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Commodity Insights

# Global C4s & Synthetic Rubbers Outlook

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# Agenda

**Overview of Butadiene & Synthetic Rubbers**

**Underlying trends**

**New patterns in industry**

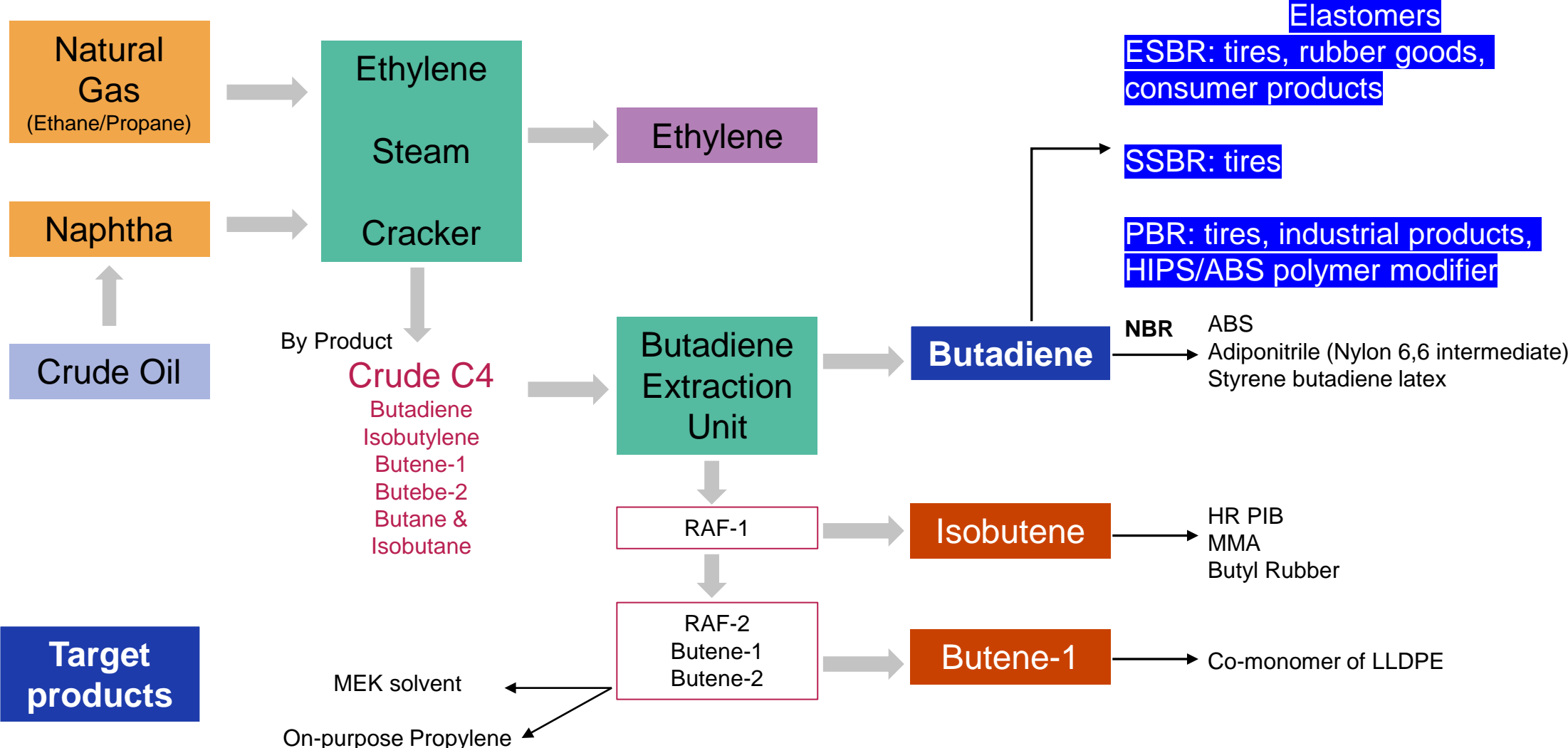
**Conclusions**





# Overview of Butadiene & Synthetic Rubbers

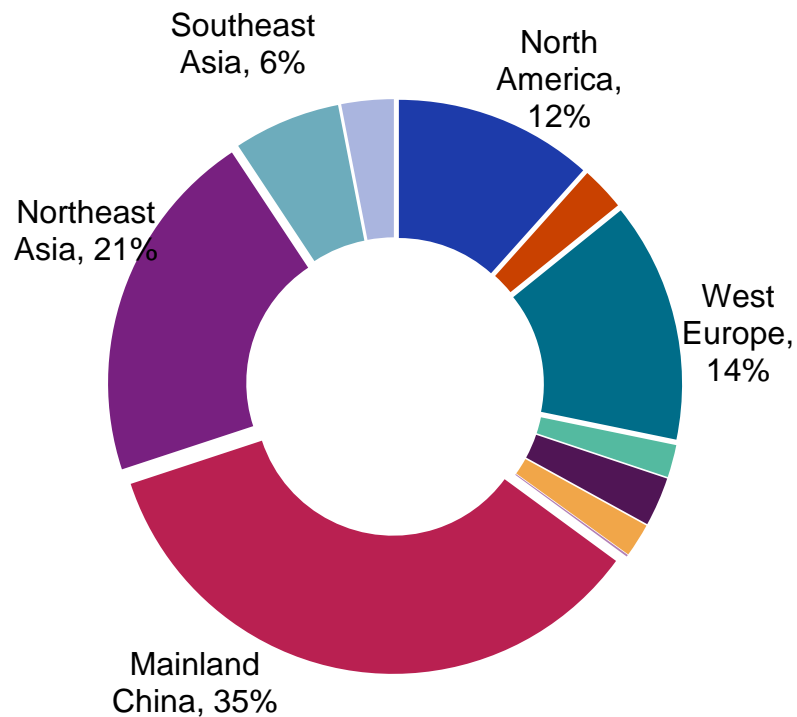
# C4 olefins value chain – elastomers and non-elastomers



Global Butadiene capacity expected to reach 22 Million Tons by 2033 with slower growth rate of 2.5% compared to 2.9% in the past 10 years

### 2023 BDE Capacity Composition

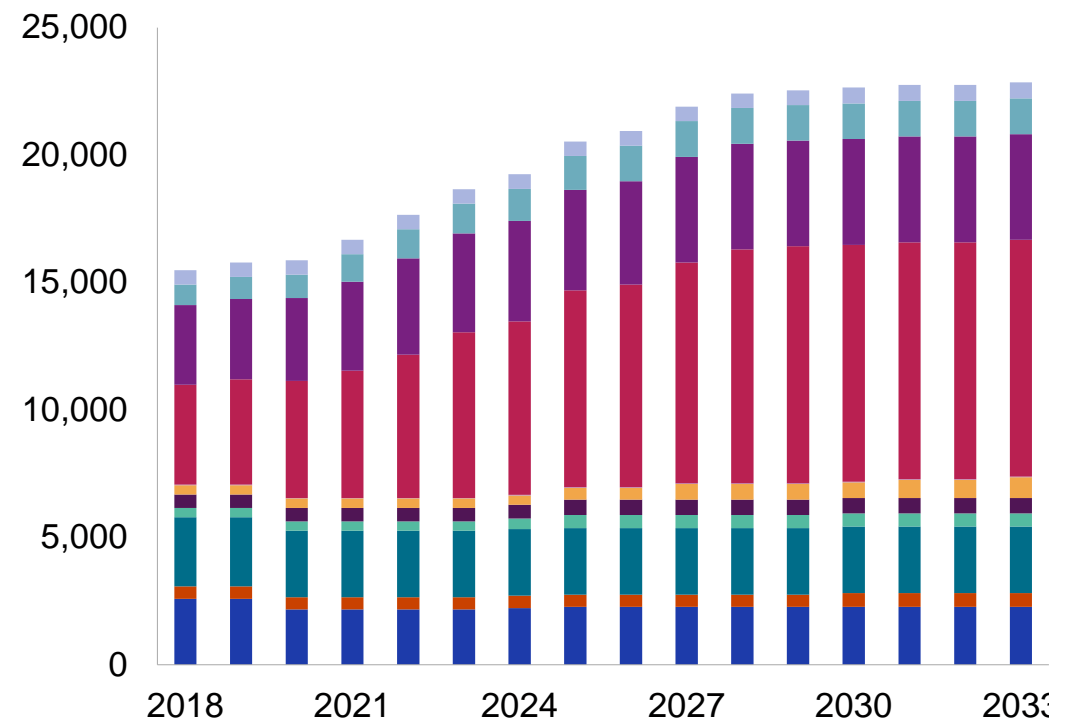
Global Butadiene Capacity=18 Million Tons



Source: S&P Global Commodity Insights.  
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### BDE Capability Outlook

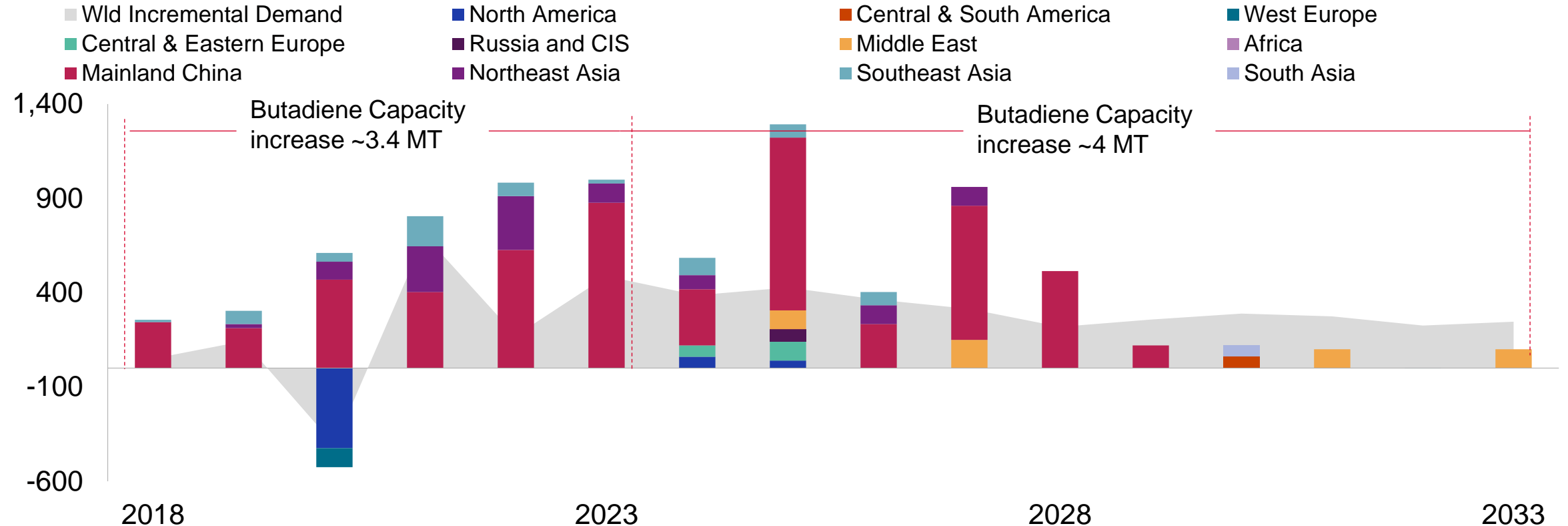
Global capacity in 2033=22 Million Tons



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Source: S&P Global Commodity Insights.  
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# Global Butadiene supply to outpace demand in the next decade, with over 70% of capacity expansion concentrated in China

## BDE Incremental Capacity Vs Demand

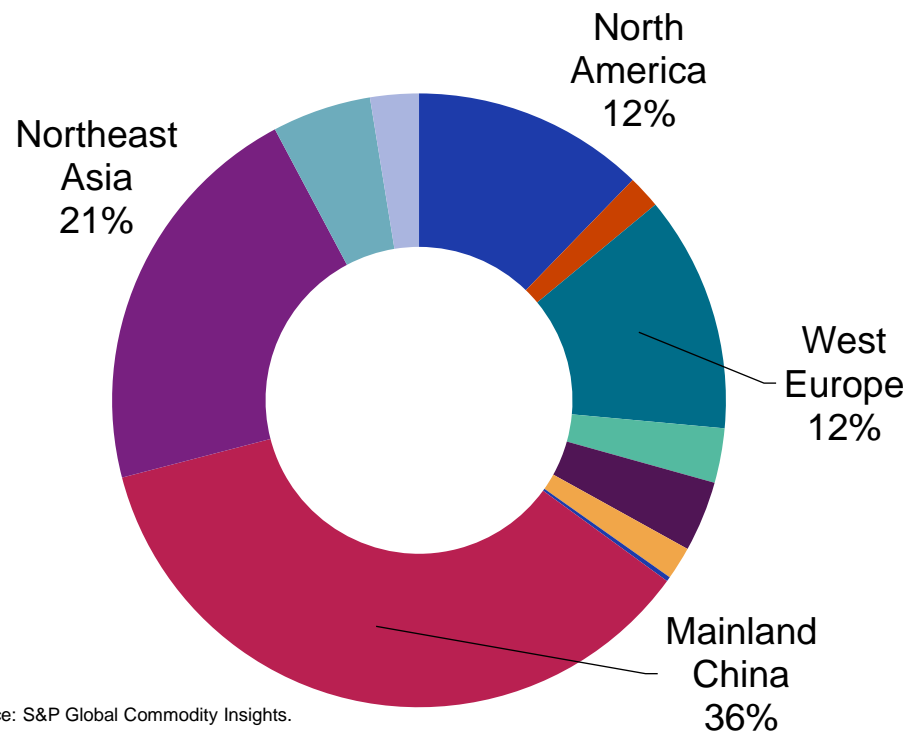


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China leads global demand in 2023, accounting for 36%. It is followed by Northeast Asia at 21%, North America at 12%, and West Europe at 12%

### Composition of Demand by Region, 2023

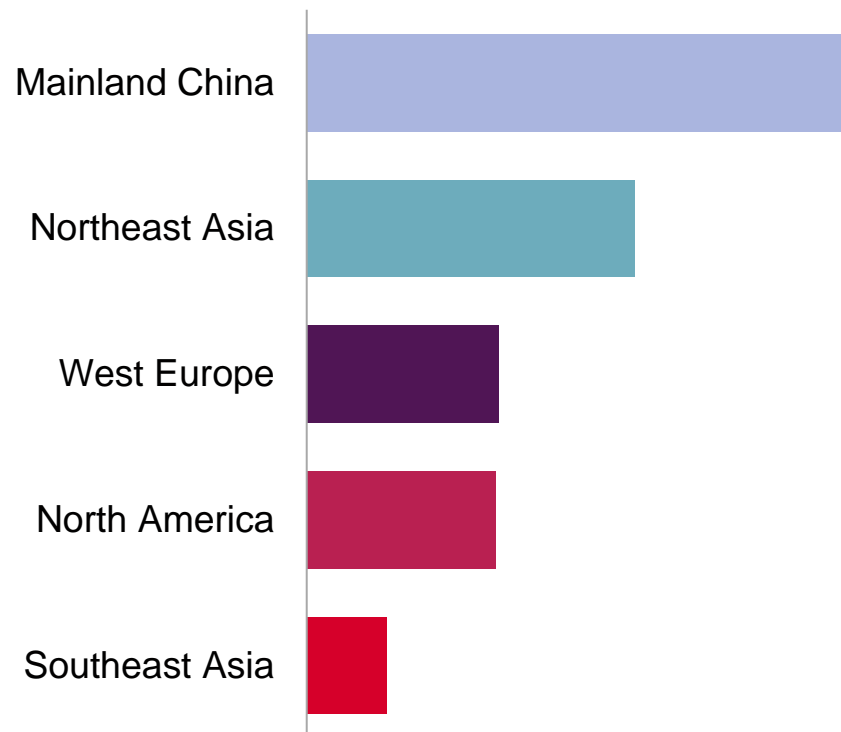
Butadiene Demand=13 MMT



Source: S&P Global Commodity Insights.  
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### Butadiene demand by key regions, 2023

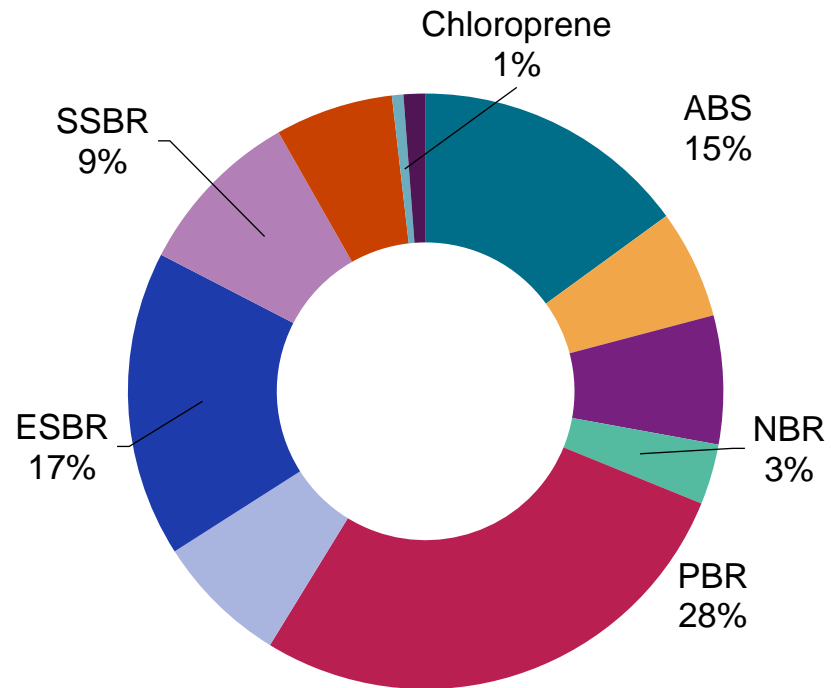
Butadiene Demand=13 MMT



The production of elastomers dominates butadiene consumption accounting for 57% of total in 2023 followed by ABS resins

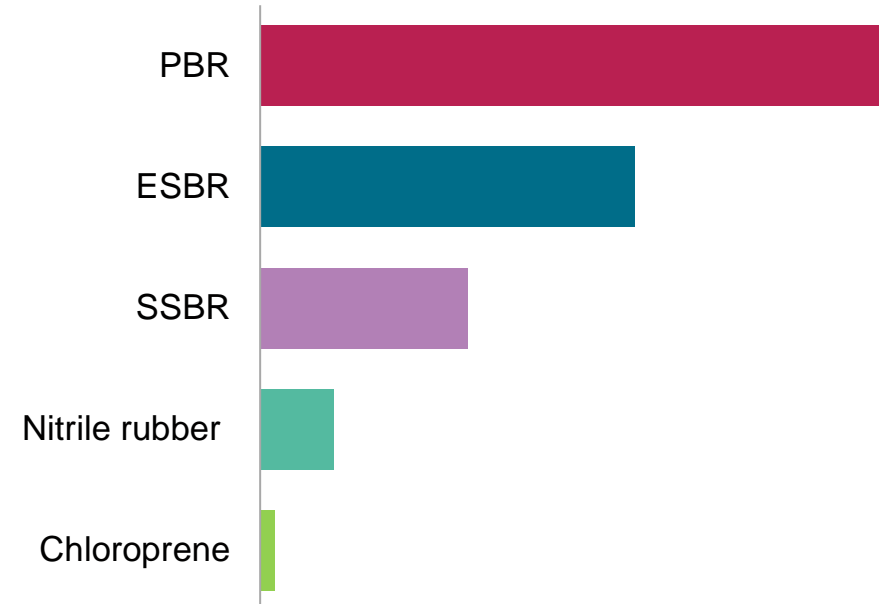
### Composition of Demand by End Use, 2023

Butadiene Demand=13 MMT



### Butadiene demand by Elastomers 2023

Butadiene Demand=13 MMT

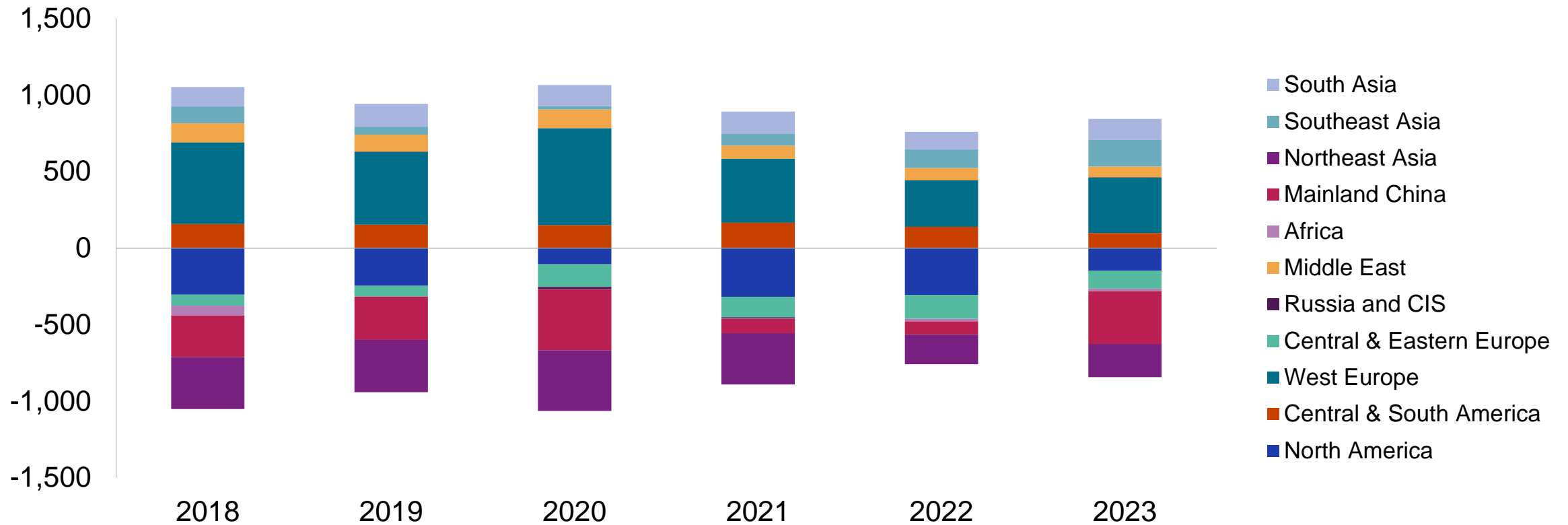


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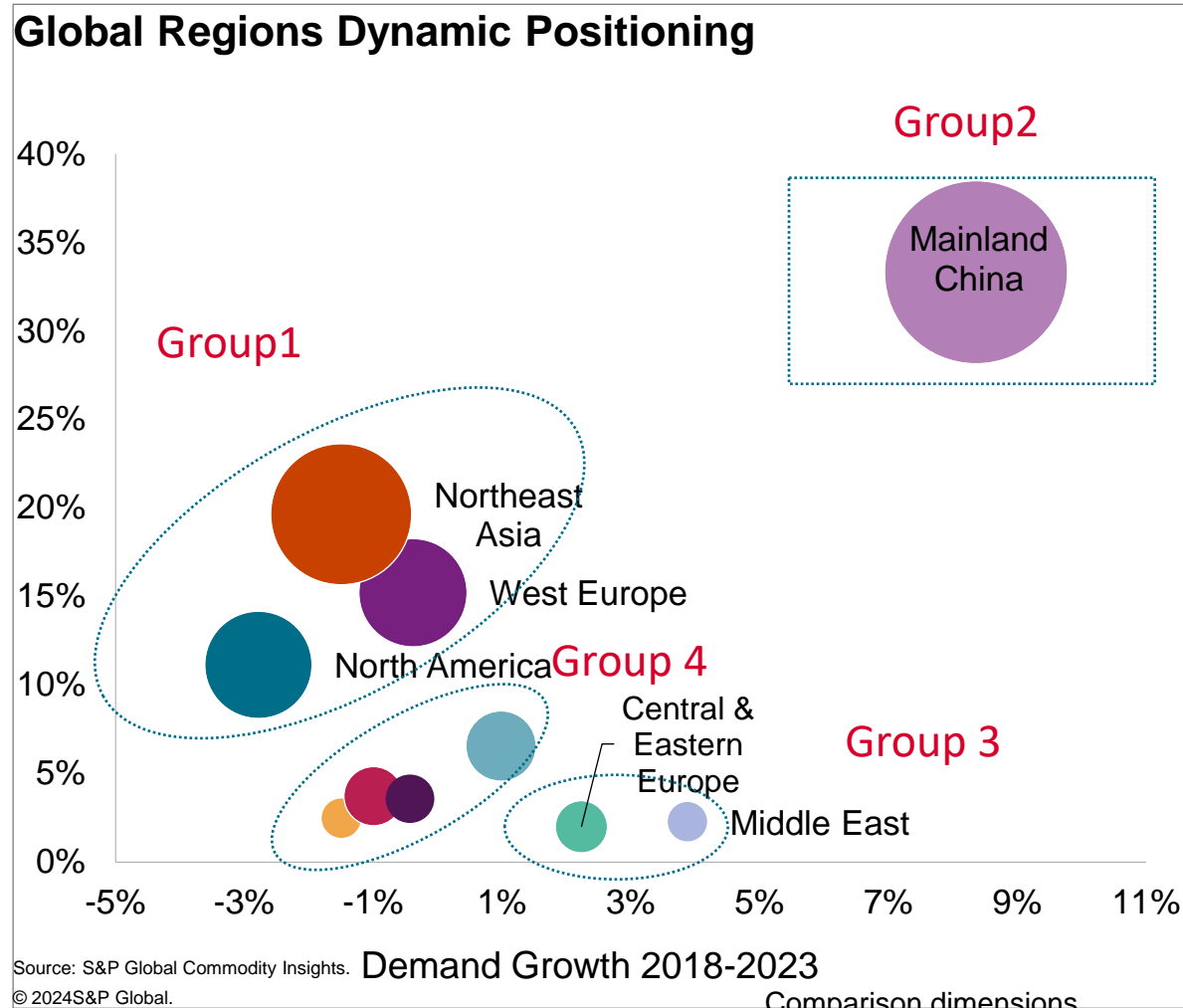
In 2023, around 2.4 million mt per year of Butadiene is traded globally accounting for 18% of global production

### BDE Regional Net Trade



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# Global Butadiene market can be categorized into Mature, Dynamic, Emerging, and Developing regions



Main characteristics	Type of the market	Represented regions
Stable Demand Growth, stable Production Presence	Mature regions	Northeast Asia-ex China West Europe North America <b>Group 1</b>
High Demand Growth, High Production Presence	Dynamic regions	Mainland China <b>Group 2</b>
Potential Demand Growth, Lower Production Presence	Emerging regions	Middle East Central Eastern Europe <b>Group 3</b>
Lower Demand Growth, limited Production Presence	Developing regions	Southeast Asia, Central & South America <b>Group 4</b>

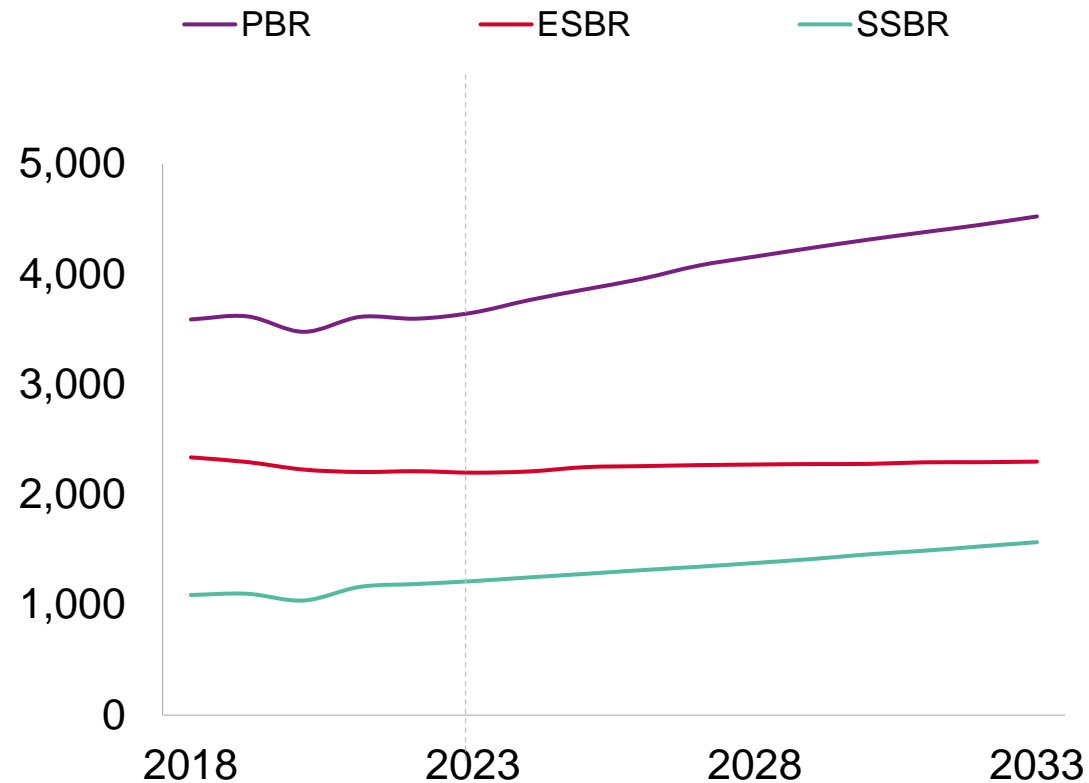
- Comparison dimensions
1. Demand growth
  2. Production presence
  3. Demand volume (Bubble size)



# Underlying trends

# Global Butadiene demand will continue to be driven by consumption growth of PBR, SSBR targeted mainly for high performance tires and green tires

## Global Butadiene Demand Growth

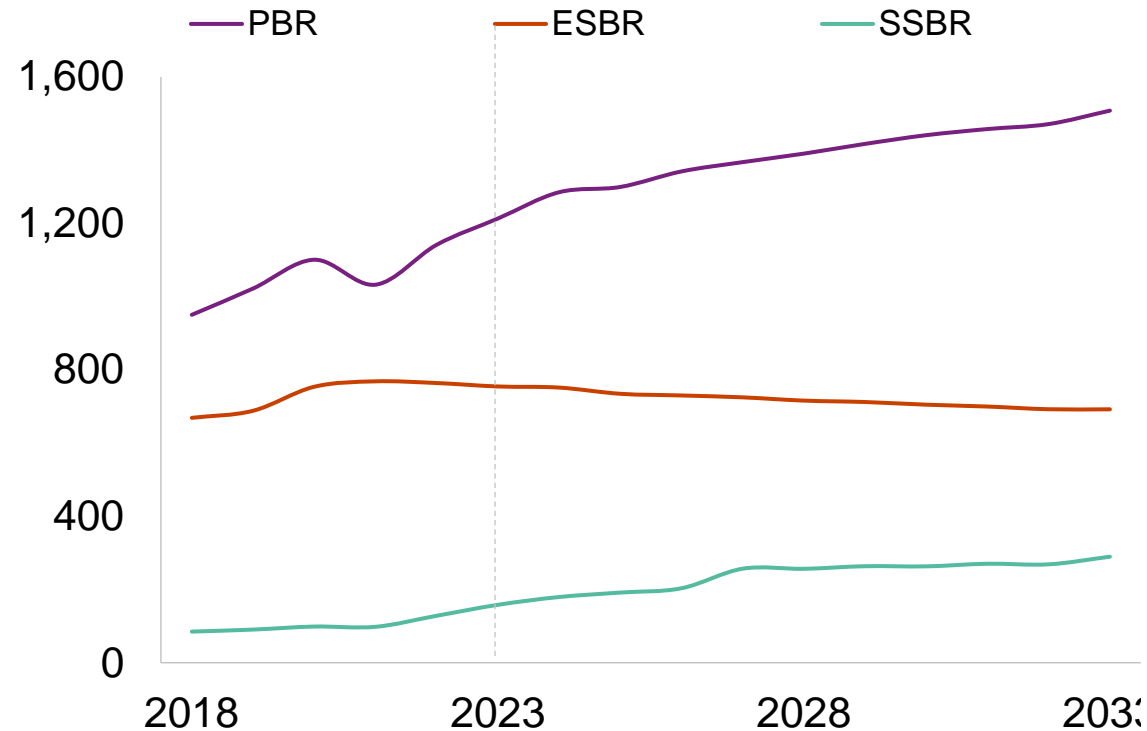


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- PBR are the largest butadiene outlets, its consumption will be driven by the demand of high-performance tires and labeling initiatives, moreover, PBR is used as impact modifier for ABS and HIPS
- SSBR demand will be fueled by growing demand of high-performance tires and substitution of ESBR, also positive outlook of the high-quality footwear sectors
- ESBR demand will be declining with the substitution of SSBR

# China Butadiene demand will be driven by the growth of PBR, SSBR and ABS

## China Butadiene Demand Growth

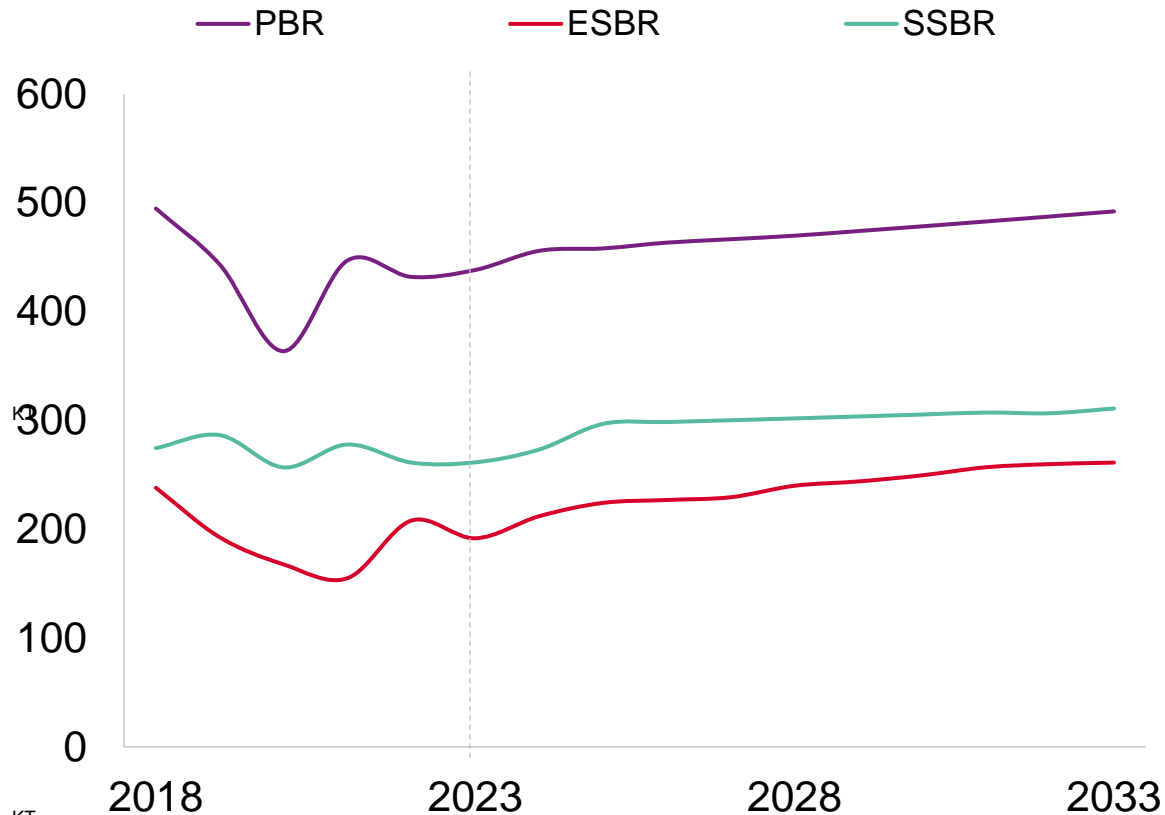


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- Chinese tire companies boost PBR and ESBR exports through investments in emerging markets, with continued growth expected.
- PBR production in China driven by growing tires Industry and increased industry margin, fueled by Butadiene capacity release in past years
- ESBR production in China is expected to decline, while SSBR demand is projected to grow due to the increasing demand for green tires and high-performance tires.

# North America PBR and SBR account for 54% of the Butadiene consumption

## North American Butadiene Demand Growth

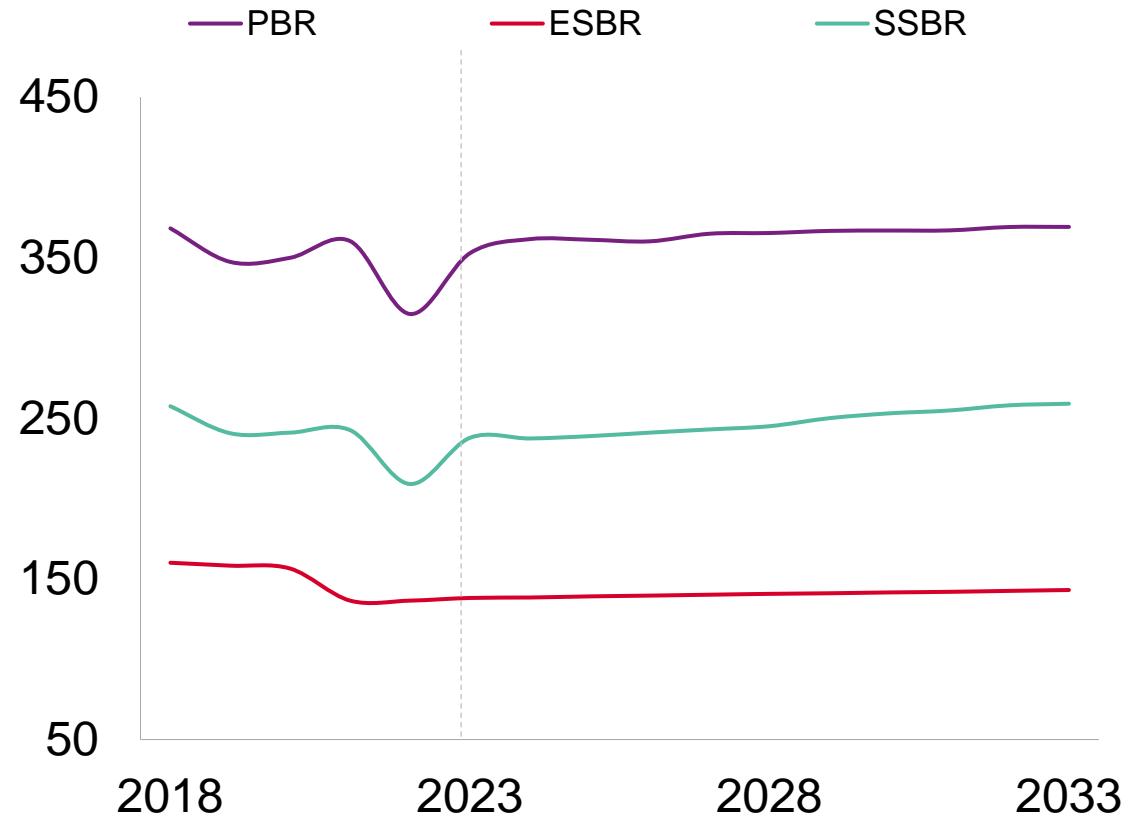


- NAM PBR and SBR operating rates will continue to be challenged (less than 70%) due to weak demand growth but improving with derivative exports.
- No PBR/SBR capacity additions expected.
- SSBR will continue to grow at the expense of ESBR. North America will continue to experience SBR imports from Poland, Russia, and Asia.

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Source: S&P Global Commodity Insights.  
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# West Europe PBR and SBR account for 44% of Butadiene consumption

## West Europe Butadiene Demand Growth



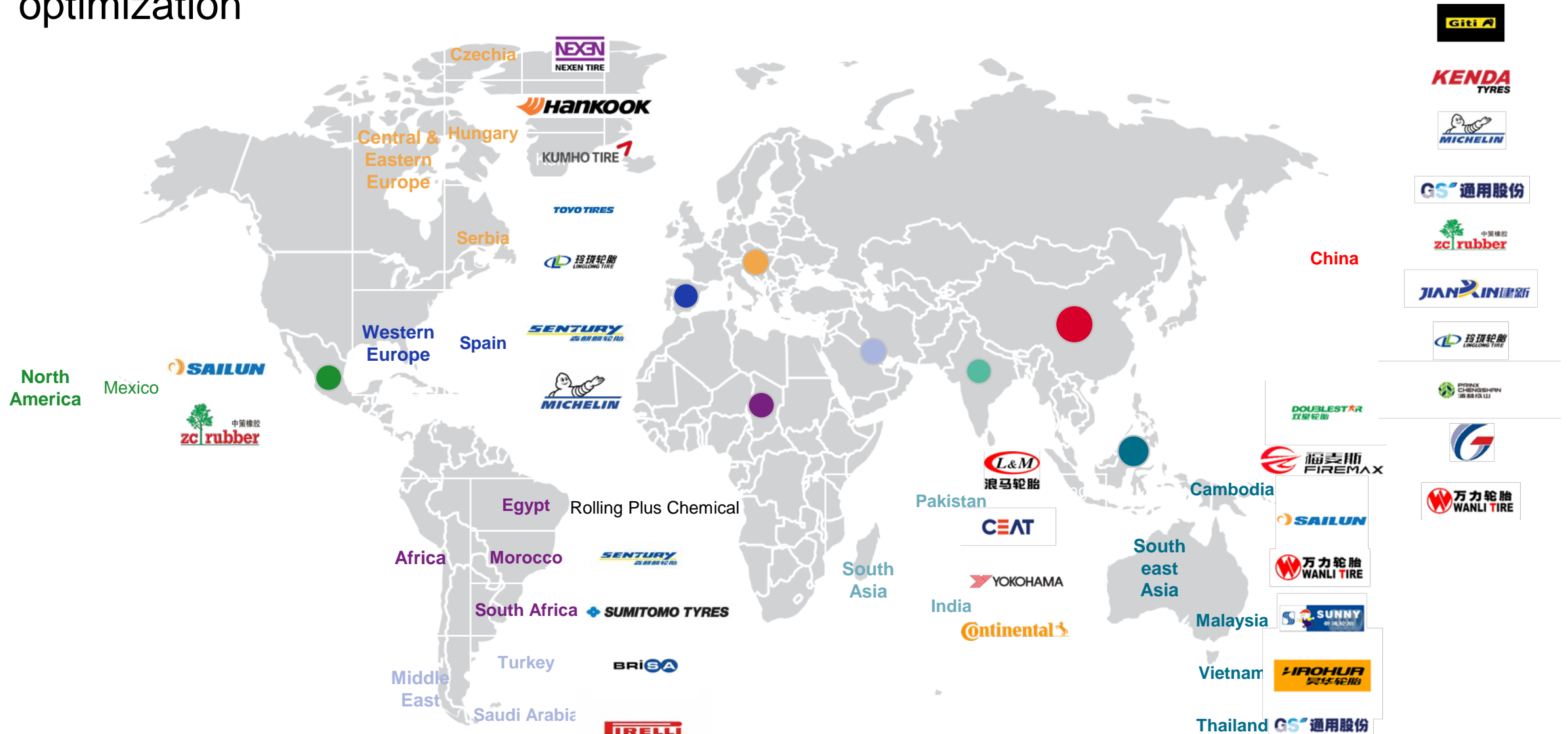
SSBR increased demand for high-performance tires and the substitution of ESBR could drive SSBR demand higher.

ESBR demand is expected to remain flat as European tire plants are not profitable.

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Source: S&P Global Commodity Insights.

# Chinese tire companies expand global footprint amid trade friction and cost optimization





# EU and US: pivotal players in shaping global standards and driving advancements in technology and supply chains

1

## Enhancing compliance and technologies

**New Tire Labeling** New EU Tire Labeling Regulation (Reg(EU)2020/740) Raises Export Requirements

**Euro 7 Regulation:** Ensuring meaningful tire objectives and global regulatory certainty

2

## Impact on environmental and supply chain

**ESPR Regulation:** Enhancing tire's environmental footprint, priority listing by 2023

**Deforestation Regulation:** Impact on tire industry, addressing deforestation

3

## Impact on health and safety

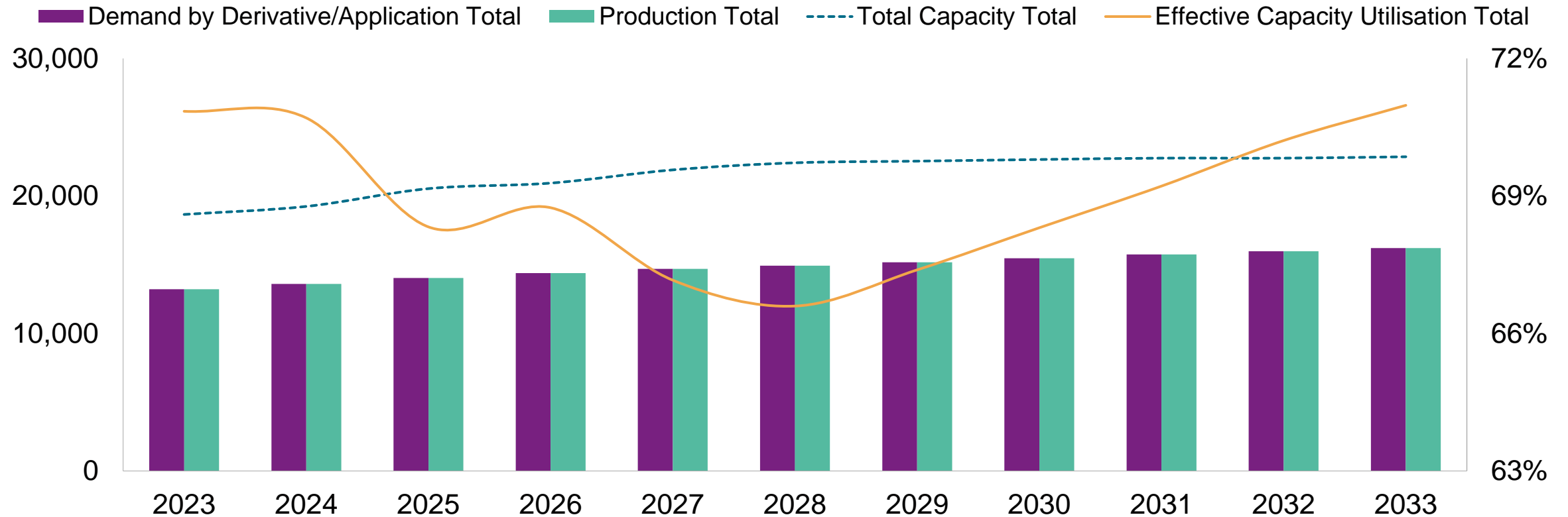
**California Regulation on 6PPD:** Tire manufacturers seek safer alternatives, reducing environmental and health Risks



# New patterns in industry

Massive capacity additions in China to impact global operating rates in Mid-term, expected to decline by 2028 before gradual recovery by 2033

### World Butadiene Supply & Demand



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Source: S&P Global Commodity Insights.

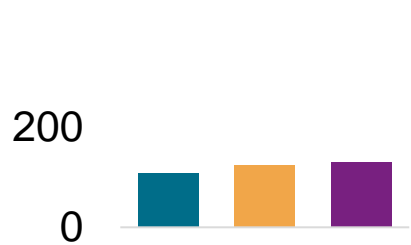
# Trade on a global basis will be at 2.3 million mt per year by 2033, Mainland China is expecting to move from a net importer to a more balanced position

## Butadiene Trade Flow Analysis (kt)

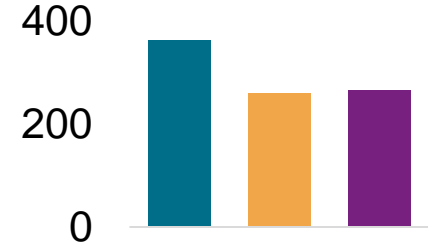
■ 2023 ■ 2028 ■ 2033



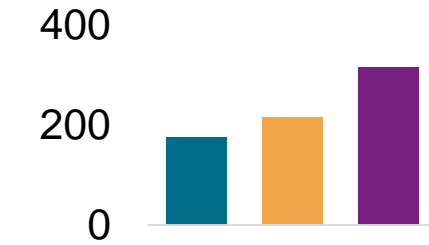
Middle East



West Europe



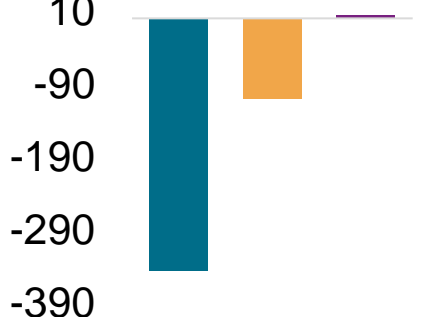
Southeast Asia



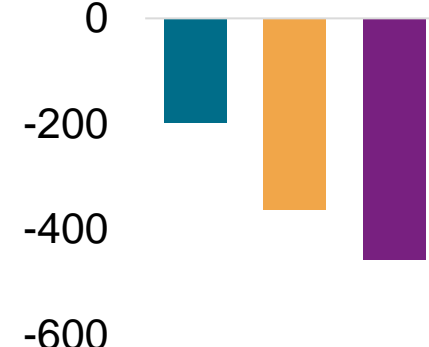
North America



Mainland China



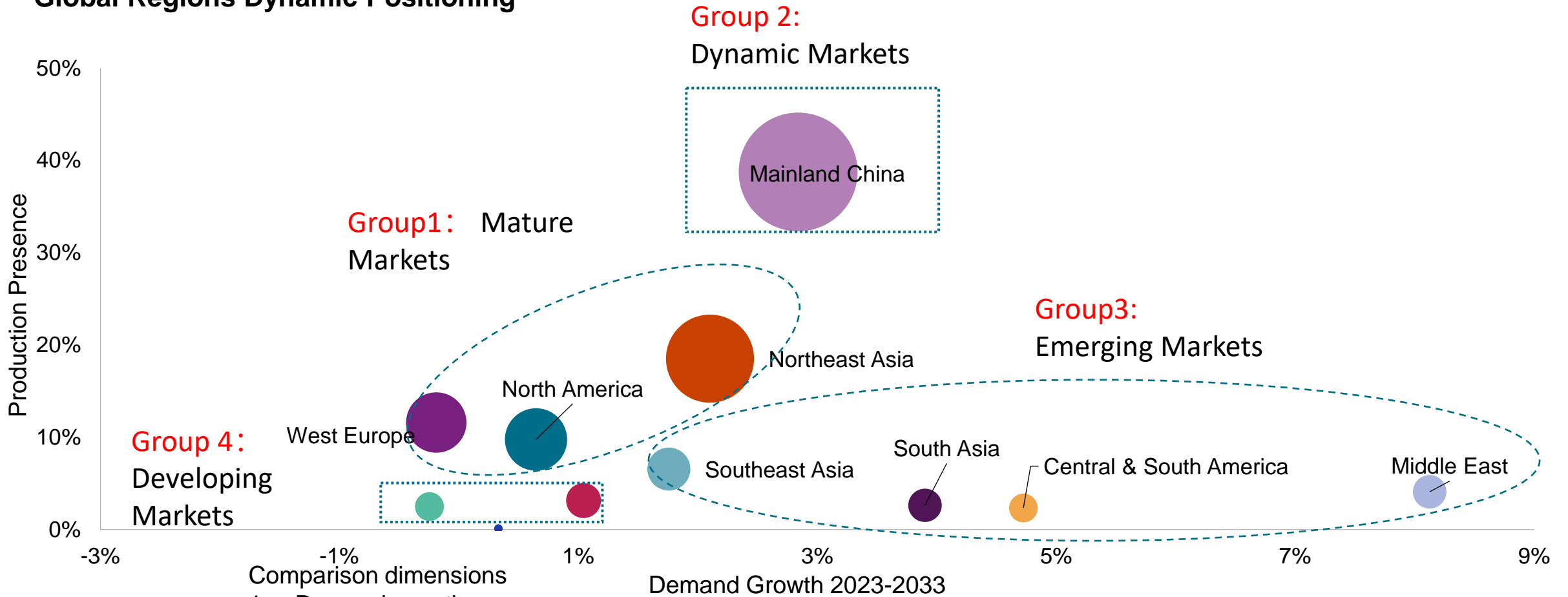
Northeast Asia



+ denotes net export, - denotes net import.  
Source: S&P Global Commodity Insights.

# Emerging markets expand: Three new regions to join from developing markets by 2033

## Global Regions Dynamic Positioning



## Conclusions

- China's role in the global butadiene market is crucial, driving both demand and capacity expansion
- Western Europe and the US are pivotal players in shaping global standards and driving advancements in technology and supply chains
- Emerging and developing markets contribute to global supply chains through low-cost labor and resources

