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Industry Restructuring & Inorganic Growth Through an Era of Chronic Oversupply

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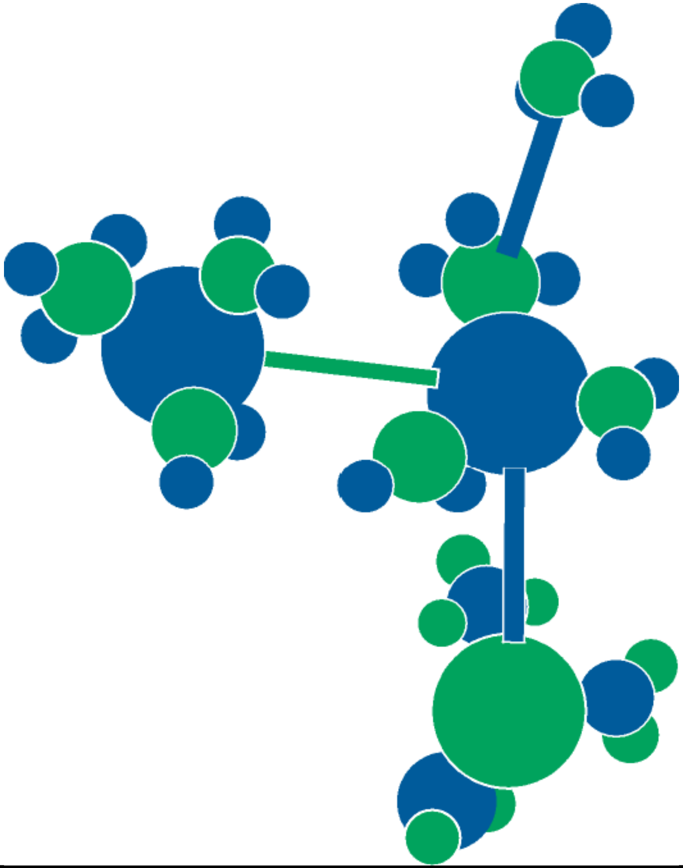
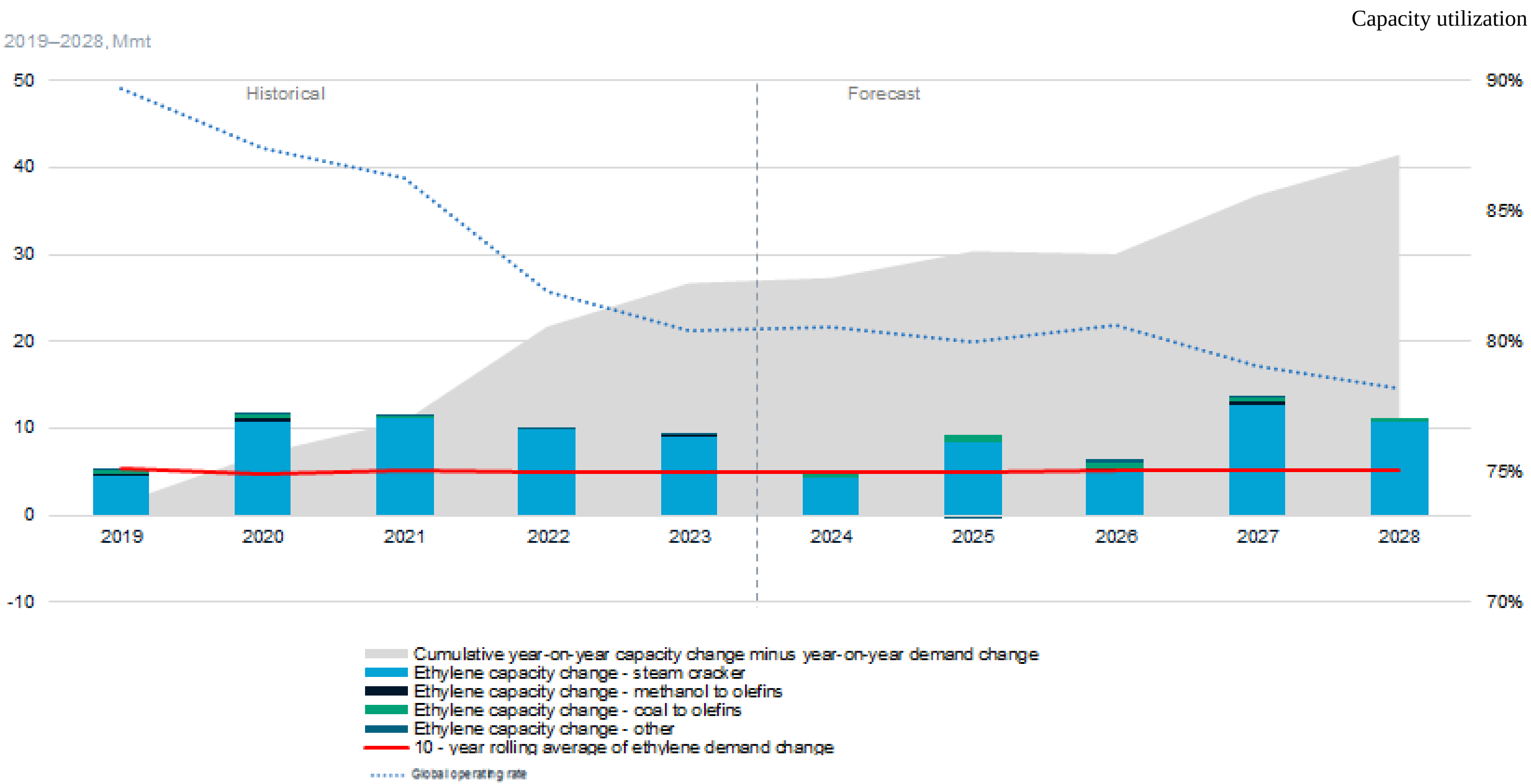


I. Introduction

- The chemical industry is presently facing a buildup of overcapacity.
- Completed and planned Chinese capacity additions, combined with slower demand growth globally, have resulted in lower industry margins. The planned Saudi “Liquid to Chemicals” capacities will only exacerbate this situation and lead to a prolonged period of chronic oversupply that could extend well into the 2030s.
- Traditionally, the chemical industry has recovered well from short periods of oversupply.
- However, a more severe and prolonged supply overhang will likely trigger industry rationalization and could also herald opportunities for inorganic growth through M&A and consolidation.
- Where are the likely opportunities and exit alternatives available to companies to deal with this business/economic crisis?

II. Era of Chronic Oversupply – Global Ethylene to 2028



Source: Chemical Market Analytics

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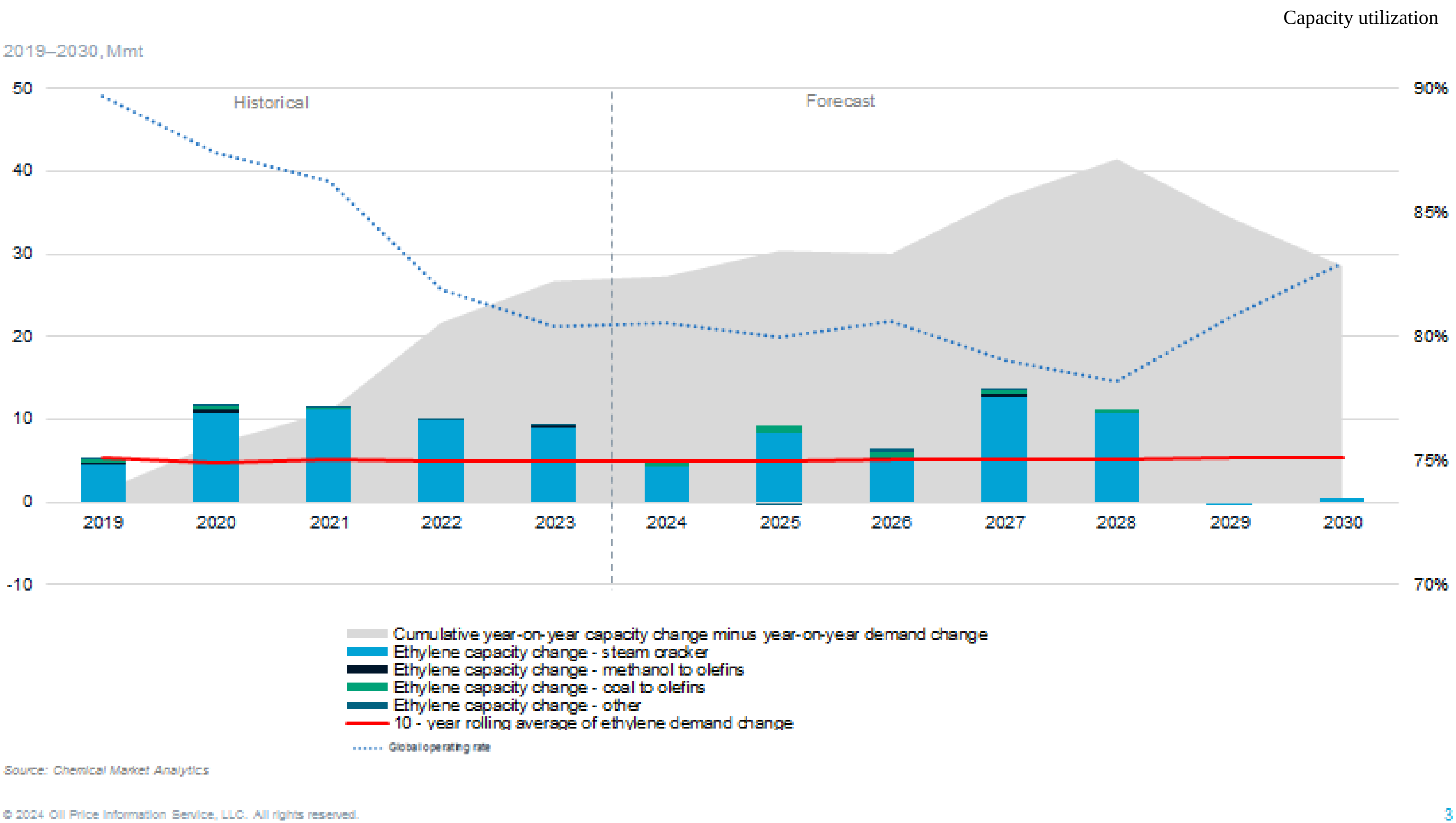
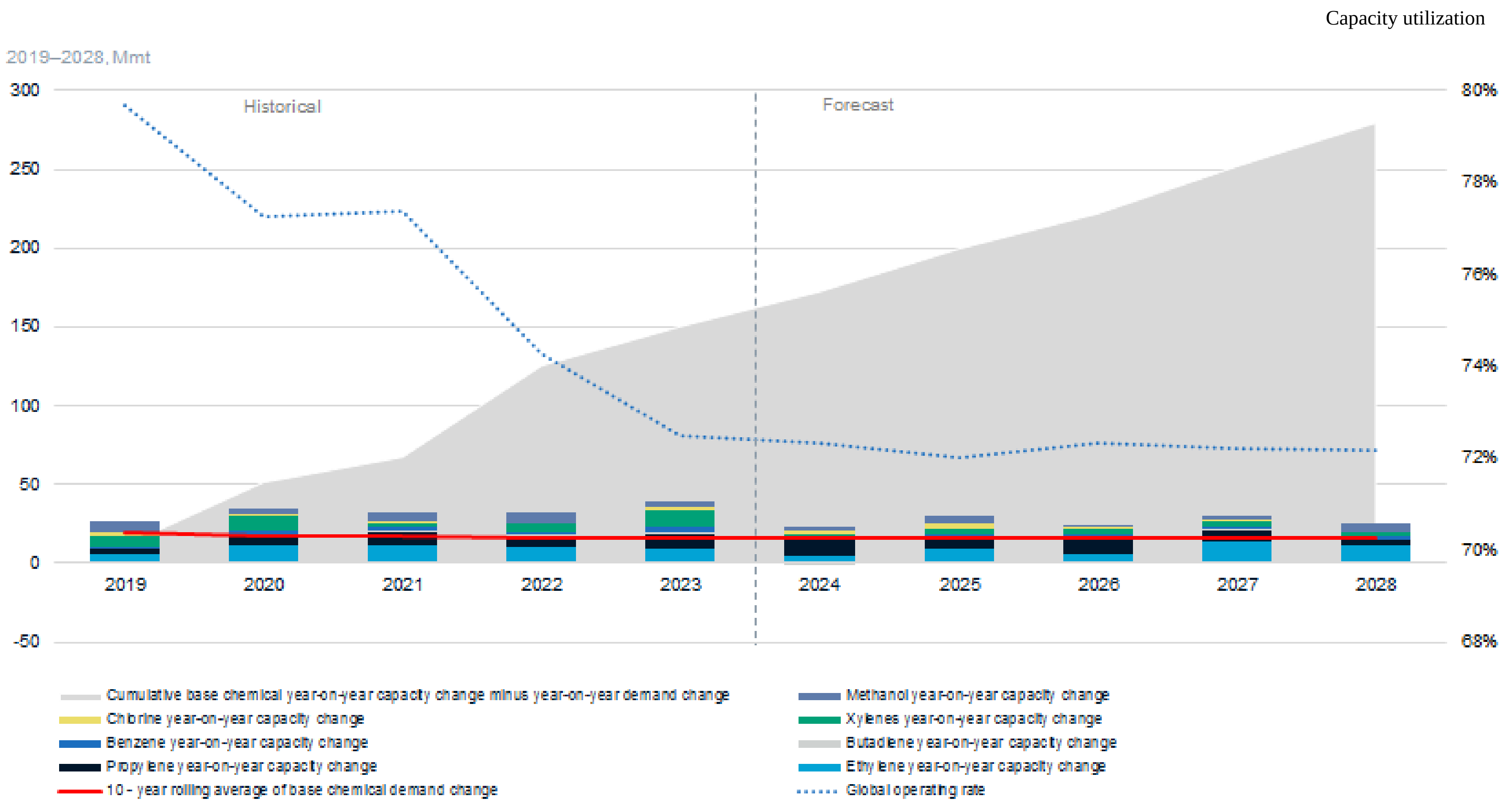
II. Era of Chronic Oversupply – Global Ethylene to 2030



II. Era of Chronic Oversupply – Base Chemicals to 2028



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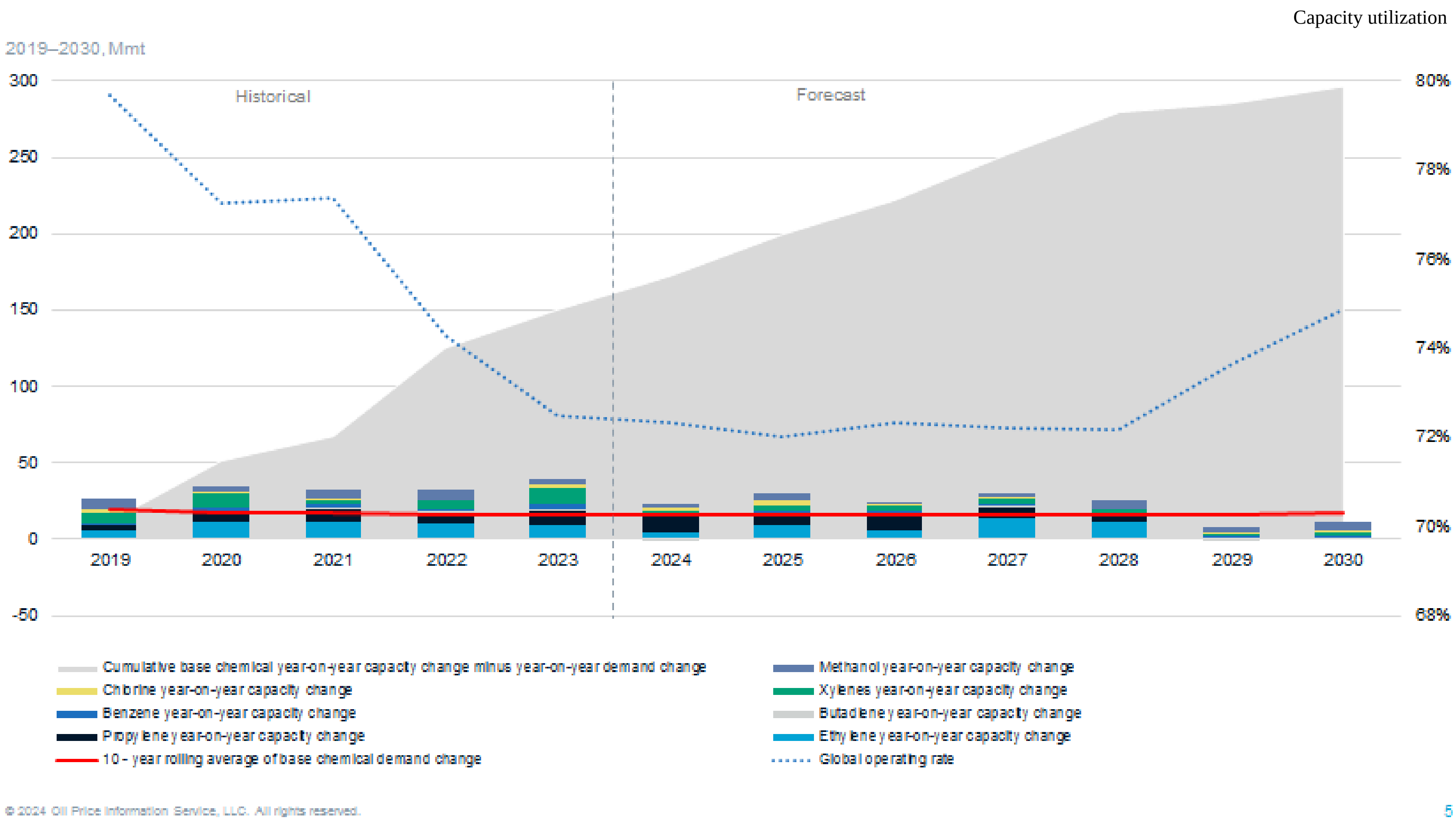
Capacity utilization
2019–2030, Mmt
Historical
Forecast
300
250
200
150
100
50
0
-50
80%
78%
76%
74%
72%
70%
68%
2019
2020
2021
2022
2023
2024
2025
2026
2027
2028
2029
2030
Cumulative base chemical year-on-year capacity change minus year-on-year demand change
Methanol year-on-year capacity change
Chlorine year-on-year capacity change
Xylenes year-on-year capacity change
Benzene year-on-year capacity change
Butadiene year-on-year capacity change
Propylene year-on-year capacity change
Ethylene year-on-year capacity change
10 - year rolling average of base chemical demand change
Global operating rate
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II. Era of Chronic Oversupply – Business Implications

- Petrochemical producers in Europe and Asia are struggling as the capacity expansions in China by Chinese companies and expansions in Asia and the Middle East by Middle East players (often through partnerships) have depressed profits. High energy costs in Europe have also reduced profits in recent years.
- The sector's weakness is troubling for a global oil industry looking at petrochemicals to keep profits rolling in as transportation fuel demand falls in coming years with the energy transition.
- Major producers in Asia and Europe are selling assets, shutting older plants, and retrofitting facilities to use cheaper raw materials such as ethane instead of naphtha to cut costs.
- Producers will need to further consolidate ethylene and propylene capacity as oversupply is expected to persist for years with new plants still coming online in the Middle East and China, even as the Chinese economy sputters.
- As the previous charts show, there will be a general overcapacity situation globally in base chemicals and ethylene as a whole.
- This will not be the case for all commodity chemicals. For example, U.S. propylene producers are experiencing a much better environment, including rising prices, due to the structure of the industry feedstocks derived from cheaper natural gas liquids, like ethane

II. Era of Chronic Oversupply – Business Implications

- Asia's producers face the toughest outlook, with oversupply likely to persist as some companies are unlikely to curb output at new units and plants that are integrated with wider operations.
- Since 2022, a range of factors have made the business environment more difficult – including falling domestic demand, as well as a drastic oversupply on account of new production facilities launched in China and other parts of Asia.
- However, producers in South Korea and Malaysia are keeping run rates high despite losses, as their plants are integrated with oil refineries. That makes them unable to shut or sell loss-making petrochemical units without affecting the output of other products.
- As production and exports from the Middle East, China, and the U.S. have grown, companies have been trying to shift to growth markets such as India, Indonesia and Vietnam.
- Europe, on the other hand, is going through a major restructuring by a host of players. With no local growth markets, weak exports, high energy costs, and a limited ability to switch to ethane, there are very few options available.
- As a result, there have been many shutdowns and announced strategic reviews of European assets by global players.

- The strategic implications for chemical industry companies varies widely depending on the situation of each asset.
- Questions you must ask in each case:
  - What is your cost position in terms of both feedstocks and production costs?
  - Can you shift your feedstock source to a lower cost feedstock such as ethane?
  - Which geographic market are you serving and what is the demand and competitive picture?
  - Can you pivot to more attractive growth markets such as India on a competitive basis? Are there other products that can be produced onsite?
  - Is your chemical operation integrated into a refinery and/or into downstream products? If so, to what extent will actions you take at the chemical level affect the profits and volume of your up and downstream operations?
  - If you are an oil company currently in chemicals, how will changes in the refinery mix affect the viability of the chemical units, positively or negatively?
  - Do you have an equity partner/joint venture that helps or hurts alternatives?
  - Can your competitive position be improved and become viable by merging with partners facing similar issues?

M&A Trends – First Half of 2024

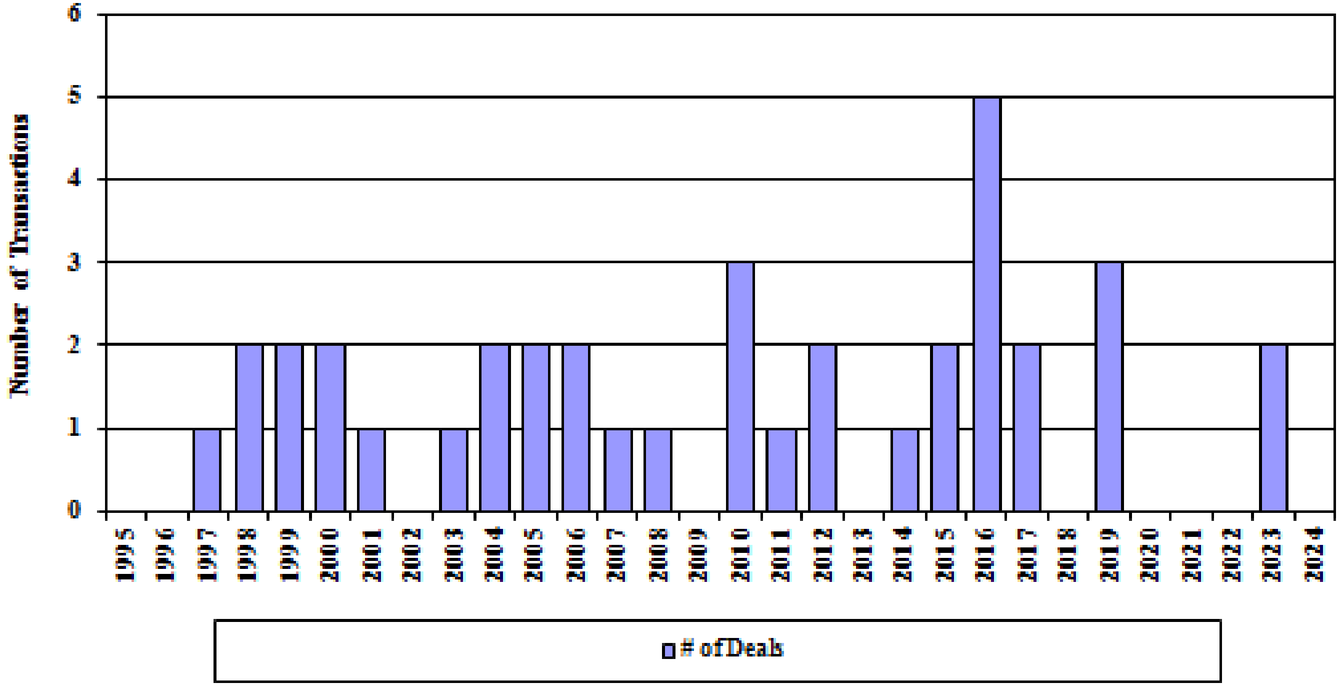
- $28.6 billion worth of deals closed in the first half of 2024 compared to $57.1 billion in 2023. On an annualized basis, the first half was on pace with 2023 on a dollar basis, but one large delayed deal (the merger of Novozymes and Chr. Hansen for $11.4 billion) was the reason.
- The number of deals that have closed tell a different story. In terms of numbers of deals, only 20 deals closed in the first half of 2024, a major slowdown on an annualized basis from the 75 deals in 2023 and the 86 deals in 2022.
- Looking forward, the value of deals announced but not closed as of June 30, 2024 was $18.8 billion (21 deals), which suggests a continuation of the slow pace in the first half.
- Commodity chemical deal activity continued to fall. The volume of commodity chemical transactions in the first half accounted for only 35.0%, a continuation of the decline in 2023. None of the commodity chemical deals were in Europe. Commodity chemical deals are normally around 50% of the total historically.

M&A Trends – First Half of 2024

- Commodity chemical median valuations continued to fall dramatically starting at the beginning of 2023. Commodity chemical valuations are depressed and will remain so given the uncertainties in the commodity chemical industries.
- Specialty chemical median valuations have fallen modestly recently.
- Geographically, the chemical M&A market continues to be dominated by deals in Asia/ROW. The global share of deals completed in Asia and ROW in the first half was 55.0% of all global deals, similar to the 55.4% share in 2023. Almost all of the buyers of those Asian businesses were also Asian.
- Outside of Asia, the U.S. continues to be seen as a favorable place to make chemicals.
- As a result, the U.S. accounted for 30.0% of all deals in the first half of 2024, slightly above the 25.7% for all of 2023.
- Europe ended up with 15.0% of deals completed worldwide in the first half of 2024 versus 18.9% in 2023, as buyer interest in European chemical assets continues to be weak. All were specialties.

Spin-Offs

- Volume of spin-off transactions has never been robust. There has been no spinoffs so far in the first half of 2024.



Offerings > $25 mm

IV. Strategic and M&A Alternatives

- There a number of strategic/financial alternatives to consider depending on the results of your strategic assessment and the condition of the financial and M&A markets.
  - Shutdown of the chemical facilities
  - Spin-off into an independent company
  - Split-off
  - Sale of the chemical asset
  - Merger of the operation privately or publicly
  - Joint-venture or strategic partnership
  - Restructuring through cost reductions or shifting product mix, partially or totally
  - Shift to lower cost feedstocks to be competitive

Thank You

<u>The Speaker</u>

- Peter Young is CEO of Young & Partners. He can be reached at Mr. Young can be reached at pyoung@youngandpartners.com.

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