During the "13th Five-Year Plan," China's refining and ethylene capacity expanded significantly, promoting commissioning of integrated refining and chemical projects. The styrene industry chain entered a high capacity-expansion phase.

# Styrene Capacity Growth Maintains High During Past Five Years yet Slows Down 2024

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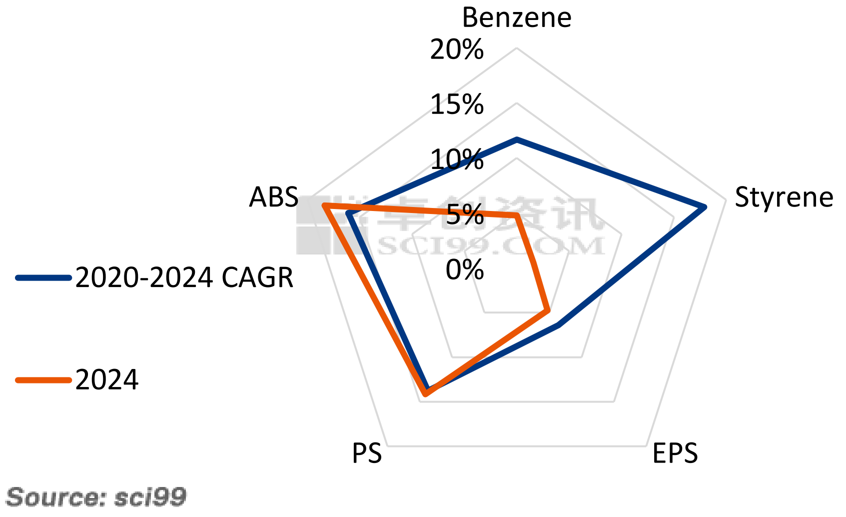
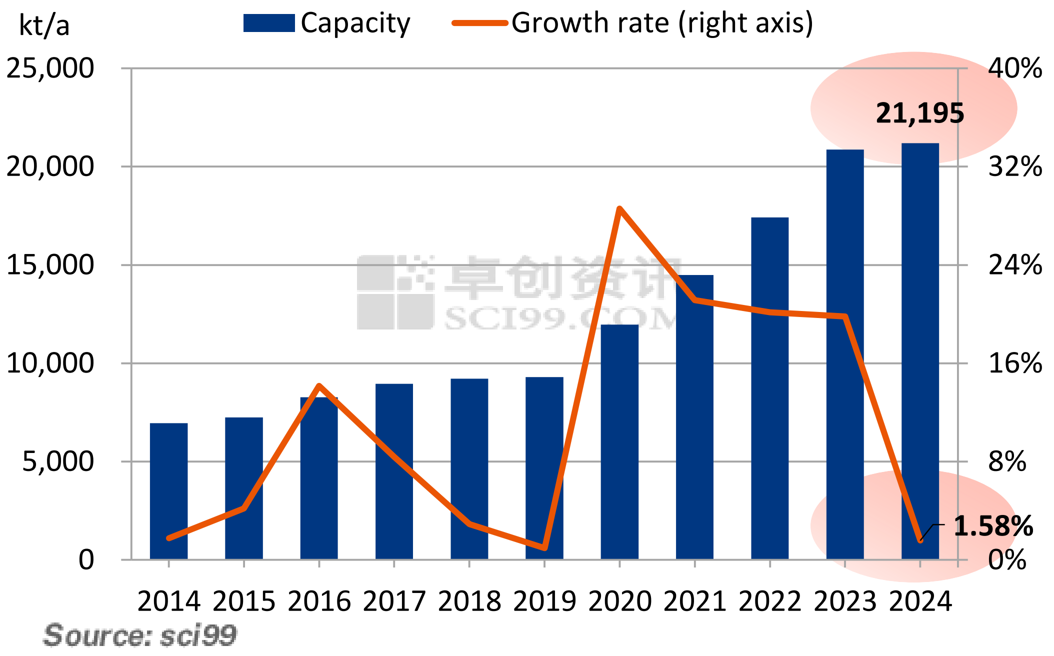
**2020-2024 CAGR of Styrene and Its Downstream Products Capacity**



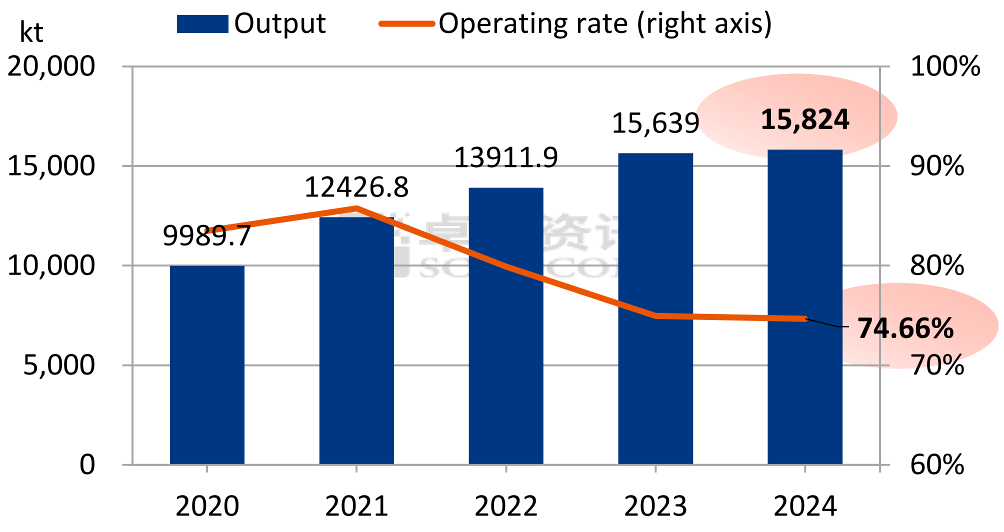

**2014-2024 China Styrene Capacity**




- Over the past five years, styrene has recorded the highest capacity CAGR across the industry chain.
- Styrene capacity growth in 2024 slowed down mainly restricted by limited new capacity commissioning and certain project's elimination due to overcapacity and profit losses.
- In 2024, the CAGR of downstream EPS, PS, ABS capacity began to surpass that of styrene.

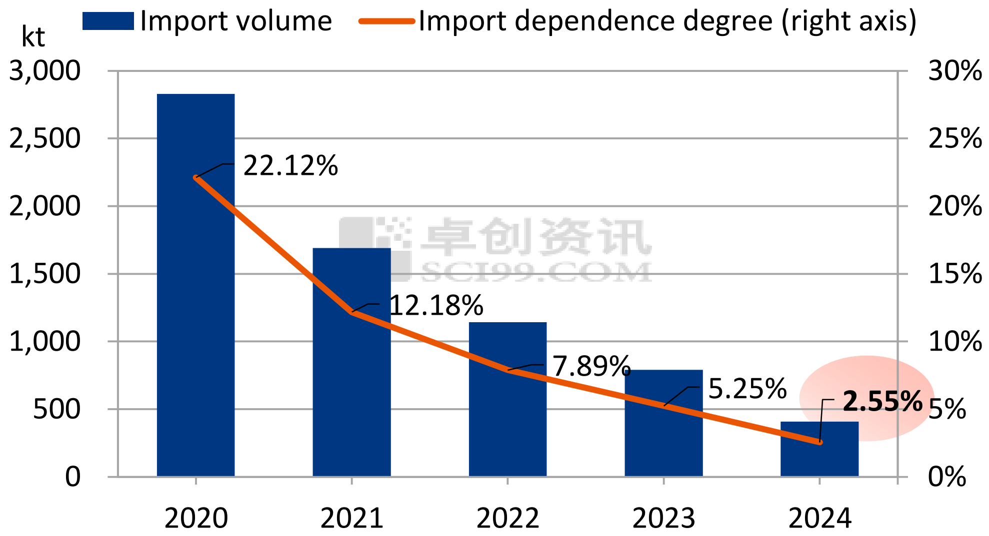
# Styrene Supply Keeps Growing Despite of Import Declines

**2020-2024 China Styrene Output and Operating Rate**




Source: sci99

**2020-2024 China Styrene Import Volume and Import Dependence Degree**

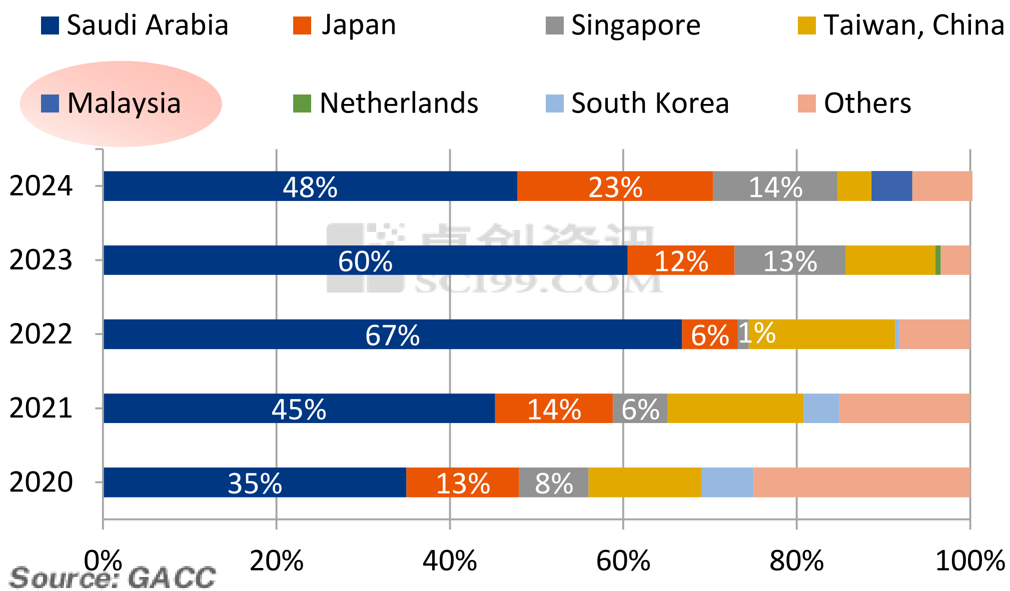



Source: GACC

- The output of styrene shifted from high growth to moderate increase, reflecting the industry's transition from rapid expansion to overcapacity.
- Under overcapacity and fiercer competition, the OR in 2024 declined to 74.66%.
- Styrene imports into China has gradually decreased as a result of domestic capacity increase and elimination of overseas units. By the end of 2024, China's dependency on imported styrene dropped to 2.55%.

# Styrene Import Origins Relatively Stable

**2020-2024 China Styrene Import by Trade Partner**



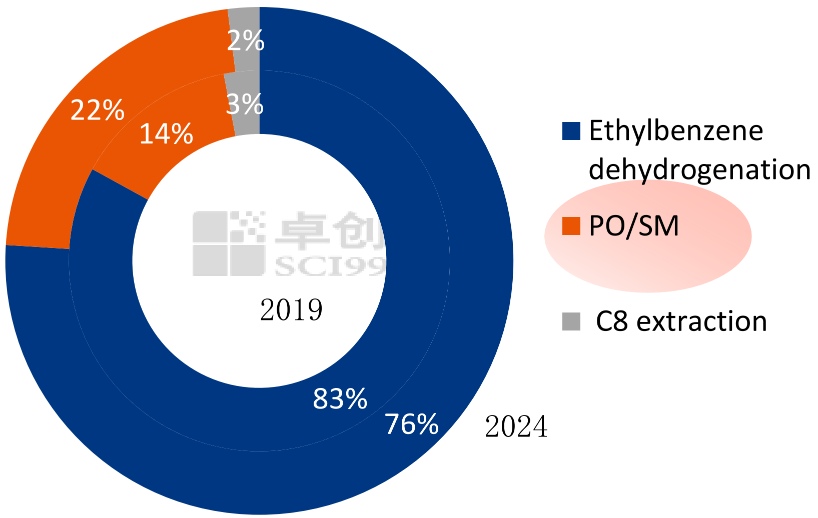

Source: GACC

➢ Saudi Arabia: China's largest origin of styrene import by virtue of abundant resources, low costs and stable contracts with Chinese users.

➢Japan: China's second-largest trade partner, mainly due to lower transportation costs and quick delivery.

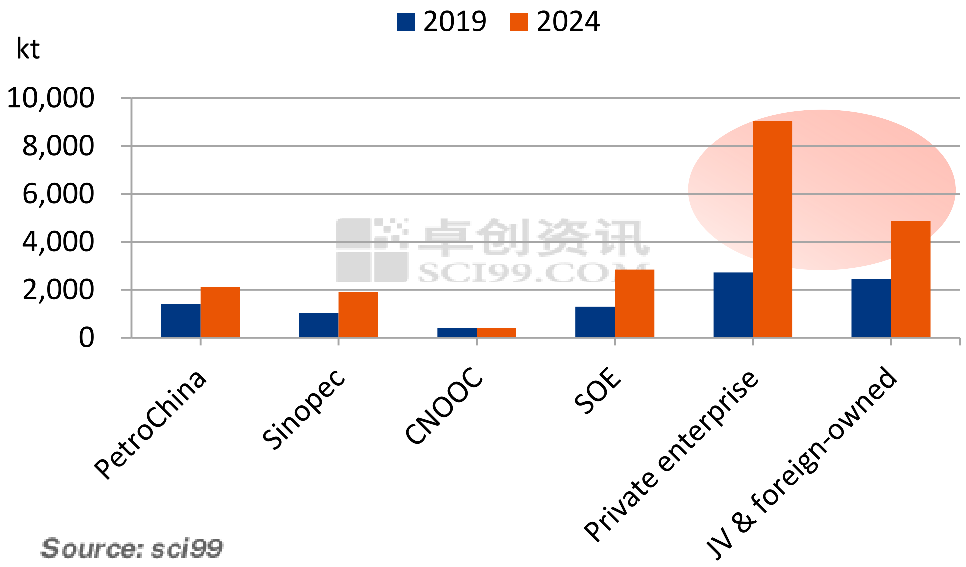
➢Malaysia: A new styrene import partner in 2024, because of unit turnarounds in Japan in July 2024, and some resources were shipped from Malaysia.

# Capacity Expansion Triggers Structural Changes in Styrene Supply Side



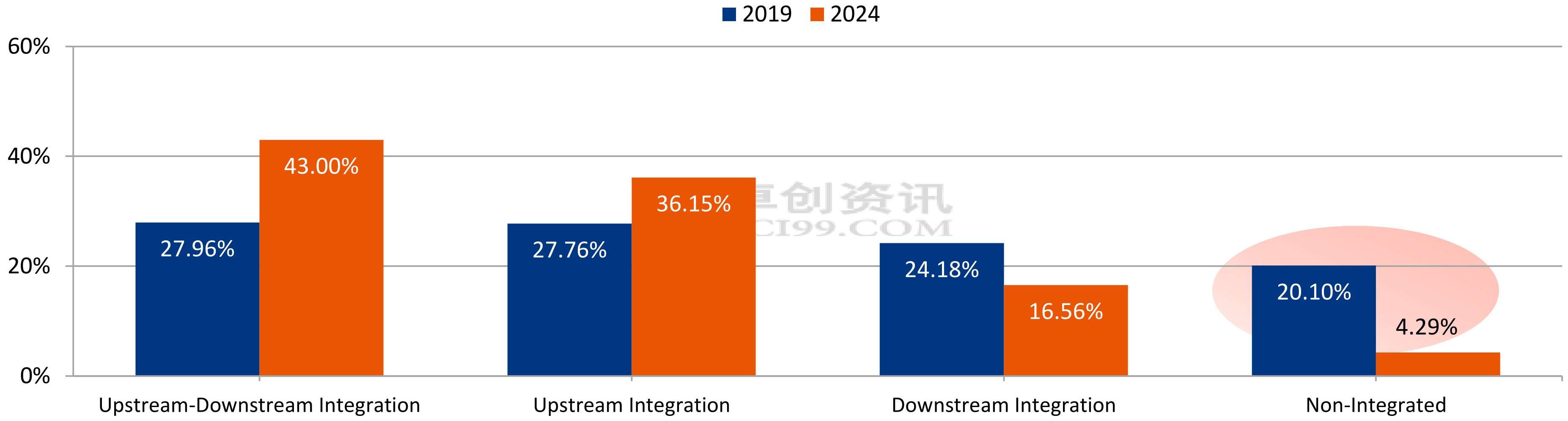

Source: sci99

2019 and 2024 China Styrene Production Technology Comparison




Source: sci99

2019 and 2024 China Styrene Enterprise Nature Comparison

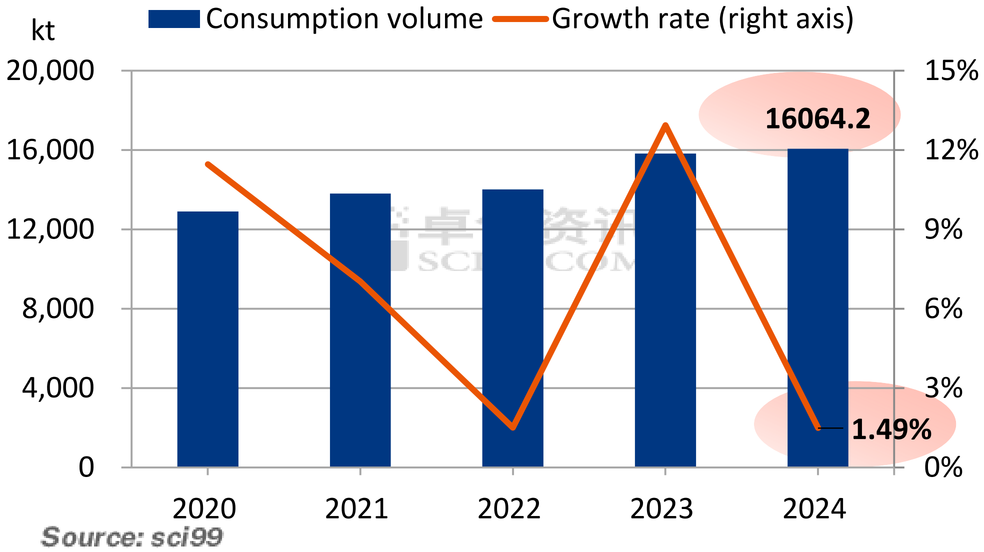



Source: sci99

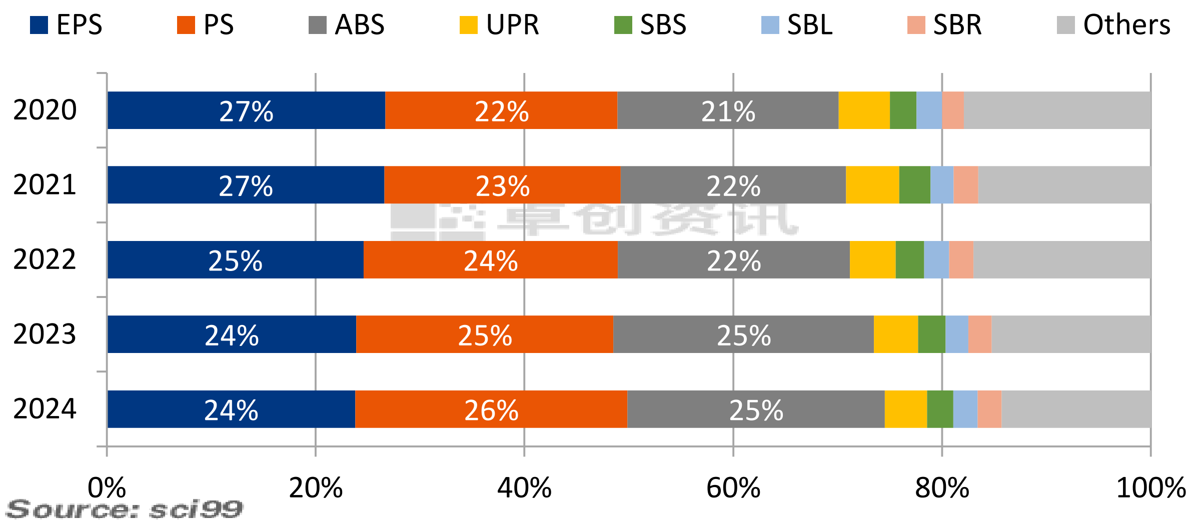
2019 and 2024 Styrene Upstream & Downstream Integration Trend

## Styrene Consumption Rises Steadily, with PS Jumping to No. 1 Consumption Sector in 2024

### 2020-2024 China Styrene Consumption Volume




### 2020-2024 Styrene Consumption Structure

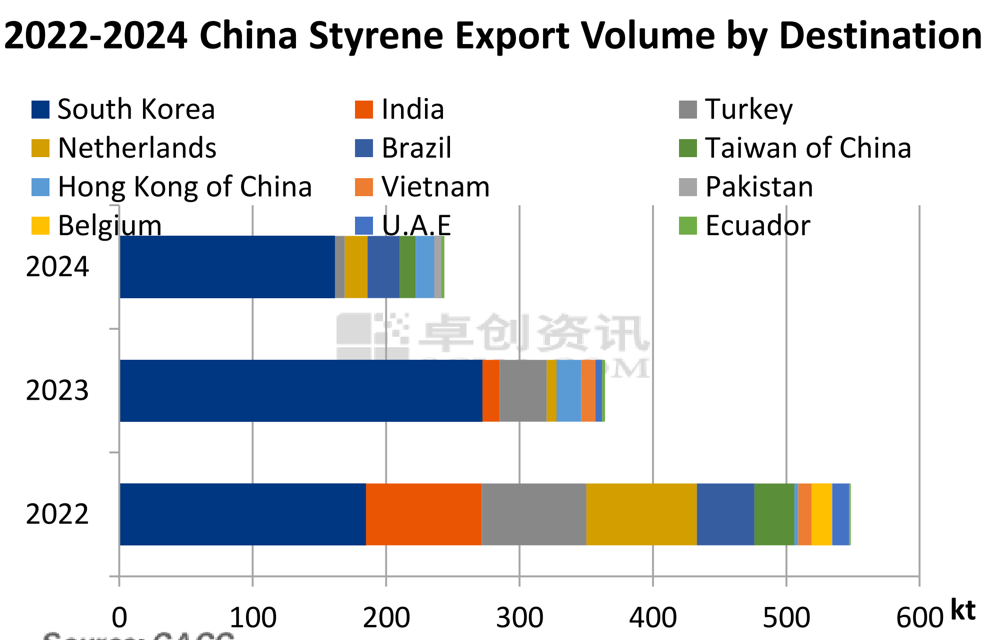



- Overall demand for styrene has maintained positive growth, but the year-on-year growth has declined annually, except for 2023.
- The demand growth in 2024 hit a ten-year low.

- PS industry became the largest styrene consumption sector in 2024 backed by high capacity-expansion on relatively healthy profits and export dividend before.
- The consumption proportion from EPS decreased due to slower EPS capacity growth compared with PS and ABS in recent years.

# Styrene Export, as an Effective Way to Ease Oversupply, First Hikes and then Dips

Source: GACC



Source: GACC

- Exports reached a historical high, especially in 2021-2022, due to China's styrene capacity expansion, the cold wave overseas, as well as the concentrated turnarounds of overseas units.
- The drop in exports 2023-2024 indicated limited overseas styrene demand as well as slowdown in China's styrene supply growth.

**China's styrene export trade partners have shifted from diversification to concentration.**

- South Korea: Main destination backed by convenient transportation and long-term unit shutdown there.
- No styrene exported to India in 2024 on soft demand.

# Supply-Demand Balance Weakens and Supply Turns Long During Capacity Expansion

### 2020-2024 Styrene Supply-Demand Balance

| Index | 2020 | 2021 | 2022 | 2023 | 2024 |
|---|---|---|---|---|---|
| Capacity | 11,965.00 | 14,495.00 | 17,415.00 | 20,865.00 | 21,195.00 |
| Operating rate | 83.49% | 85.73% | 79.88% | 74.96% | 74.66% |
| Beginning inventory | 625.40 | 518.50 | 593.80 | 1,071.40 | 1,306.80 |
| Output | 9,989.70 | 12,426.80 | 13,911.90 | 15,639.40 | 15,824.20 |
| Import volume | 2,830.40 | 1,691.40 | 1,143.20 | 790.50 | 407.60 |
| Total supply volume | 13,445.50 | 14,636.70 | 15,648.90 | 17,501.30 | 17,538.60 |
| Export volume | 27.00 | 234.90 | 562.50 | 365.90 | 247.40 |
| Downstream consumption volume | 12,900.00 | 13,808.00 | 14,015.00 | 15,828.60 | 16,064.20 |
| Total demand volume | 12,927.00 | 14,042.90 | 14,577.50 | 16,194.50 | 16,311.60 |
| Ending inventory | 518.50 | 593.80 | 1,071.40 | 1,306.80 | 1,227.00 |
| Reasonable inventory | 600.00 | 510.50 | 614.30 | 687.00 | 722.20 |
| Supply-demand balance | -81.50 | 83.30 | 457.10 | 619.80 | 504.80 |

*Remarks:*

*1. Beginning inventory = ending inventory of last year*

*2. Total supply volume = beginning inventory + output + import volume*

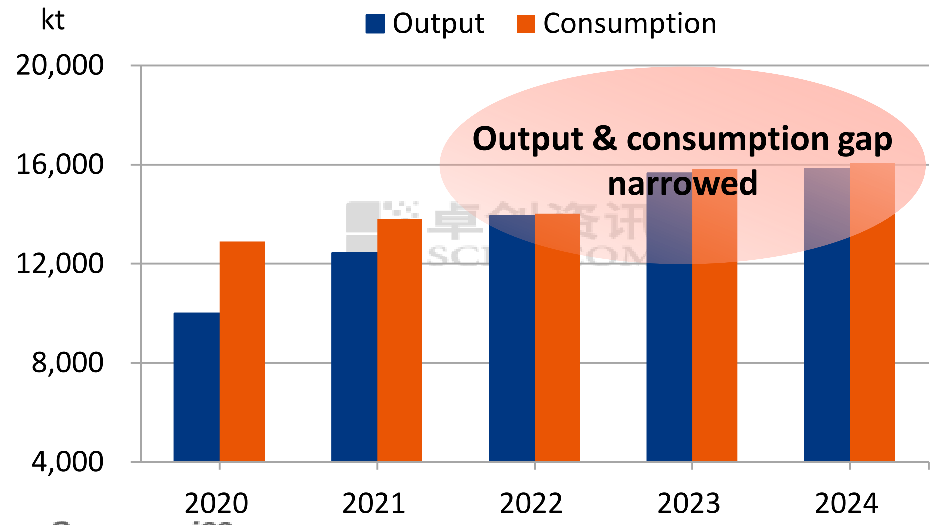
*3. Total demand volume = export volume + downstream consumption volume*

*4. Ending inventory = total supply volume - total demand volume*

*5. Reasonable inventory = styrene producers' product inventory + downstream producers' feedstock inventory + ports' inventory*

*6. Supply-demand balance = ending inventory - reasonable inventory*

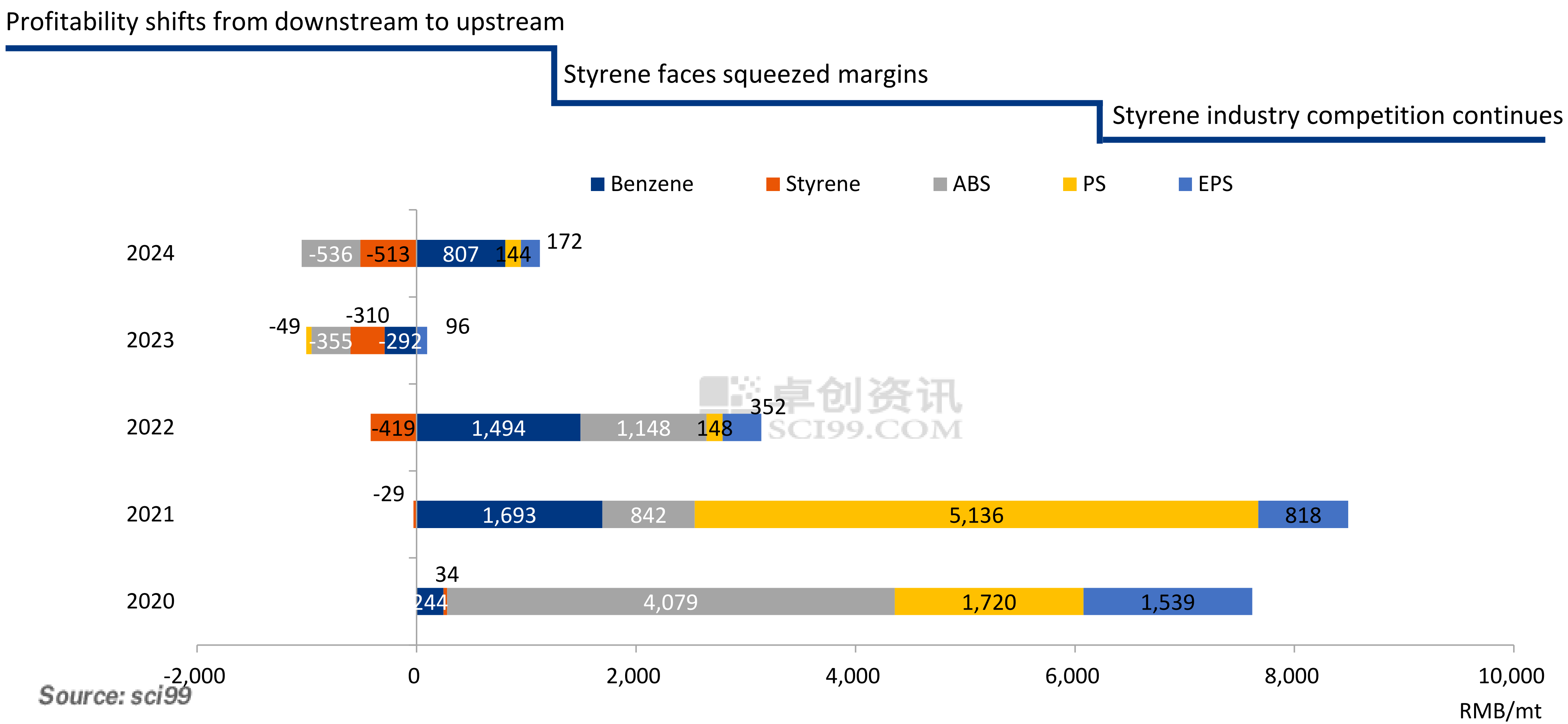
### 2020-2024 Styrene Output and Consumption




Source: sci99

- From 2020 to 2024, the styrene supply and demand continued to expand, shifting from supply deficit to oversupply.
- In 2024, the oversupply sustained, but the degree was alleviated, as supply growth fell short of demand growth.

# Profitability Shifts from Downstream to Upstream, with Styrene Facing Squeezed Margins



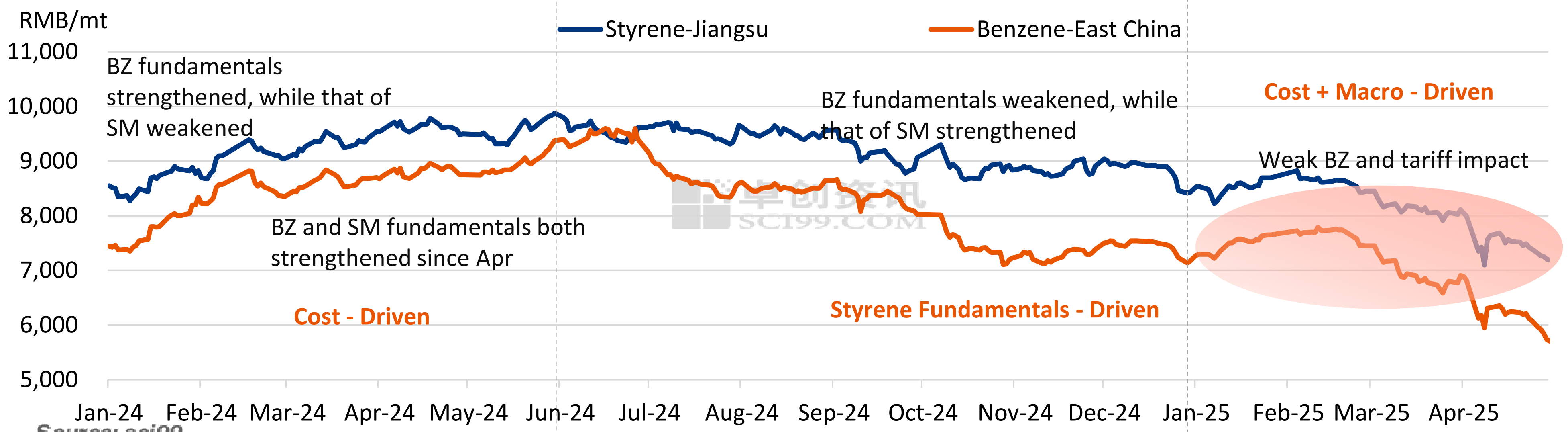

Source: sci99

**2020-2024 China Styrene Industrial Chain Profit Comparison**

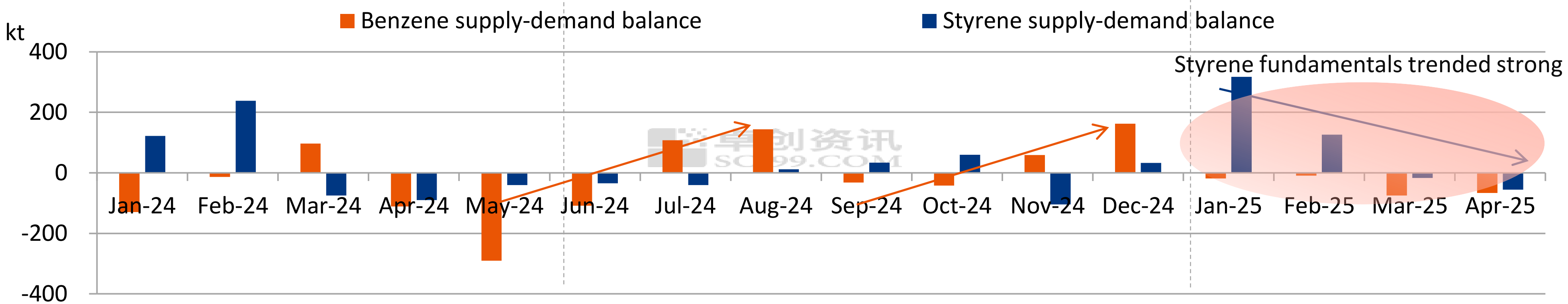
# PART 02

## 2024-2025 YTD China Styrene Price and Price Drivers Analysis

# 2024-2025 YTD Styrene Market Fluctuated Downwards After Rising




Source: sci99




Source: sci99

# Tariff Issue Exerts More Negative Impact on End Demand, Transmitting to Benzene and Styrene Indirectly

## Feedstock Benzene

No direct trade between China and the U.S., but tariff issues may affect South Korea's exports to the U.S., thereby uplifting South Korea's exports to China

## Feedstock Ethylene

Basically, no direct impact on ethylene, but will influence the import of ethylene feedstock, ethane (almost 100% from the U.S., has been exempted sources said) and propane (60% from the U.S.), which may affect the production of ethylene and styrene.

## Downstream EPS/PS/ABS

The mutual imposition of tariffs between China and the U.S. has a limited direct impact on the import and export of EPS/PS/ABS

## End Finished Products

The export of home appliances, etc. accounts for around 60% of home appliance total consumption, and among the 60% of the exports, 50%-60% are exported to the U.S., which may drag down the demand for PS, EPS and ABS by 1.3%-7.2%.

| Product | China 2024 imports | Import from the U.S. | Import from South Korea | South Korean exports to the U.S. |
|---|---|---|---|---|
| Benzene | 4,310kt | 0% | 50% | 20% |
| Styrene | 407.6kt | 0% | 0% | - |
| Ethane | 5,540kt | 100% | - | - |

| Product | Original U.S. tariffs on China | Share of import from U.S. | Share of export to U.S. | Latest revised U.S. tariffs on China (TBD) |
|---|---|---|---|---|
| ABS | 31.50% | 0.34% | 0.6% | 31.50% |
| PS | 31.50% | 0.38% | 0.47% | 31.50% |
| EPS | 31.50% | 37.19% (3.8kt) | 0.01% | 31.50% |

# PART 03

## 2025-2029 China Styrene Industry Outlook

# Styrene Capacity Estimated to Expand Further yet with Slower Growth Rate

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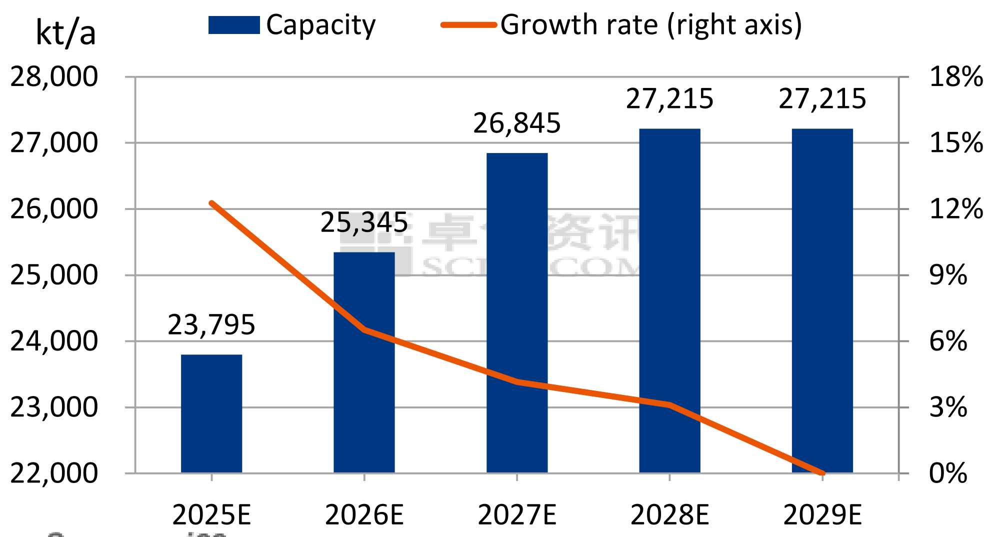
## 2025-2029 China Styrene Capacity Forecast




Source: sci99

## New Styrene Projects Next Five Years (kt/a)

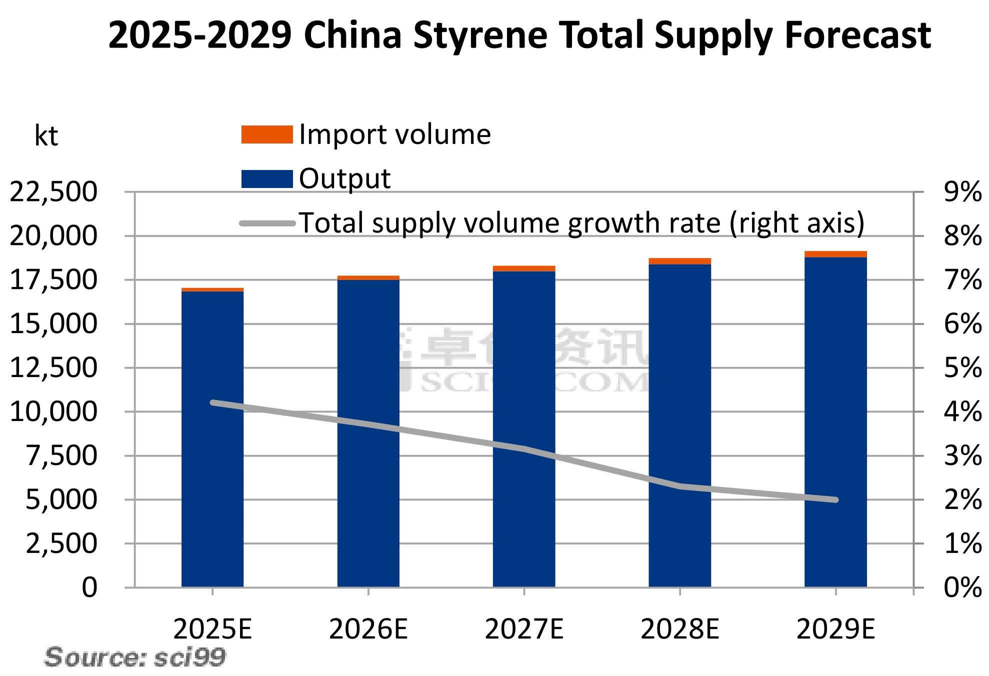
| Region | Enterprise | Original capacity | Newly added | Commissioning date | Production technology |
|---|---|---|---|---|---|
| North China | Shandong Yulong Petrochemical | - | 500 | Jan-25 | Ethylbenzene dehydrogenation |
| North China | Guoen Chemical Dongming | - | 200 | H1 2025 | Ethylbenzene dehydrogenation |
| North China | Shandong Zhongtai Chemical | - | 670 | H1 2025 | Ethylbenzene dehydrogenation |
| North China | Yantai Wanhua Chemical | 650 | 30 | Mar-25 | C8 extraction |
| Northeast China | PetroChina Jilin Petrochemical | 320 | 600 | Oct-25 | Ethylbenzene dehydrogenation |
| Southwest China | PetroChina Guangxi Petrochemical | - | 600 | Dec-25 | PO/SM co-production |
| North China | Zhenhua Chemical | - | 670 | 2026 | PO/SM co-production |
| East China | Shaowu Yonghe Jintang New Material | - | 880 | 2026 | PO/SM co-production |
| South China | Fujian Haiquan Chemical | - | 450 | 2027 | PO/SM co-production |
| Northeast China | Huajin Aramco Petrochemical | - | 600 | 2027 | - |
| South China | CNOOC and Shell Petrochemicals | 1,400 | 820 | 2028 | PO/SM co-production |
| **Total** | | **-** | **6,020** | | |

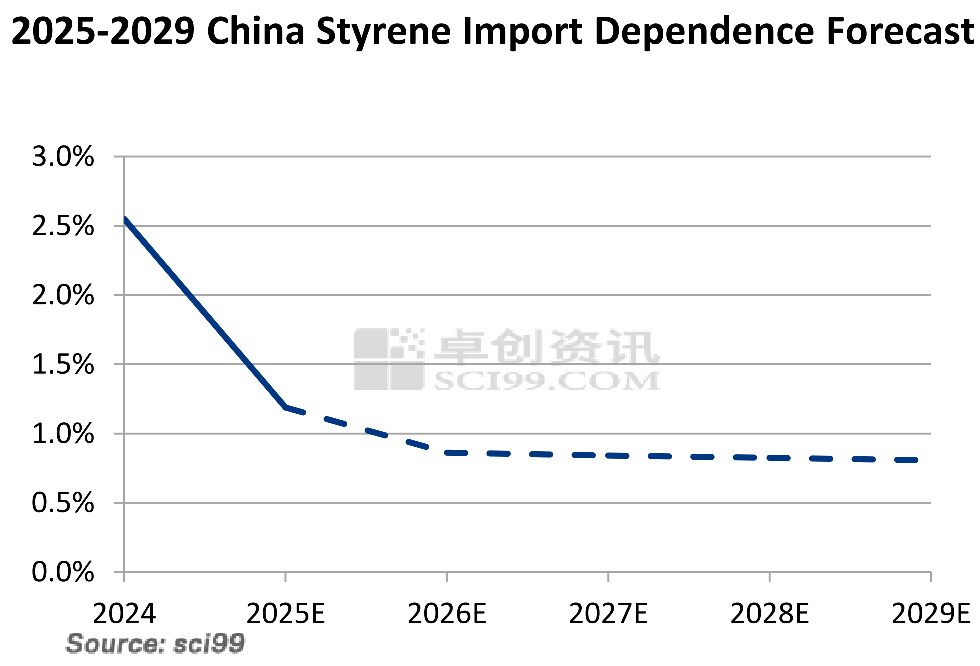
*Remarks: Only projects most likely to come onstream listed*

- Over the next five years, China will continue to see commissioning of new styrene projects, but the pace of capacity growth will slow down year by year.
- Another 4,170kt/a capacity under planning may be postponed or canceled given overcapacity and long-term losses.

# Total Supply Expected to Maintain an Uptrend, but Growth Rate May Slow Down with a CAGR of 3.07%

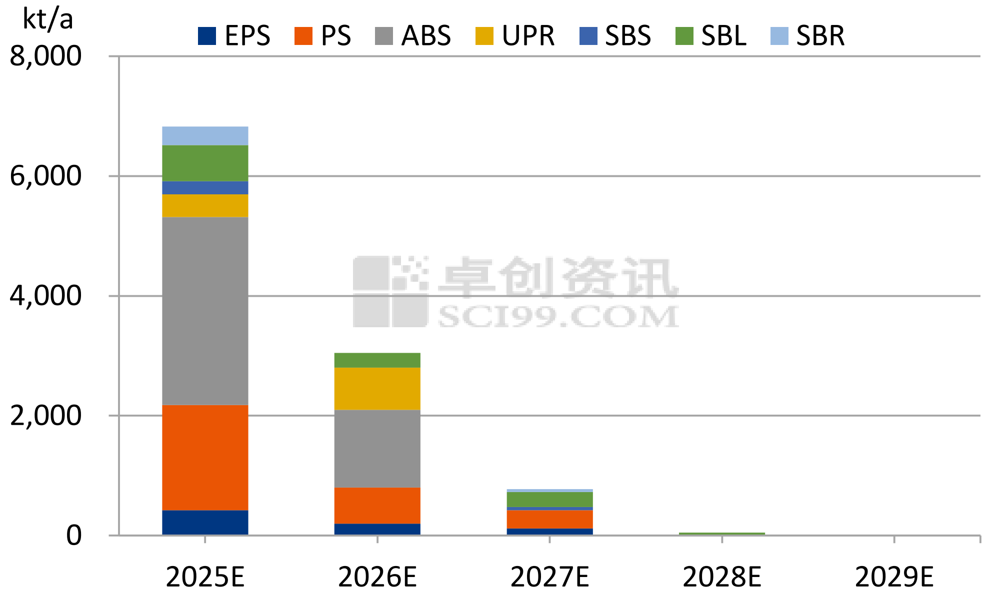





- ➢Over the next five years, the total supply of styrene is expected to maintain an uptrend, but the growth rate may slow down gradually, with an a CAGR of 3.07%.
- ➢Newly-added styrene capacity to boost output further.
- ➢Imports expected to remain low yet will not be zero.

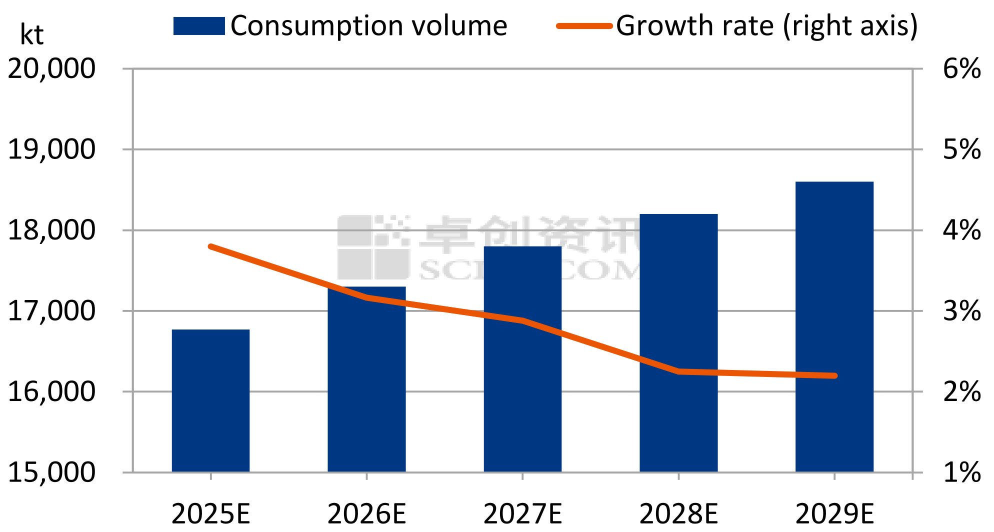
## 2025-2029 Newly-Added Styrene Downstream Capacity




Source: sci99

- ABS industry estimated to witness the largest capacity increase of 4,435kt/a, followed by PS with the capacity growth of 2,660kt/a.
- The capacity increase at downstream industries may slow down mainly owing to the anticipated poor industrial profits or losses.
- New downstream capacity likely to rise concentratedly from 2025 to 2027. Since 2028, new downstream projects may be scarce.

### 2025-2029 China Styrene Consumption Volume Forecast




Source: sci99

- In the next five years, styrene demand is expected to sustain growth, with the growth rate rising in 2025 and falling afterwards.
- Benefiting from the stable economic growth in China, domestic demand will remain the main driver for styrene demand growth in the coming five years.
- Styrene export is also anticipated to rise, which, however, will be moderate.

# Oversupply to Remain yet the Degree to be Eased by 2029

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## 2025-2029 China Styrene Supply and Demand Balance Forecast

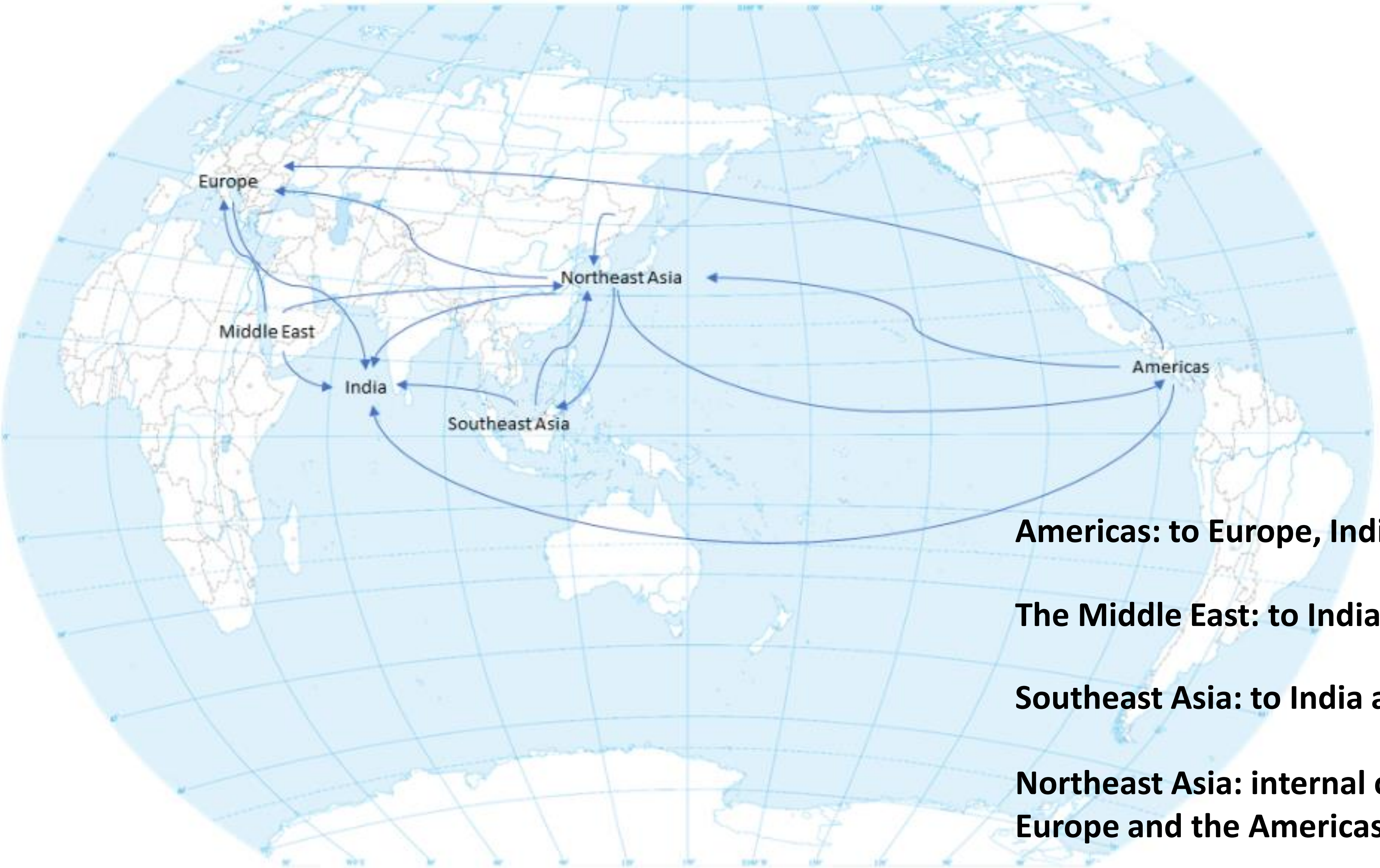
Unit: kt

| Index | 2025E | 2026E | 2027E | 2028E | 2029E |
|---|---|---|---|---|---|
| Beginning inventory | 1,227.0 | 1,306.0 | 1,404.2 | 1,454.2 | 1,454.2 |
| Capacity | 23,795.0 | 25,345.0 | 26,395.0 | 27,215.0 | 27,215.0 |
| Output | 16,850.0 | 17,500.0 | 18,000.0 | 18,400.0 | 18,800.0 |
| Import volume | 200.0 | 150.0 | 150.0 | 150.0 | 150.0 |
| Total supply volume | 18,277.0 | 18,956.0 | 19,554.2 | 20,004.2 | 20,404.2 |
| Export volume | 200.0 | 250.0 | 300.0 | 350.0 | 350.0 |
| Downstream consumption volume | 16,771.0 | 17,301.8 | 17,800.0 | 18,200.0 | 18,600.0 |
| Total demand volume | 16,971.0 | 17,551.8 | 18,100.0 | 18,550.0 | 18,950.0 |
| Ending inventory | 1,306.0 | 1,404.2 | 1,454.2 | 1,454.2 | 1,454.2 |
| Rational inventory | 765.5 | 798.3 | 817.8 | 813.4 | 839.0 |
| Balance | 540.5 | 605.9 | 636.4 | 640.8 | 615.2 |

*Remarks:*
*Beginning inventory is the ending inventory of last year.*
*Total supply = beginning inventory +output+ the import volume.*
*Total demand = the export volume + downstream consumption volume.*
*Ending inventory = Total supply-total demand.*

- Supply-demand gap expected to increase first and then narrow.
- As upstream and downstream capacity expansion gradually slows down, supply-demand pressure projected to ease.
- By 2029, the balance gap likely to narrow, suggesting improvements in the industry's oversupply situation.

# Global Styrene Trade Flow




Source: sci99

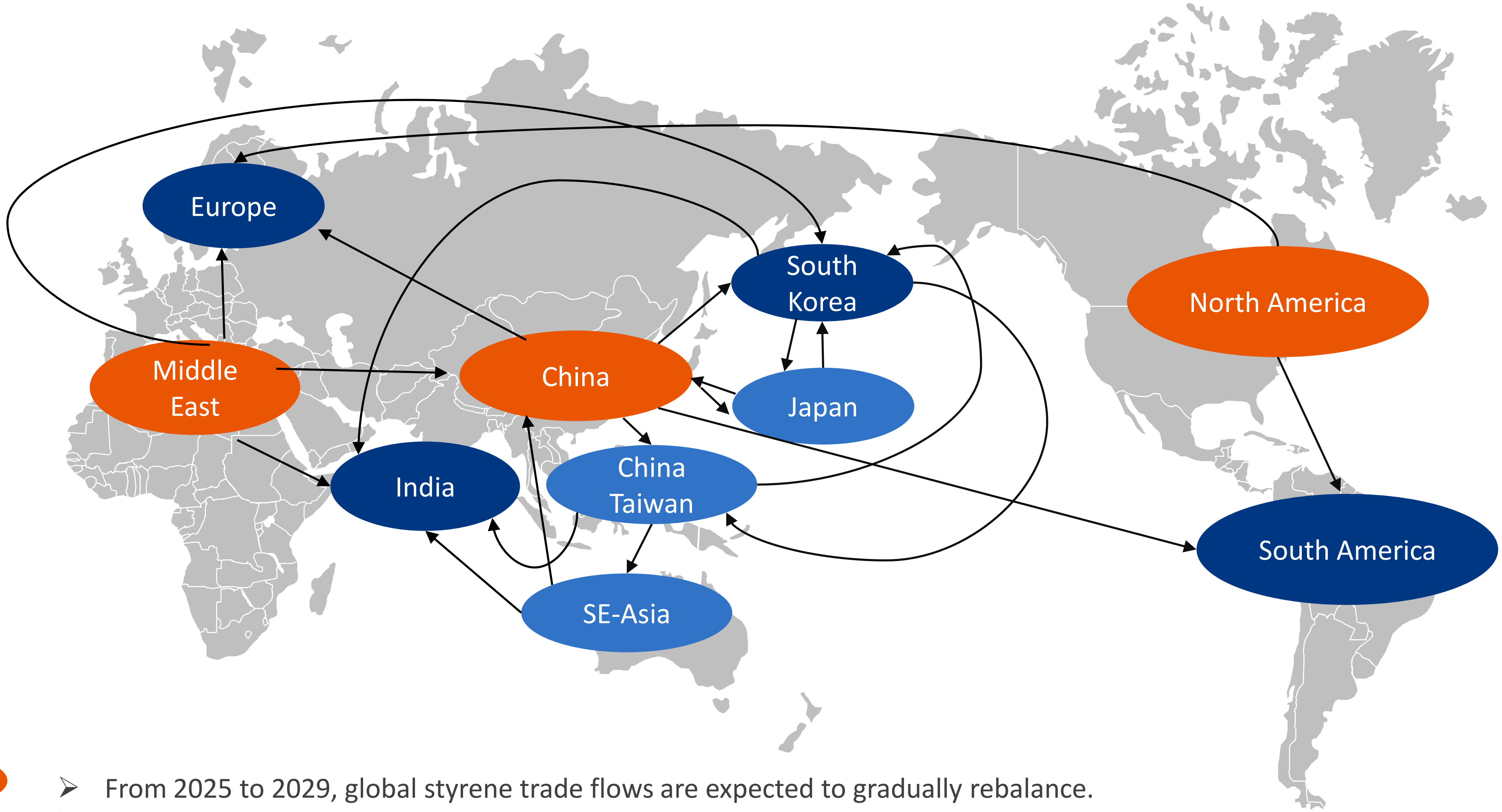
**Americas: to Europe, India, and Northeast Asia**

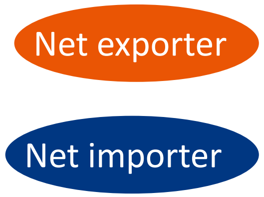
**The Middle East: to India, Europe, and Northeast Asia**

**Southeast Asia: to India and Northeast Asia**

**Northeast Asia: internal circulation as well as to Europe and the Americas**

# Global Styrene Trade Flow Forecast: China's Role in Global Styrene Trade to Enhance




- From 2025 to 2029, global styrene trade flows are expected to gradually rebalance.
- China, the Middle East, and the U.S. are expected to be net exporters, while India, South Korea, and Europe will be net importers. Japan, Southeast Asia, and Taiwan of China may transit from net exporters to self-sufficient or net importers.
- China's influence over global styrene trade dynamics to enhance.

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