

China Chemical Industry Outlook: Will it drive/restrain the global petrochemical industry?

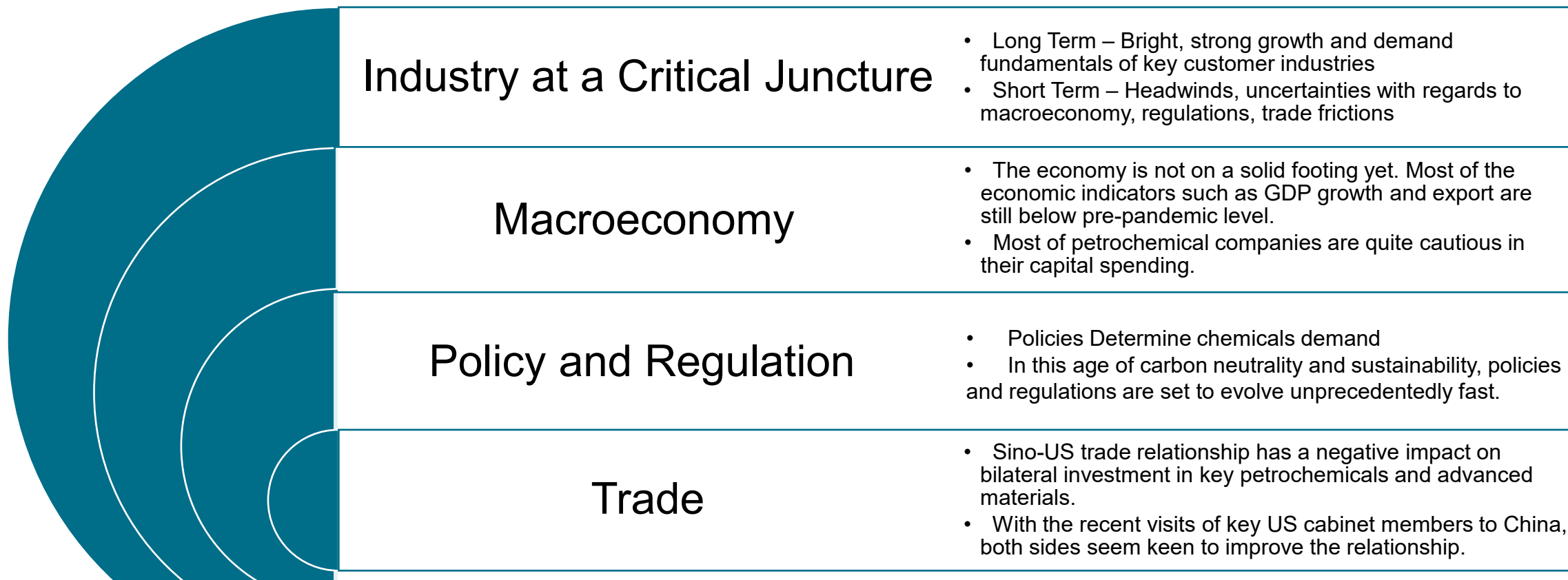
Chemical Strategic Report Brochure

September 2023

S&P Global
Commodity Insights



The chemical industry in Mainland China is in a critical juncture, facing intermingled uncertainties



- **During Stage 3 (14th 5Y plan and beyond), foreign investments are still welcome in chemicals, but good investment opportunities are expected to be found mostly in advanced synthetic materials where technology and innovation are key**
- **Energy conservation and environmental protection have been steadily increasing. The trend will continue as the industry enters an age of carbon neutrality and sustainability**

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Background

1. Why this report and why now?

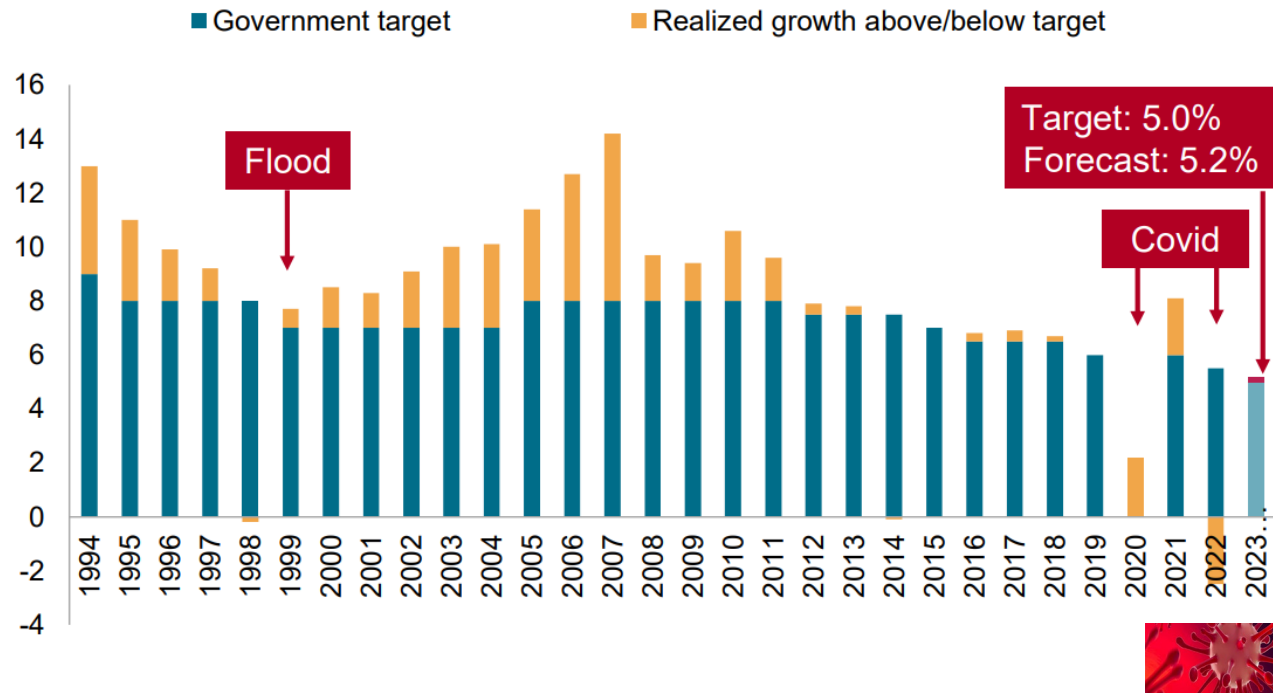
2. Report content summary

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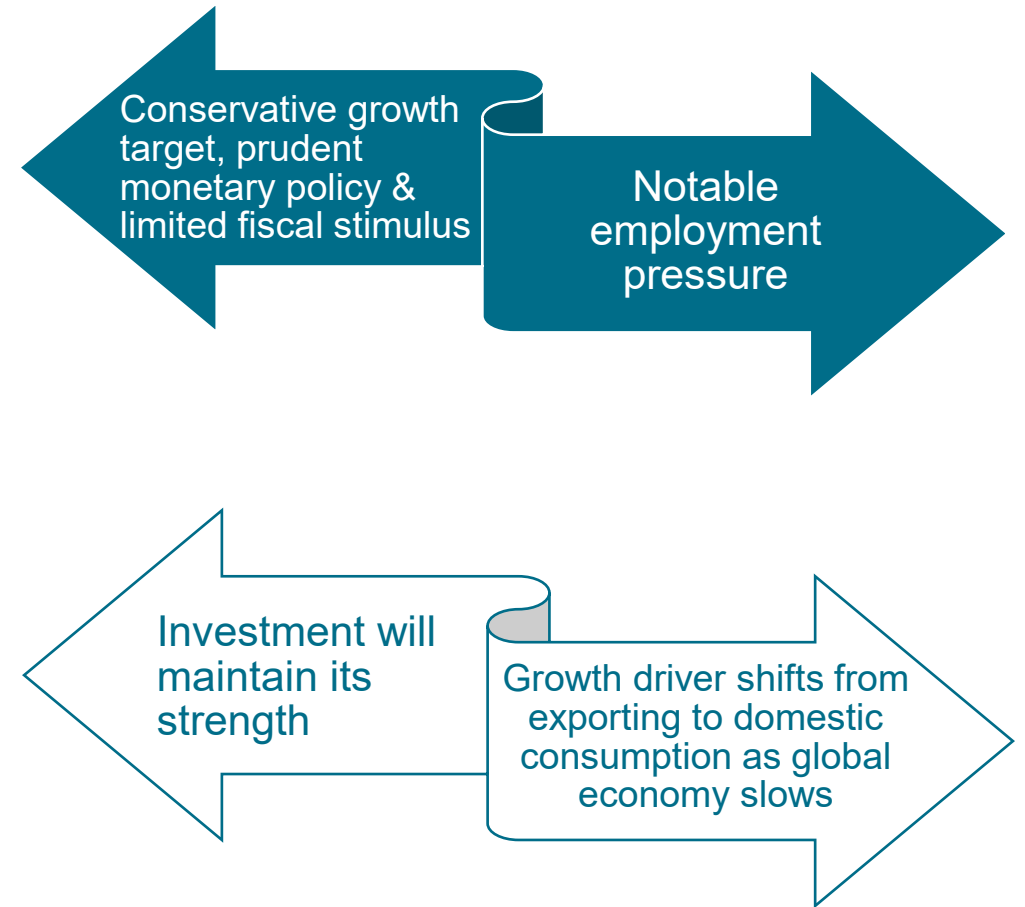
Why NOW?

Macro economy: Reopening with Headwinds Ahead

Mainland China's GDP growth target scoreboard (% change)

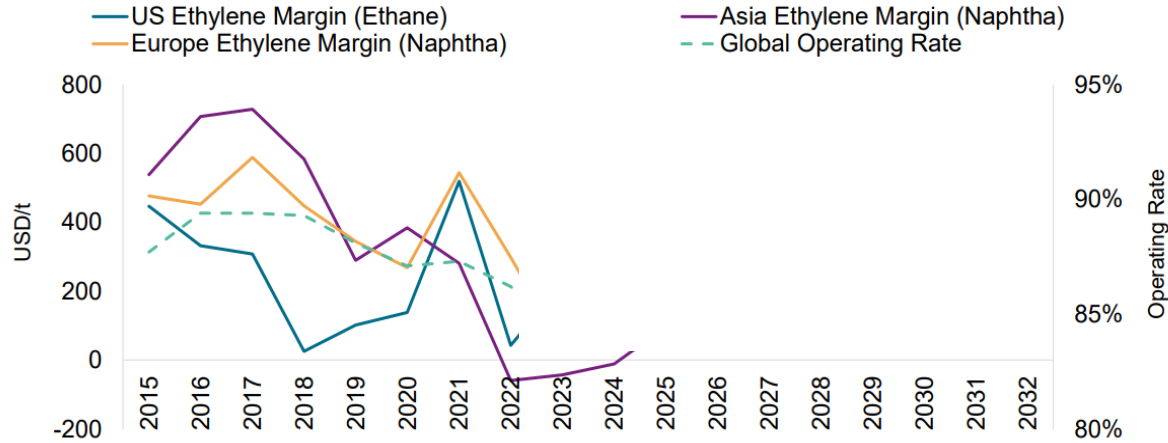


Data compiled March. 5, 2023.
Source: Government work report, National Bureau of Statistics, S&P Global Market Intelligence.



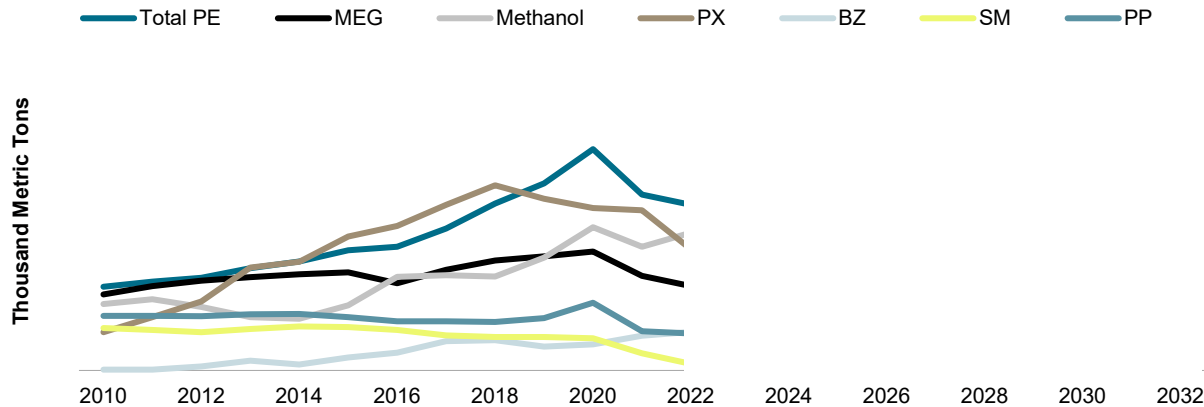
Why NOW? Unprecedented Scale of Expansion, Low O/P Rate & Squeezed Margin Bring the questions:

Expected Regional Ethylene Margins* vs. Global Operating Rate



*Ethylene margin: regional ethylene price less cost of production

Net Import Volume for Chemicals



Data compiled Jun, 2023.

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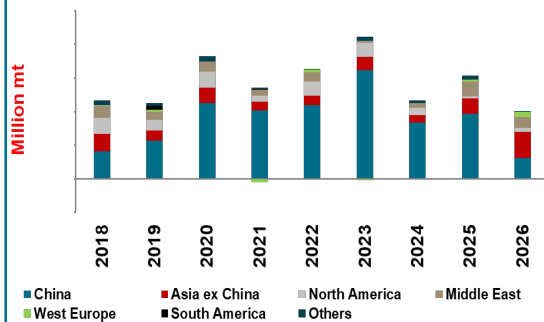


Why This Report? Questions continue, amid short/ long-term uncertainties

Market Fundamentals

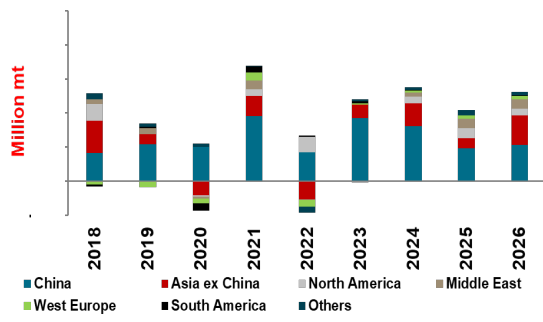
- Why is China building more capacities on awareness of oversupply?
- Competitor or cooperator?
- Attenuating import appetite? Will China turn into an exporter in the coming future?
- Any foreseeable rationalization?
- Future demand growth large enough to absorb the surplus?

World Base Chemical* Capacity Growth by Region



Source: S&P Global © 2023 S&P Global

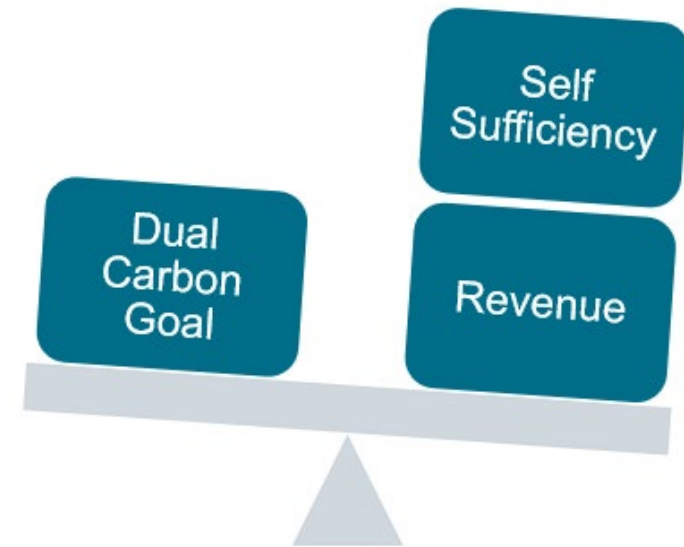
World Base Chemical* Demand Growth by Region



Source: S&P Global © 2023 S&P Global

Sustainability

- Carbon neutrality commitment VS Local Fiscal Revenue VS Self Sufficiency ?
- Monetizing coal VS Dual Control?
- Initiatives for sustainability among competitors



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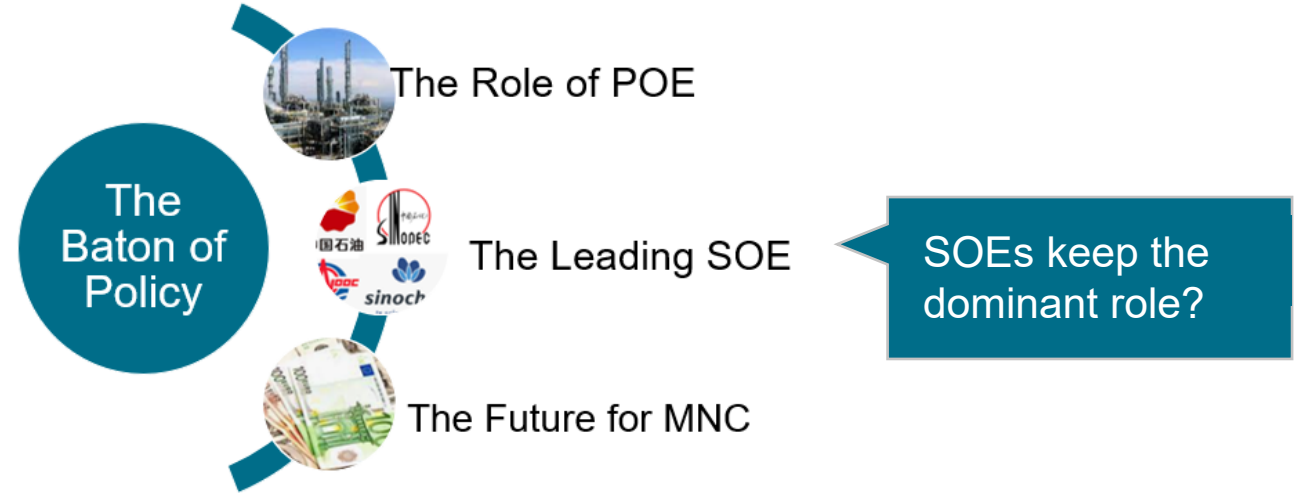
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Competition Landscape under Policy and Regulations

Why does China keep building on awareness of oversupply?

Need to know the “who” before figure out the “why”



Environment and emission

- “2+26 Act”
- Carbon Peak and Carbon Neutrality
- Plastics

“Cap primary refining capacity at 1 billion mt/year”

Investment and entry barrier

- FDI
- Entry Barrier

Minimum production scale for steam crackers, PX, styrene...

Industry upgrading

- Industrial Structure Adjustment Guidance Catalogue
- Work Plans

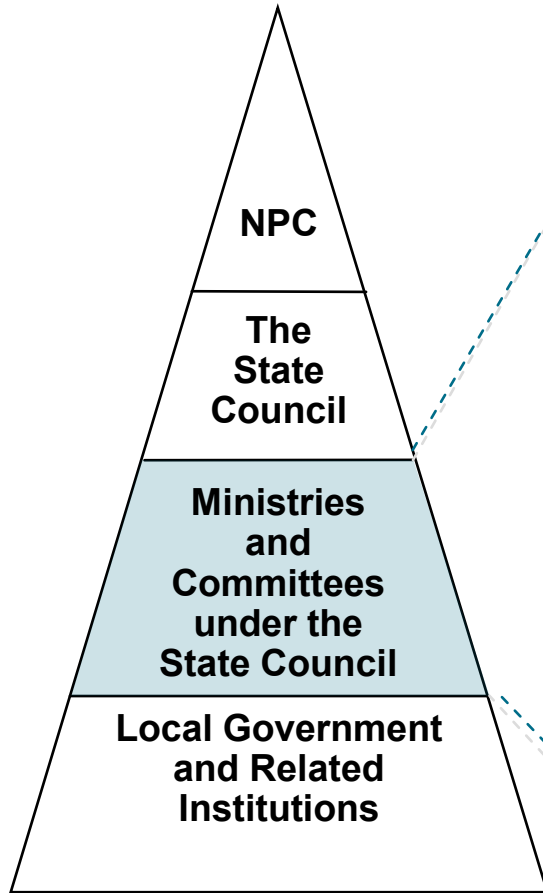
“Orderly exit”
“Ethylene production exceeds ...”

As a pillar industry, chemicals industry is regulated and influenced heavily by China government policy

EXCERPT

China's Regulation System

Chemical Related Government Departments



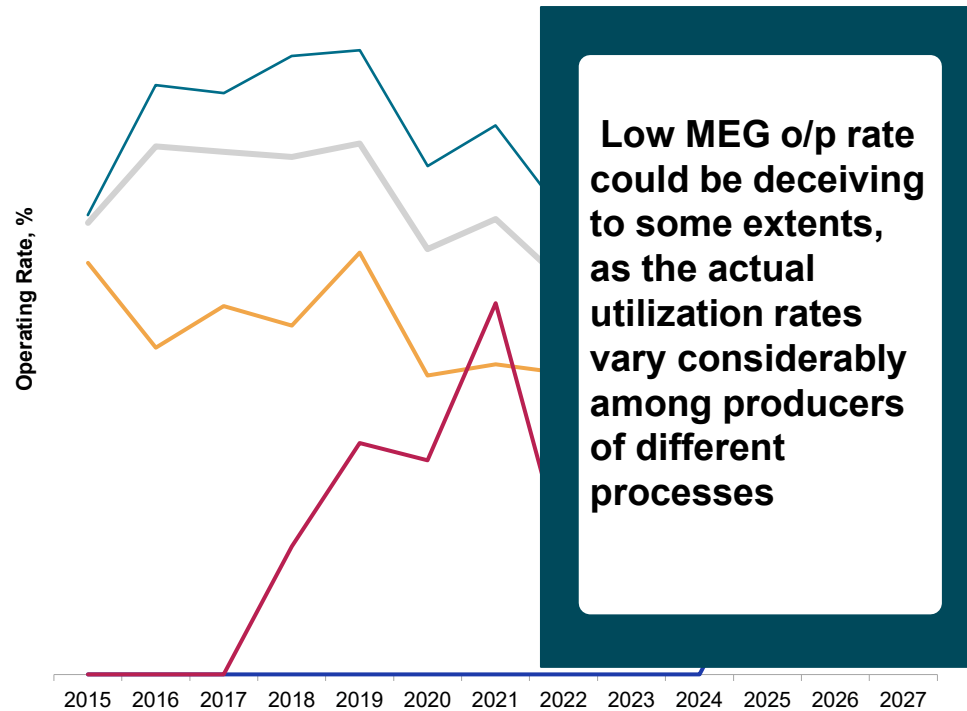
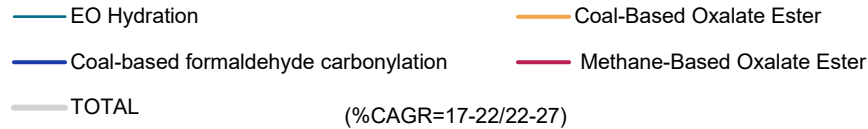
Key Entities	Functions and Chemical Related impacts
NDRC (National Development and Reform Commission)	<ul style="list-style-type: none"> Be responsible for chemical industry plans and large-scale chemical projects approval
MIIT (Ministry of Industry and Information Technology)	<ul style="list-style-type: none"> Directly responsible for the development of chemical industry Issued the stimulus plan for Petrochemical industry MIIT is also assigned by the state council to allocate the RMB20 billion budget fund for industry renovation
MOC (Ministry of Commerce)	<ul style="list-style-type: none"> Responsible for formulating policy on foreign trade, export and import regulations, foreign direct investments All on determining chemical products' import tariff, export debate rates and anti-dumping appealing
MEE (Ministry of Ecology and Environment)	<ul style="list-style-type: none"> Focus on environmental, health and safety issues, including protecting China's air, water, and land from pollution and contamination. Issuing regulations and managing DG/toxic products importing /exporting and handling
SASAC (Supervision and Administration Commission of the State Council)	<ul style="list-style-type: none"> Has top-down control over China's state-owned enterprises, including appointing top executives and approving any mergers or sales of stock or assets, as well as developing strategies to facility these companies to grow into top leading companies within the industry.

(1) NPC - National People's Congress

Mounting capacity and complex feedstock slates

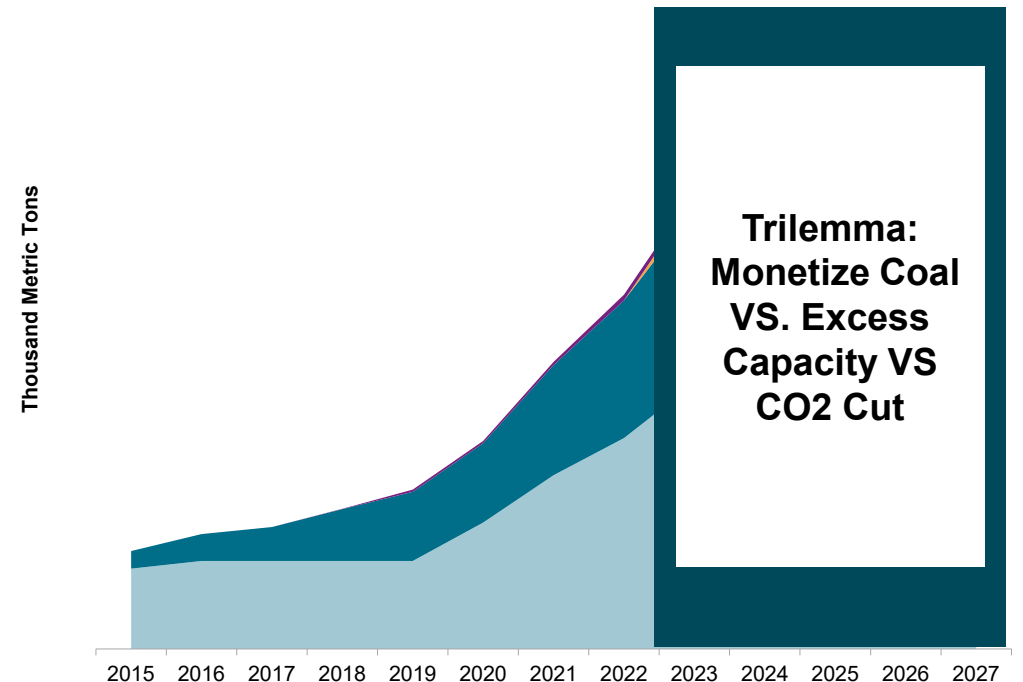
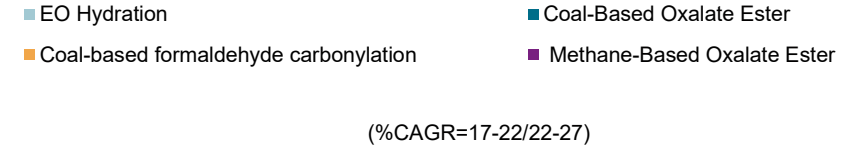
A combination of multiple factors determine competitiveness

China MEG Operating Rates



Data compiled Jun, 2023.
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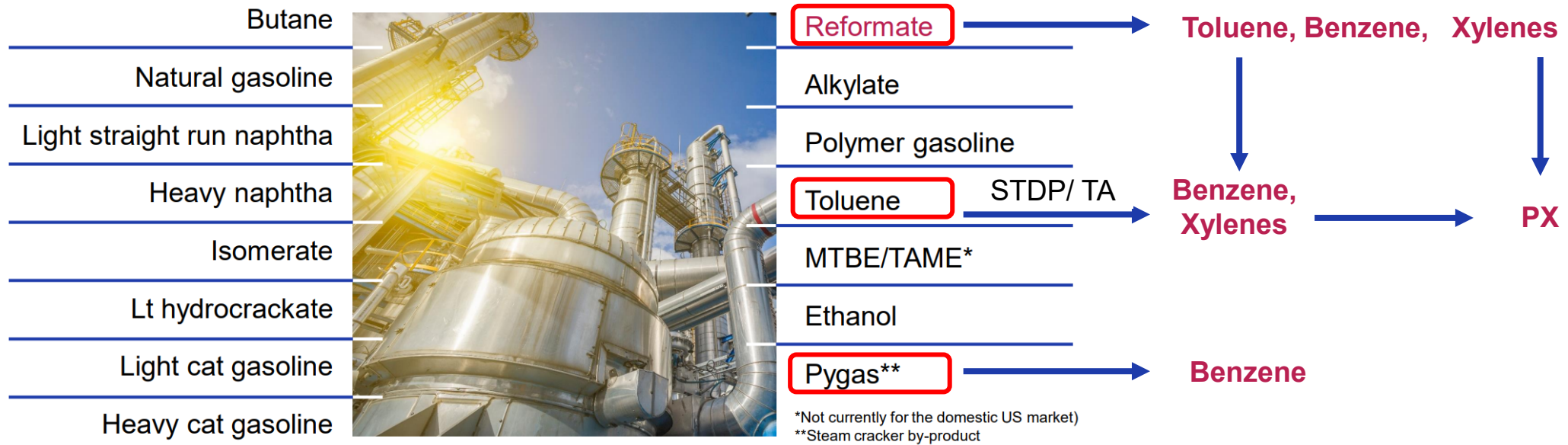
China MEG Capacity



Data compiled Jun, 2023.
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EXCERPT

Routes to BTX: Aromatics VS Gasoline Pool



EXCERPT

Gasoline must meet specifications for many properties:
 Octane | Vapor pressure | Distillation | Sulfur | Benzene | Oxygenates | Contaminants

Short Term

- Utilization rates are forecast to hit record lows with the large wave of new units coming online.
- Polyester end use consumption was discouraging during 2022-2023 ytd.
- High blend economics pulled toluene into gasoline pool during 2022.

Long Term



Oil refinery

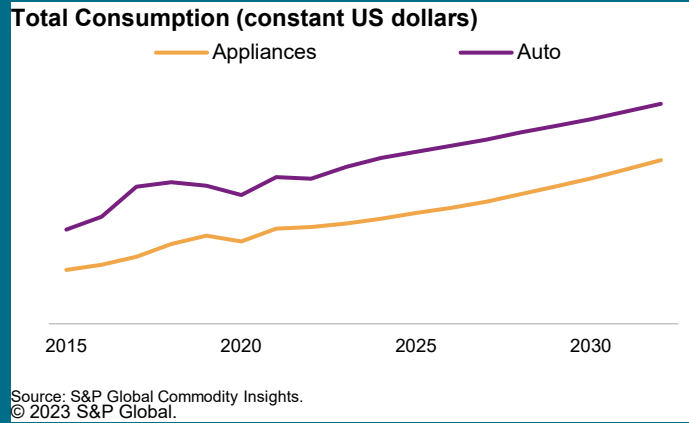


Petrochemicals

Future demand growth large enough to absorb the surplus?

Increasing focus on the domestic consumption

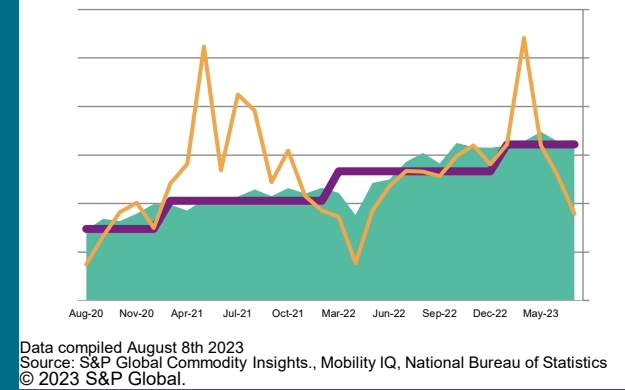
Spending will outpace disposable income growth



Auto, E/E and appliance are major customer industries for polymers: PE, PP and engineering polymers



Automobile- Export Value

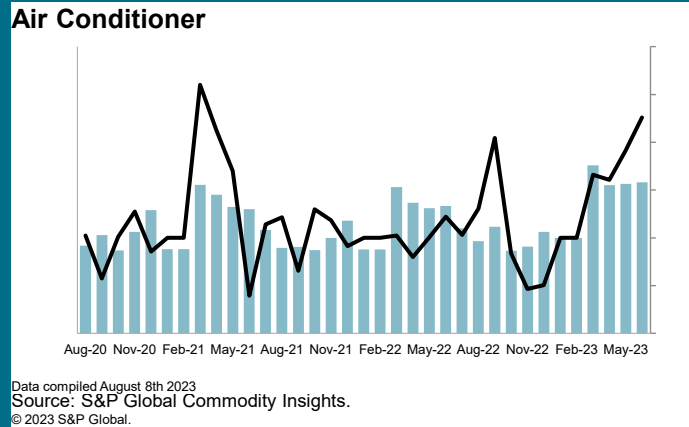


The NEV sector played a key role underpinning the recovery of auto demand in mainland China

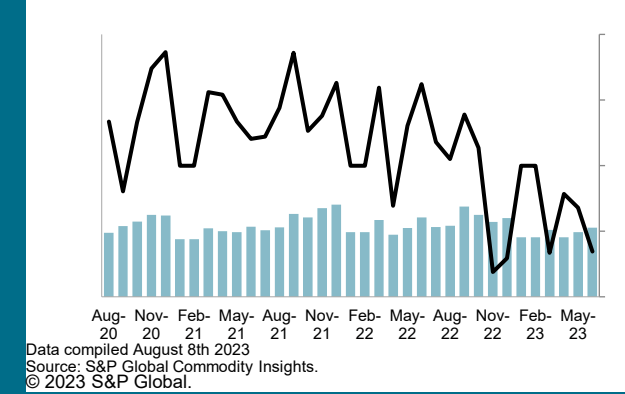
Auto export surges in 2023

China continues to be growing engine for future demand growth

Mainland China dominates the supply chain for the industry. Reshoring takes time.



Export - Computer and Communication Equipments



Mainland China has been the largest electric products manufacturing and export country

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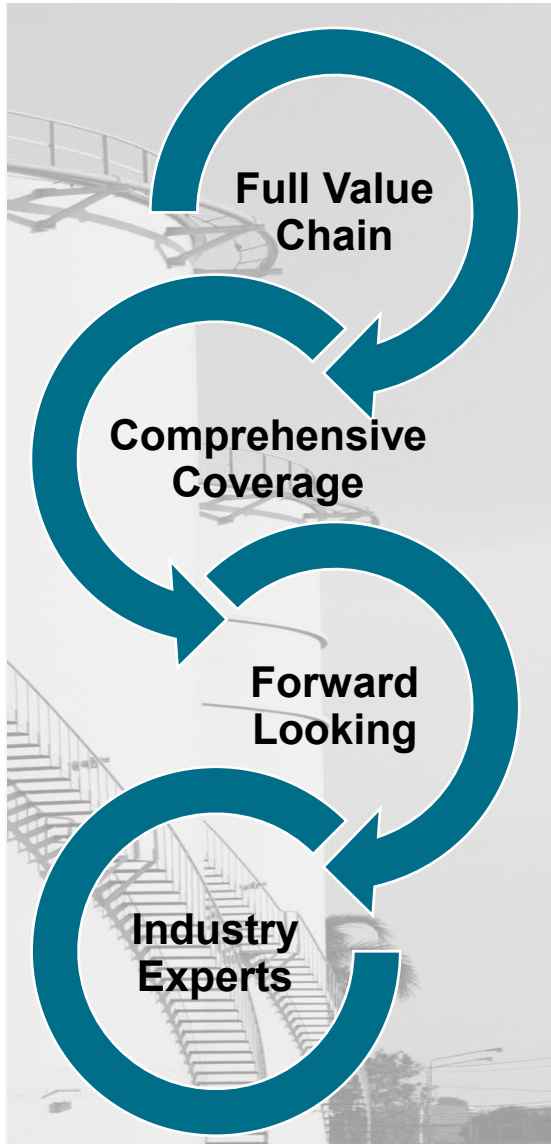


Background

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Chemicals consulting brings a comprehensive report on **China Petrochemical Market** based on its experience from actual projects and wider S&P Global expertise



- This report will provide an overview of China petrochemical market, including development and evolution, market size and growth, special characteristics like State-Led model and fragmented supply landscape.

- The report covers short/long term outlook for major petrochemical products, with an emphasis on the evolution of trade pattern, competitiveness and industry structure.
- Updates on macro economy and major customer industries, and their impacts on petrochemical market

- Key Policies and Regulations: entry barriers, strategic sectors, energy/water usage, recycling
- 14th Five-Year-Plans, 2+26 Act, Dual Control, Carbon Peak and Carbon Neutrality Commitment, Industrial Structure Adjustment Guidance Catalog...

- SPGCI has been working with companies worldwide on deep dive researches into commodity, specialty and advanced materials.
- Competitiveness among different technologies and feedstock slates, the future role of coal in petrochemical feedstocks mix.

High Level Table of Contents: this report covers a wide range of key factors/drivers that have significant impacts on the China chemical industry

1. Introduction

2. Overview

- Evolution/development
- Size, growth and drivers
- Import dependence
- Capacity and utilization
- Role of coal chemicals
- Feedstock dynamics

3. Policy & regulation

- Evolution
- Decision-making processes
- Key regulators
- Key policies and regulation
- Intro on 14th Five Year Plan and its implications

4. Competition landscape

- Evolution and dynamics
- Profile of key SOE and POE players
- Recent investments by MNCs

5. Review of key petrochemical building-blocks (ethylene, propylene, butadiene, benzene, methanol)

- Summary of key short term and long-term outlook
- Global supply/demand: China's role
- China supply/demand

- Trade outlook
- Demand breakdown and dynamics
- New capacity/investment
- Industry structure
- Pricing and margin

6. Short term and long-term outlook on all major petrochemicals and engineering resins

- Supply/demand, trade, price and margin and industry structures are provided for each product
- Outlook of key ethylene derivatives: PE, MEG, PVC
- Outlook of key propylene derivatives: PP, PO, Acrylonitrile, Acrylic Acid
- Outlook of key butadiene derivatives: ABS, MTBE
- Outlook of aromatics: benzene, styrene, PX, PTA, PET and PC
- Outlook of selected specialty materials
 - Carbon fiber
 - Carbonates
 - LAO/PAO
- Updated market data of more than 20 other petrochemicals

7. Sustainability & decarbonation

- Overview
- Case studies of key players

8. Key takeaways

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