Rhodium Group

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Jeremy Smith

Global Impacts of China's Chemicals Buildout

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Executive summary

Chemicals are key building blocks of nearly all manufacturing industries, making them a top priority in China's broader drive for industrial competitiveness and supply chain self-sufficiency. This report explores the causes and ramifications of China's expansive chemicals buildout.

China's industrial self-sufficiency drive massively expanded its chemicals capacity but damaged the industry in the process. China's chemicals output has grown 18-fold over the past 25 years and now represents over 45% of global capacity for basic chemicals and plastic resins.[1] But this dramatic growth harmed the industry's own financial performance. China's property sector collapse beginning in 2021 weakened demand for chemicals right as investment in production capacity accelerated. Supply growth became increasingly untethered from demand, pushing down prices, piling up inventories, and shrinking profits.

The rapid growth and distress in China's chemicals sector have had major impacts on the global competitive landscape. The decline in China's imports has thus far been most disruptive, resulting in lost sales for foreign producers in China, the world's largest chemicals market. At the same time, China's exports are rising, most of all to emerging markets, where China is making rapid market share gains displacing incumbent producers. Even where China is still a net importer, the size of China's chemicals sector is so vast that its market dynamics can exert pressure on world prices and profit margins.

Beijing has acknowledged the supply-demand imbalance, but Chinese policymakers are reluctant to face the economic, social, and supply chain repercussions of large-scale closures. Instead, Beijing's ongoing "anti-involution" campaign seeks to restore profitability by ending price wars, upgrading outdated facilities, and building more integrated industrial clusters. This may slow capacity additions on the margins, but the sector is unlikely to meaningfully consolidate in the near term. Instead, Chinese policymakers will push it to emerge more efficient, with greater economies of scale, more modern technology, and stronger linkages to upstream refineries and higher-value downstream products.

Global chemicals producers are unlikely to benefit from China's efforts to stabilize its industry. New chemicals investment is slowing in China, but the degree of slack in the industry suggests that fundamentals would likely take years to resolve. The global market will not return to balance without stronger demand growth or capacity reductions somewhere. High-cost regions such as Europe and Northeast Asia are now bearing the brunt of those pressures. In the meantime, ongoing efficiency upgrades will likely lower China's marginal production costs in commodity chemicals, better equipping it to sustain price competition. While the state's fiscal and financial capacity has limits, chemicals are key to China's overall industrial strategy, increasing Beijing's tolerance for low investment returns in the sector and providing a safety net that makes firm exit less likely. The feedstock disruptions caused by the Iran war have shaken up the global price environment but have likely only further entrenched Beijing's commitment to supply chain redundancy

[1] American Chemistry Council, "China's Share of Global Capacity Continues to Surge," April 15, 2026. *https://www.americanchemistry.com/better-policy-regulation/trade/resources/china-s-share-of-global-capacity-continues-to-surge*.

and resilience, making Chinese policymakers even more reluctant to cut domestic capacity.

Global producers also face increasing pressure as Chinese companies push into segments they have long dominated. China is pursuing a deliberate strategy to boost chemicals output and depress prices to strengthen its downstream industrial ecosystem. This means that competitive pressures originating in chemicals will likely spread to a wide range of industries that consume chemicals as a key input. In addition, Chinese producers are becoming more vertically integrated and innovative, so competition will likely continue migrating into high-end specialty chemicals, where profit margins generally remain higher for foreign producers.

The complex structure of the industry will make protection difficult with conventional trade tools. Individual countries using bilateral defenses to target China will struggle to prevent trade diversion or provide meaningful price relief for domestic producers in the timeframe needed to restore competitiveness. Safeguard tariffs that target all imports (such as those the EU is now debating) could be more effective at protecting domestic producers but would create trade frictions with other advanced economies (i.e. such as by potentially disrupting the supply of raw materials) and would do little to address major sources of pressure on the industry: China's declining imports, third-market competition, and chemicals content embedded in end-products ranging from autos to appliances to toys.

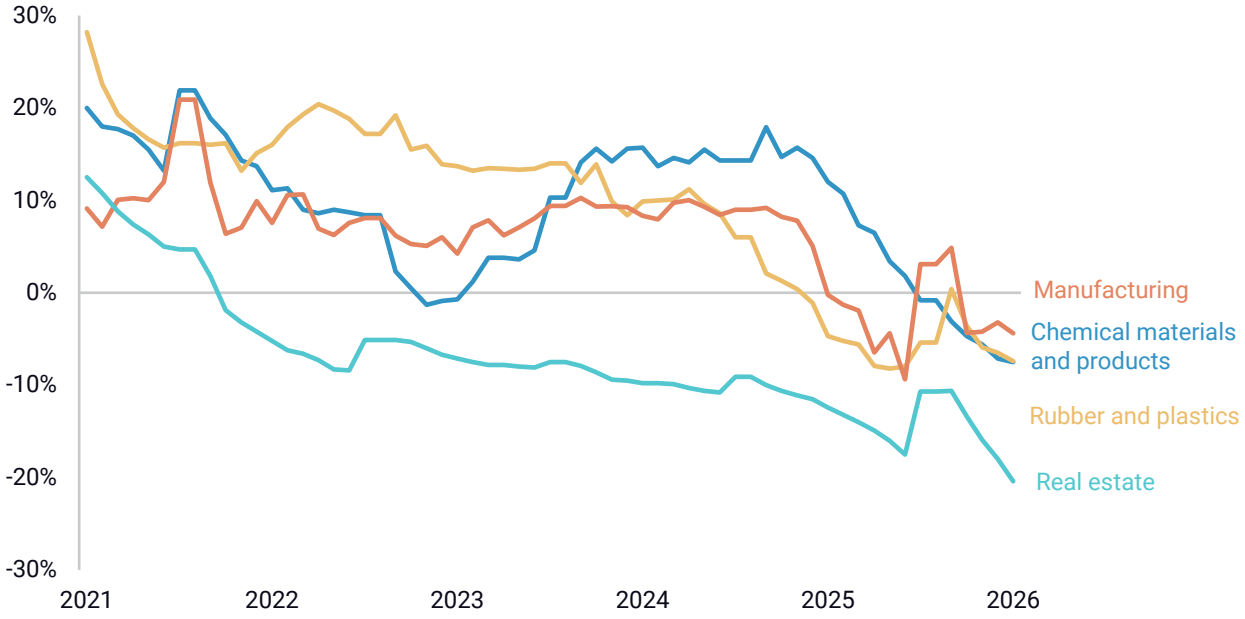
Effective policy responses to this multidimensional challenge will require a broad range of countries to coordinate along full value chains. Robust international cooperation is necessary because chemicals supply chains can cross borders many times, and coordination across production nodes is needed to ensure that trade defenses to protect upstream inputs don't put downstream producers at a disadvantage. Policy solutions will also have to balance each country's reshoring goals against the complex interests of multinational chemical producers who operate and trade across many jurisdictions with competing priorities, including in China.

China's chemicals buildout: Policy goals, support mechanisms, and industry impacts

The chemicals sector sits at the intersection of China's energy security and supply chain resilience goals, making it a major focus of Beijing's broader self-sufficiency drive. Beijing and local governments have used an array of industrial policy instruments to encourage a large-scale chemicals buildout, both to increase industry self-sufficiency rates and to stimulate economic growth within the sector and chemicals-consuming sectors.

These efforts produced a massive capacity expansion across basic chemicals and bulk commodity polymers over several decades, lifting China's share of global chemicals sales from 10% in 2004 to 46% by 2024.[2] But the largest capacity additions have occurred within the past five years, when chemicals formed part of a manufacturing investment surge during the sharp contraction in aggregate domestic demand triggered by China's property sector collapse (Figure 1).

FIGURE 1
Fixed asset investment growth, selected industries
Y/Y percent change, YTD



Source: National Bureau of Statistics

As investment overshot domestic demand, the industry's financial performance deteriorated, as a mix of policy incentives encouraged redundant investment and fierce price competition across key product markets. From early 2022 through early 2026, industry profits shrank, prices fell, and inventories accumulated, with nearly a third of Chinese chemicals producers now making losses.

[2] Cefic, "Facts & Figures of the European Chemical Industry," December 2, 2025. *https://cefic.org/facts-and-figures-of-the-european-chemical-industry/*.

The chemicals sector is highly complex and diverse, which means market dynamics and industry economics can vary significantly across individual product markets and regions. This report provides an overview of these trends within five key petrochemical building blocks to supplement analysis of industry-wide trends: ethylene, polyethylene (PE), polypropylene (PP), polyvinyl chloride (PVC), and styrene (Table 1).

TABLE 1
Description and capacity trends for petrochemicals profiled in this report

Product	China's capacity in 2025	Change since 2020	Description and uses[3]
Ethylene	62.9 Mt	+28.0 Mt (+80% since 2020)	Basic olefin and world's largest petrochemical by production volume. Ethylene derivatives account for over 75% of all petrochemical products.[4] Generally produced in steam crackers using naphtha, ethane, or LPG as feedstock.
Polyethylene (PE)	41.1 Mt	+17.7 Mt (+75%)	Downstream resin derivative of ethylene and the most widely used plastic. High-density grades are used in rigid applications such as bottles, containers, pipes, and toys. Uses of low-density grades include plastic films, packaging materials, and wire and cable.
Polypropylene (PP)	49.2 Mt	+20.3 Mt (+71%)	Downstream resin derivative of propylene. Versatile thermoplastic used in auto parts, appliances, medical products, and consumer goods.
Polyvinyl chloride (PVC)	29.3 Mt	+3.9 Mt (+15%)	Downstream resin produced from ethylene and chlorine. Primarily used in construction applications such as pipes and flooring.
Styrene	23.7 Mt	+11.7 Mt (+97%)	Intermediate aromatic produced from benzene and ethylene. Sits at the middle of the value chain between basic petrochemicals and downstream plastics and rubbers. Uses include insulation, tires, and plastic drinking glasses.

Source: Rhodium Group research. See Figure 4 for capacity details. Mt = million metric tons.

[3] For additional details on chemical product supply chains and uses, see American Chemistry Council, "2023 Guide to the Business of Chemistry," September 8, 2023. *https://www.americanchemistry.com/chemistry-in-america-industry-innovation-impact/chemical-industry-statistics-u.s.-jobs-economic-impact/resources/2023-guide-to-the-business-of-chemistry*.

[4] Corinne de Berry, "Chemical Market Overcapacity and Weakening Demand: A Perfect Storm (2024 Update)," ICIS, 2024. *https://www.icis.com/explore/resources/chemical-market-overcapacity/*.

Doubling down on the "industry of industries"

CHEMICALS AND BEIJING'S SELF-SUFFICIENCY GOALS

Often called the "industry of industries," the chemicals sector feeds into every element of an economy's industrial system. Global input-output analysis has shown that 58% of chemicals are sold to other industrial sectors, with most of the remainder absorbed by agriculture and health care, highlighting their usage throughout manufacturing value chains.[5] China's policy rhetoric similarly refers to chemicals as a "pillar industry" that supports long downstream value chains and extensive linkages throughout the economy.

This makes chemicals a focal point of China's longstanding pursuit of self-sufficiency across basic materials and foundational inputs. China's journey toward becoming a petrochemicals powerhouse began with the 1959 development of the Daqing oil field in Heilongjiang province, a transformational event that ended (for the time being) China's reliance on foreign crude. In the 1960s and 1970s, China began to import machinery and equipment needed to gradually build out oil refining and petrochemical processing capabilities.[6] As China's economy progressed through the high-growth years of the 1980s to mid-2000s, rapid industrialization and urbanization meant that China's need for plastics, rubbers, and fibers increasingly outstripped its domestic chemicals production capacity.

The core objectives of China's chemicals strategy—scale and vertical integration, feedstock diversification, and technology upgrading—have been the focus of policy for twenty years. By 2005, Beijing expressed clear concern that the self-sufficiency rate for ethylene had fallen substantially, from 78% in 1990 to just 43%, in spite of rapid domestic capacity growth. Ethylene is the primary building block of petrochemicals supply chains, from which a wide variety of downstream products is derived. Projections at the time suggested that petrochemicals import demand would continue on a strong upward trajectory.[7] In a landmark industry plan published in 2005, the state planning agency, the National Development and Reform Commission (NDRC) offered a frank assessment that China's lagging technological capabilities, raw material bottlenecks, and operational inefficiencies rendered Chinese ethylene uncompetitive and would make complete self-sufficiency difficult to achieve. To overcome these constraints, NDRC proposed: 1) making ethylene crackers far larger in scale and better integrated with refineries, 2) diversifying feedstock materials and sources (including by developing domestic coal-to-chemicals), 3) restructuring inefficient producers and encouraging differentiated product development,

[5] Oxford Economics, "The Global Chemical Industry: Catalyzing Growth and Addressing Our World's Sustainability Challenges," March 2019. *https://oeservices.oxfordeconomics.com/publication/download/311002*.
[6] Li Hou, *Building for Oil: Daqing and the Formation of the Chinese Socialist State* (Cambridge: Harvard University Asia Center, 2018), 195. China's first ethylene plant, a 300,000-ton capacity facility in Beijing, opened in 1976. See SASAC, "Years of Burning Passion: The Ethylene Miracle Under the Taihang Mountains [燃情岁月 太行山下的乙烯奇迹]," November 17, 2024. *http://vod.sasac.gov.cn/folder21/folder25/2024-11-21/lUg0sJUXNPLk27rJ.html*.
[7] Jörg Wuttke, "The Petrochemical Industry in China," in *The Chemical and Pharmaceutical Industry in China*, ed. Gunter Festel, Udo Oels, Andreas Kreimeyer, and Max von Zedtwitz (Berlin: Springer, 2005), 9–22. *https://doi.org/10.1007/3-540-26561-9_2*.

and 4) attracting foreign capital and technology to gradually indigenize leading capabilities.[8] All of these remain hallmarks of China's chemicals strategy today.

Beijing gradually elevated upgrading chemical production technology and developing high-end products to the top of the policy agenda. By the *12th Five-Year Plan for the Petrochemicals and Chemicals Industry* in 2011, Beijing concluded there had been significant progress on capacity expansion, but assessed that high-quality domestic equipment and high-end chemical products were still lacking. In addition, feedstock bottlenecks remained unresolved and the industry remained too fragmented to achieve the desired economies of scale.[9] Like with other traditional heavy industries, Beijing has placed increasing emphasis on advanced manufacturing, with production processes evolving toward smart manufacturing, digitalization, and, most recently, the integration of AI. It has also emphasized movement up the value chain, setting R&D targets to foster development of higher value-added specialty and fine chemicals.

Supply chain security objectives are increasingly explicit within chemicals industry plans. While Beijing has long been anxious about China's feedstock deficit, the balance of its concerns has evolved from addressing constraints on industry competitiveness and meeting rising domestic demand to eliminating foreign dependencies that could be economic security chokepoints. The Ministry of Industry and Information Technology's (MIIT) most recent formulation reflects this shift, stating that petrochemicals "play an important role in stabilizing economic growth and ensuring energy and supply chain security."[10] Developing the capacity to support a coal-to-chemicals pipeline is Beijing's primary strategy for leveraging domestic resources and bypassing oil-based production dependencies. Beijing has invested heavily in coal-to-chemicals despite its high environmental cost and unfavorable economics (except when oil is very expensive relative to domestic coal, as it is now).[11] As of end-2024, coal-to-olefins accounted for 15% of China's capacity for ethylene and propylene, two foundational base chemicals. A March 2026 industry survey identified over RMB 300 billion ($44.6 billion) worth of proposed or

[8] NDRC, "Special Long-Term Development Plan for Ethylene Industry [乙烯工业中长期发展专项规划]," December 2005. *https://www.ndrc.gov.cn/fggz/fzzlgh/gjjzxgh/200710/P020191104623348065018.pdf*.

[9] MIIT, "Notice on Issuing the 12th Five-Year Plan for Petrochemicals and Chemicals Industry [关于印发《石化和化学工业"十二五"发展规划》的通知]," December 13, 2011. *https://policy.mofcom.gov.cn/claw/clawContent.shtml?id=3110*.

[10] MIIT, "Notice on Issuing the 'Action Plan for Strengthening Promotion of Renewal and Upgrading of Aging Equipment in the Petrochemicals Industry (2026-2029)' [关于印发《加力推进石化化工行业老旧装置更新改造行动方案（2026－2029 年）》的通知]," April 3, 2026. *https://www.miit.gov.cn/zwgk/zcwj/wjfb/tz/art/2026/art_5fbbef2f9f6d4aba8eedb1e05b43dd94.html*.

[11] Coal-to-chemicals processes have high carbon emissions and energy and water requirements relative to using oil- or gas-based feedstocks. In addition, coal-to-chemicals production is concentrated in China's coal-rich northwestern provinces, meaning materials must be transported over long distances to reach downstream manufacturers in other regions. See *China Oil and Petrochemicals*, "Survival of Coal-to-Ethylene Glycol Still Difficult Under High Oil Prices [高油价下煤制乙二醇生存犹艰]," July 13, 2022. https://www.ndrc.gov.cn/fggz/cyfz/zcyfz/202207/t20220715_1330750.html; Sam Li and Colleen Howe, "Chinese Alchemy: Cheap Fuel Powers Coal-to-Gas and Chemicals Boom," *Reuters*, September 4, 2025. *https://www.reuters.com/sustainability/climate-energy/chinese-alchemy-cheap-fuel-powers-coal-to-gas-chemicals-boom-2025-09-04/*.

under-construction projects.[12] China has also increased the share of ethane (which it imports from the United States) within its feedstock mix as an additional diversification (and cost-cutting) option. The United States briefly imposed licensing requirements on its ethane exports to China in the context of escalating trade tensions in mid-2025. While these restrictions reportedly affected production at ethane-only crackers in China, much of China's newer capacity consists of "flexi-crackers" that can switch between feedstocks, partially mitigating US leverage.[13]

INDUSTRY ECONOMICS AND STATE SUPPORT

China faces unfavorable feedstock economics and struggles to be cost-competitive in petrochemicals. Feedstock is by far the most important determinant of production costs for base petrochemicals, and China's options are expensive (see Table 2).[14] Feedstock usage varies by region depending on resource and technology availability. China, like other Asian and European producers, primarily uses naphtha-based feedstock derived from crude oil, while natural gas-derived ethane is more common in North America and the Middle East.[15] When the price of crude oil is high relative to natural gas—as has generally been the case since the US shale boom—ethane-using producers enjoy an advantaged position at the low end of the global ethylene cost curve.[16]

TABLE 2
Simplified cost structure of a hypothetical basic chemicals plant

Variable costs	Fixed costs
Feedstock (naphtha, ethane, etc.)	Land
Utilities (electricity, water, etc.)	Plant construction
Process chemicals (e.g., catalysts)	Machinery and equipment

[12] China Coal Transportation and Distribution Association, "Overview of the Development Status of China's Coal Chemicals Industry, Data as of End-2024 [我国煤化工产业发展现状概述，数据统计截至 2024 年底]," October 20, 2025. *https://www.cctda.org.cn/index.php?m=content&c=index&a=show&catid=23&id=4484*; *Sina Finance*, "Summary of Over RMB 300 Billion in Planned Coal-to-Olefin Projects Under Construction [超 3000 亿 拟在建煤制烯烃项目汇总]," March 1, 2026. *https://finance.sina.com.cn/roll/2026-03-01/doc-inhpnmvs6195189.shtml*.

[13] Josh Eiermann, "EIA Forecasts New Export Licensing Requirements Will Reduce US Ethane Exports," US Energy Information Administration, June 18, 2025. *https://www.eia.gov/todayinenergy/detail.php?id=65505#*; Nils Jenson, "US Ethane Exports to China At Risk Due to New Licensing Requirements," Kpler, May 30, 2025. *https://www.kpler.com/blog/us-ethane-exports-to-china-at-risk-due-to-new-licensing-requirements*; Philip Luck, "US-China Trade Talks in London: Ethane Export Controls and the Need for Better Economic Statecraft," CSIS, June 9, 2025. *https://www.csis.org/analysis/us-china-trade-talks-london-ethane-export-controls-and-need-better-economic-statecraft*.

[14] IEA, "Simplified Levelised Cost of Petrochemicals for Selected Feedstocks and Regions, 2017," October 5, 2018. *https://www.iea.org/data-and-statistics/charts/simplified-levelised-cost-of-petrochemicals-for-selected-feedstocks-and-regions-2017*.

[15] According to data from Longzhong Information, 73% of China's ethylene capacity uses naphtha-based feedstock.

[16] Alexander Tullo, "The Party is Over for North American Petrochemical Makers," *C&EN*, February 16, 2026. *https://cen.acs.org/business/petrochemicals/party-over-North-American-petrochemical/104/web/2026/02*.

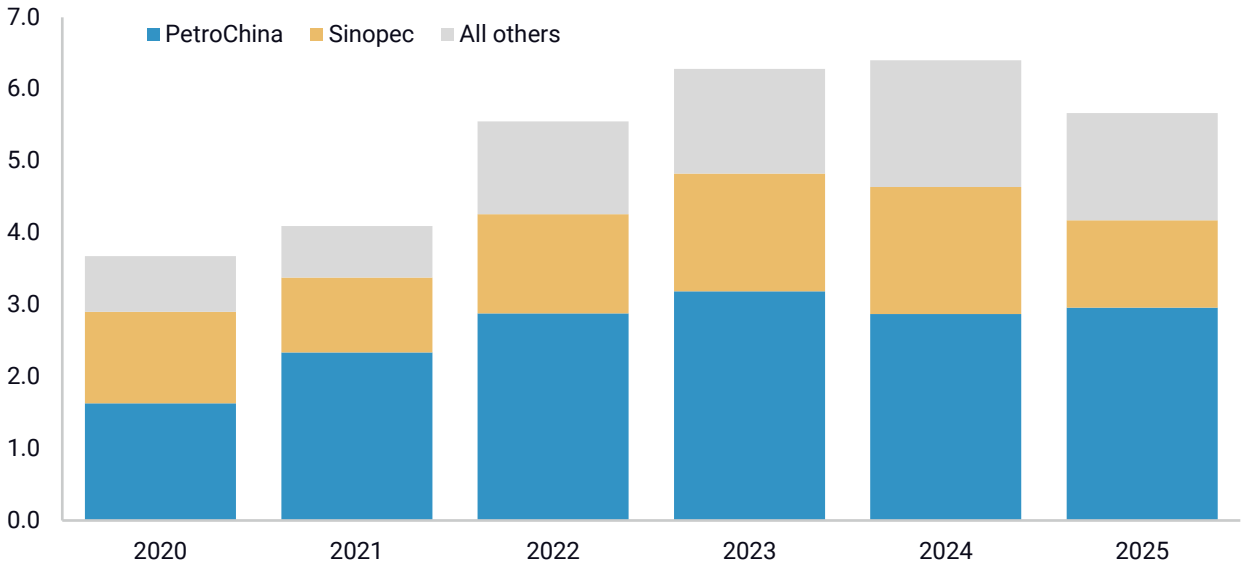
Logistics (shipping, storage, etc.)	Labor
Co-products (cost reduction)	

Source: Rhodium Group research

Beyond promoting feedstock diversification, is difficult to quantify, because it is opaque and often indirect. Nonetheless, state intervention has helped create scale and agglomeration effects, upgrade plant efficiency and production technology, provide low-cost financing and inputs, and provide a safety net to sustain producers even through prolonged downturns.

- **Government grants:** While direct grants come in many forms, they are primarily used to offset a portion of producers' capital expenditures, including equipment retrofitting and upgrades to enhance efficiency and safety, R&D, and relocation into industrial parks (see below). Grants to the chemicals sector are highly concentrated in Sinopec and PetroChina, the two state-owned industry giants who together received $4.6 billion in direct government support in 2024 (Figure 2). Grants have been used to incentivize development for strategic technologies, for instance a program in Shanghai that provides up to RMB 20 million to develop chemicals for use in chokepoint semiconductor technologies.[17]

FIGURE 2
Government grants to listed Chinese chemicals firms
USD billions



Source: Bloomberg, Rhodium Group calculations

[17] Shanghai Municipal People's Government, "Notice on Issuing the Revised 'Implementation Measures for Special Support to Promote High-Quality Industrial Development in the Shanghai Chemical Industry Park' [关于印发修订的《上海化学工业区促进产业高质量发展专项扶持实施办法》的通知]," August 28, 2024. *https://www.shanghai.gov.cn/nw12344/20241106/139a4d6742864c5ca70c823c99bb4974.html*.

- **Tax relief**: Ethylene and aromatics producers have benefitted from an exemption on naphtha consumption tax since 2011, helping reduce feedstock costs.[18] Media reported on a potential shift from a full tax exemption to a partial rebate system in early 2026, which industry analysts argued could hurt producer margins (potentially confirming the importance of tax forbearance for profitability), but the Ministry of Finance has yet to announce a formal policy change as of August.[19] Many chemicals producers also qualify for an economy-wide 200% pre-tax super deduction of R&D expenses.[20]

- **Industrial parks:** Beijing has instructed localities to develop industrial parks and relocate existing facilities in order to capture economies of scale and reduce environmental and safety hazards near residential districts.[21] Vertically integrated co-location of oil refineries, steam crackers, and downstream plastics producers also reduces logistics costs and improves utilization rates for co-products. Industrial parks also allow producers to share common infrastructure, utilities, and waste management. In 2022, MIIT set a target of raising the share of chemicals sector value generated within industrial parks to 70% by 2025.[22] Industry database ChemNet currently lists 798 industrial parks across 31 provinces, with 89 in Shandong alone.[23]

- **Below-market financing**: The People's Bank of China's (PBOC) offers multiple re-lending programs to extend low-interest rate loans to support a variety of industrial policy goals, including to lower the cost of financing equipment purchases. Through this facility, the PBOC re-lends to commercial and policy banks at a 1.25% interest rate up to 60% of the value of the banks' loans to manufacturers in support of equipment renewal and technology upgrading. According to state media reporting, as of November 2025 participating banks had contracted loans worth a combined RMB 330 billion with 700 chemicals producers under the re-lending facility.[24]

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[18] Ministry of Finance, "Guidance on Major Preferential Tax Policies Supporting Manufacturing Development in China [我国支持制造业发展主要税费优惠政策指引]," April 2024. *https://szs.mof.gov.cn/zhengcefabu/202404/P020240425419605339707.pdf*.

[19] Sam Li and Mohi Narayan, "China's Naphtha Imports to Rise Ahead of Tax Revamp, Traders Say," *Reuters,* January 21, 2026. *https://www.reuters.com/world/asia-pacific/chinas-naphtha-imports-rise-ahead-tax-revamp-traders-say-2026-01-21/*; Mariana Santos Moreira, "Mainland China's Naphtha Tax," OPIS Chemical Market Analytics, February 16, 2026. *https://chemicalmarketanalytics.com/insights/mainland-chinas-naphtha-tax/*.

[20] Arendse Huld, "Pre-Tax Super Deduction of R&D Expenses in China – An Explainer," China Briefing, May 10, 2023. *https://www.china-briefing.com/news/china-rd-expenses-pre-tax-super-deduction-explainer/*.

[21] MIIT, "MIIT Publishes Guiding Opinions on Promoting Standardized Development of Chemicals Industrial Parks [工业和信息化部印发促进化工园区规范发展指导意见]," December 10, 2015. *https://www.miit.gov.cn/jgsj/ycls/shhg/art/2020/art_5f71967f26f540228a810ad1617f13be.html*; MIIT, "Notice on Promoting the Standardized Construction and High-Quality Development of Chemical Industrial Parks [关于推进化工园区规范建设和高质量发展有关工作的通知]," August 8, 2025. *https://www.miit.gov.cn/zwgk/zcwj/wjfb/tz/art/2025/art_7b1d01b40c0c46fbb2eeb38a2af02f5d.html*.

[22] MIIT, "Guiding Opinions on the 14th Five-Year Plan for Promoting High-Quality Development in the Petrochemicals Industry [关于"十四五"推动石化化工行业高质量发展的指导意见]," *https://www.miit.gov.cn/zwgk/zcwj/wjfb/yj/art/2022/art_4ef438217a4548cb98c2d7f4f091d72e.html*.

[23] ChemNet, "Complete List of Industrial Parks [园区大全]," accessed August 21, 2026. *https://china.chemnet.com/park/park--------5.html*.

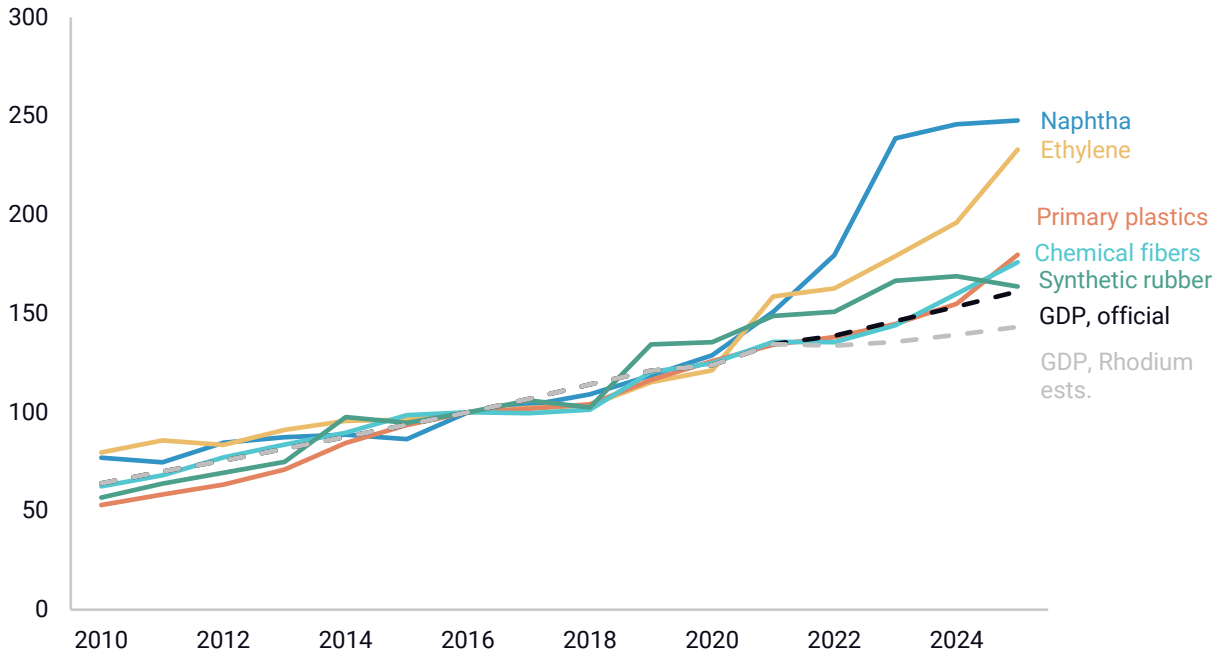
[24] Qu Peiran, "Petrochemical Industry Launches Refresh of Old Facilities [石化产业启动老旧装置'焕新']," *People's Daily*, April 13, 2026. *https://paper.people.com.cn/zgnyb/pc/content/202604/13/content_30151114.html*.

- **Support for downstream industries:** Beijing's concurrent support for a wide range of chemicals-consuming industries (e.g., automotive and advanced electronics) provides a reliable source of downstream demand and lowers the perceived risk of investment in and financing for new chemicals capacity.

From capacity expansion to industry distress

In pursuing its self-sufficiency and industrial upgrading goals, China has dramatically expanded its production capacity throughout petrochemical value chains. At an aggregate industry level, China's output of primary plastics, chemical fibers, and synthetic rubber increased by 65-80% from 2016 to 2025 in volume terms, with growth rates accelerating over the past five years relative to overall GDP growth (Figure 3). Rapid growth in commodity chemicals has been just one part of a broader value chain buildout ranging from feedstocks to end-use products. Upstream output growth has been especially strong: naphtha and ethylene output have more than doubled since 2016, with most of the growth coming after 2021.

FIGURE 3
China's industrial output along the petrochemicals value chain
Volume index, 2016 = 100



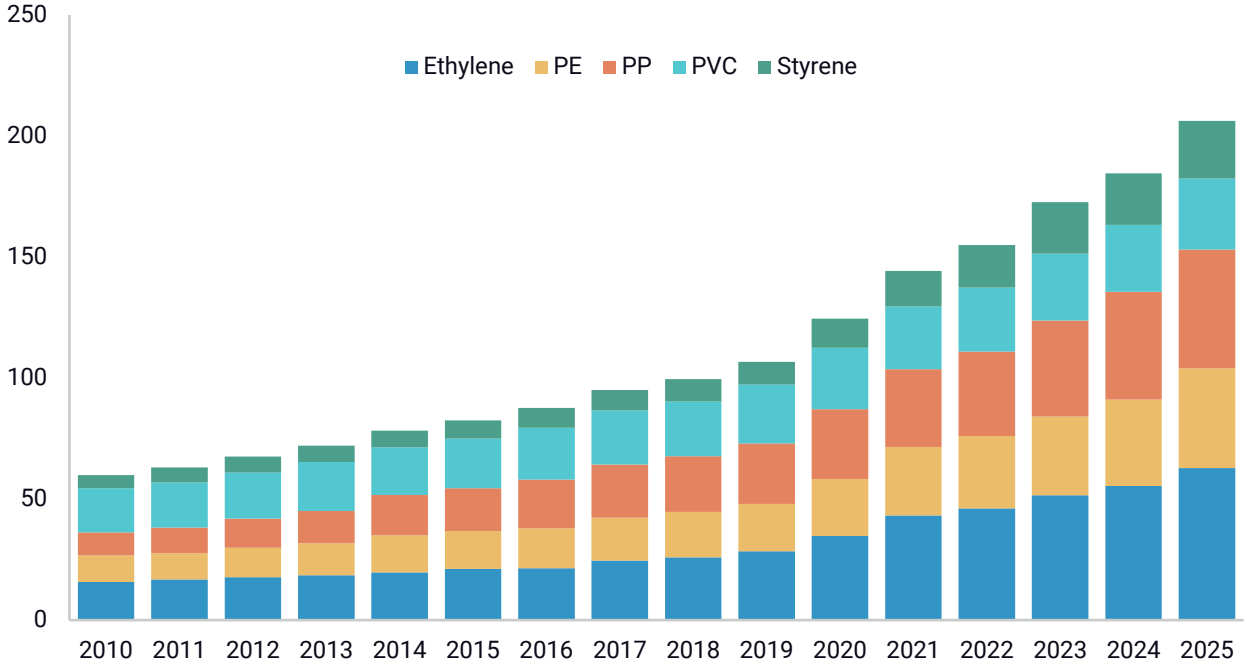
Source: National Bureau of Statistics, Rhodium Group

Foreign producers also expanded their presence in China, often motivated by optimistic projections for China's domestic demand and their prospects for integrating into China's downstream manufacturing ecosystem. In the past five years, industry giants ExxonMobil, BASF, and SABIC announced final decisions on over $25 billion in combined greenfield investment in petrochemicals complexes in Guangdong and Fujian provinces.[25] The

[25] ExxonMobil, "ExxonMobil to Invest in Petrochemical Complex in China," November 8, 2021. *https://corporate.exxonmobil.com/news/news-releases/2021/1108_exxonmobil-to-invest-in-petrochemical-*

ExxonMobil and BASF investments are the first wholly foreign-owned, large-scale petrochemicals complexes in China, having revised the foreign investment negative list as a way to encourage the foreign giants to invest. The three complexes include a combined planned annual capacity of 4.4 million metric tons of ethylene alongside downstream facilities. Yet even with these recent mega-investments, foreign players represent a declining share of China's petrochemicals capacity in longer-term perspective.

FIGURE 4
China's petrochemicals capacity, selected products, 2010 – 2025
Annual output capacity in millions of metric tons



Source: Longzhong Information, Rhodium Group calculations

China's policy drive for self-sufficiency led to overinvestment, with chemicals capacity overshooting domestic demand. By April 2023, the China Petroleum and Chemical Industry Federation concluded that "most products are experiencing excess capacity."[26] Yet MIIT lagged well behind the industry's assessment, continuing in an August 2023 industry work plan to call for "acceleration of major petrochemicals projects."[27] It wasn't until September 2025 that official policy documents directly acknowledged the role of domestic demand weakness and called for an excess capacity monitoring and warning

complex-in-china; BASF, "BASF Gives Final Approval for the Construction of the Zhanjiang Verbund Site," July 19, 2022. https://www.basf.com/global/en/media/news-releases/2022/07/p-22-300; SABIC, "SABIC Announces Final Investment Decision for the SABIC Fujian Petrochemical Complex," January 22, 2024. https://www.sabic.com/en/news/42713-sabic-fujian-investment.

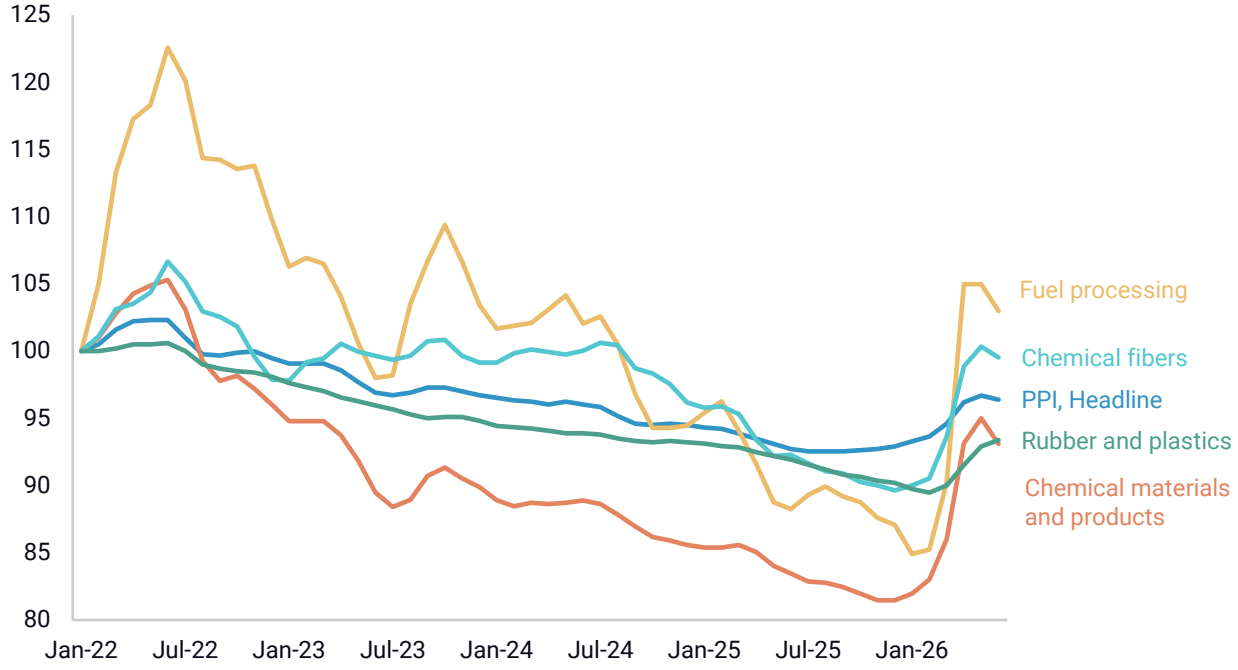
[26] China Petroleum and Chemical Industry Federation, "Report Warning on Capacity in Key Petrochemical Products Issued [重点石化产品产能预警报告发布]," April 2023. http://www.cpcif.org.cn/detail/59d0b6a6-f9eb-4e9a-b874-41613ae6ed8e.

[27] MIIT, "Notice on the Issuance of the 'Work Plan for Stabilizing Growth in the Petrochemicals and Chemicals Industry' [关于印发《石化化工行业稳增长工作方案》的通知]", August 25, 2023. https://www.miit.gov.cn/jgsj/ycls/wjfb/art/2023/art_f5c5db677a664b0385aeec2f908ff163.html.

mechanism.[28] But by that time, the capacity expansion had already imposed a significant cost on the industry's financial performance.

The producer price of chemicals in China fell for four consecutive years. The producer price indices (PPI) for chemicals-related industries fell almost continuously from 2022 Q2 to 2026 Q1, outpacing the decline in overall PPI over the same period (Figure 5). These price pressures came amid near-record high crude oil prices in mid-2022, which increases input costs for chemicals. 2022 also marked the start of a broader deflationary cycle throughout the economy, which affected downstream manufacturers and consumers, due to the shortfall in domestic demand in China. In the Chemical Materials and Products industry, which covers base chemicals and primary plastics, price levels fell by nearly 20% percentage points from the start of 2022 to end-2025. Price declines occurred throughout the value chain, from refined petroleum products to rubber, plastic products, and chemical fibers. Prices have shot up in recent months due to the global energy shock, but even so they remain below early-2022 levels.

FIGURE 5
Producer price indices, selected industries, Jan 2022 – Jun 2026
Index, Jan 2022 = 100

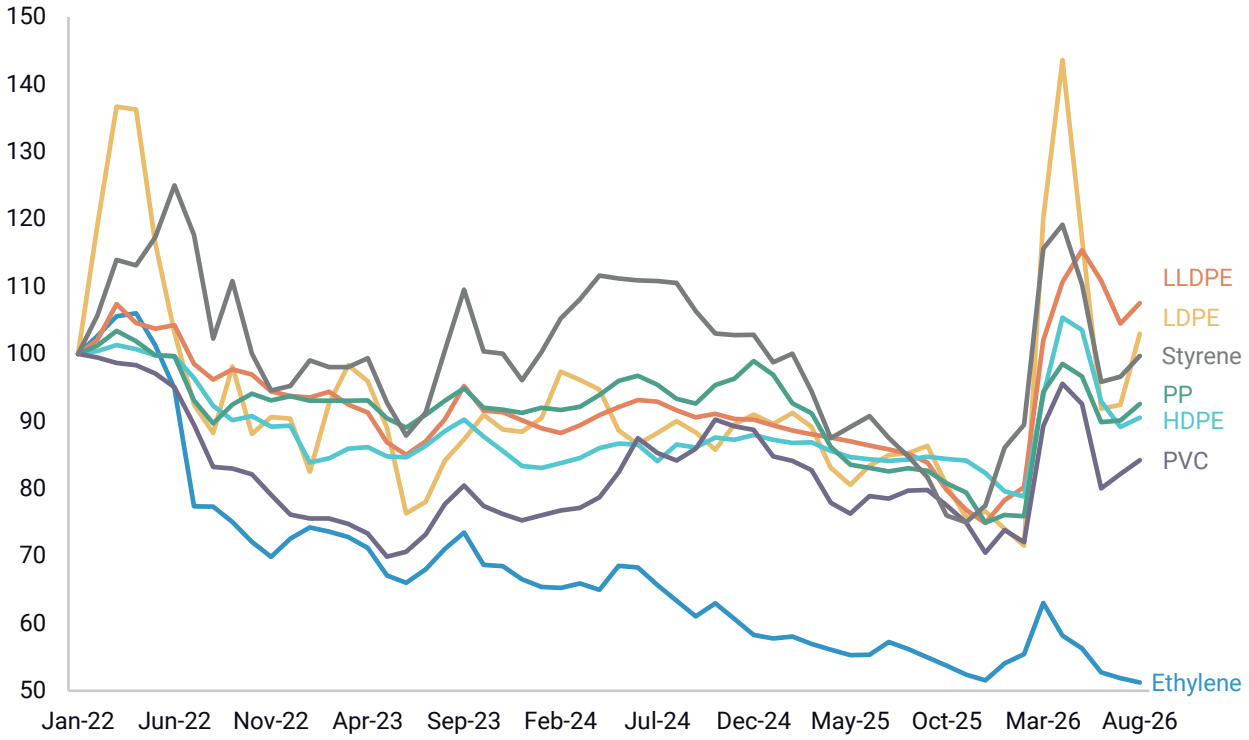


Source: National Bureau of Statistics, Rhodium Group calculations

These price declines occurred across bulk commodity product markets. The domestic prices of ethylene, PE, PP, PVC, and styrene all followed aggregate industry prices downward from 2022-5 (Figure 6). The price of ethylene, the key building block of many downstream plastics, has fallen by as much as 40% since the start of 2022.

[28] MIIT, "Notice on the Issuance of the 'Work Plan for Stabilizing Growth in the Petrochemicals and Chemicals Industry (2025-6)' [关于印发《石化化工行业稳增长工作方案（2025-2026 年）》的通知]," September 25, 2025. *https://www.miit.gov.cn/jgsj/ycls/wjfb/art/2025/art_f784501408694ec7abb15ec426d43748.html*.

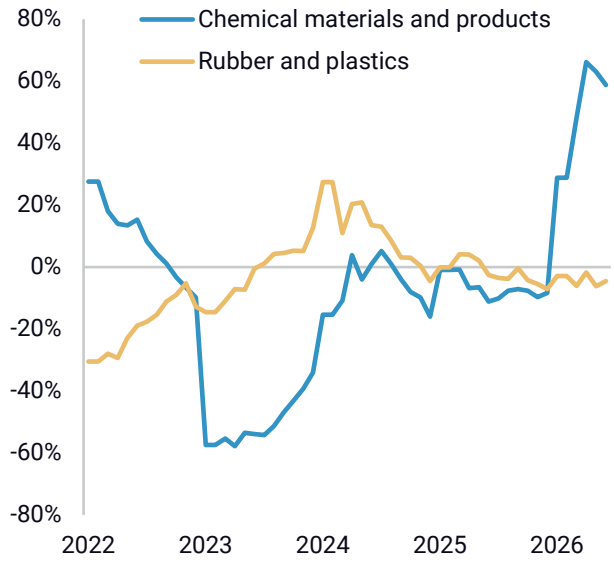
FIGURE 6
Petrochemical prices in China, Jan 2021 – Jul 2026
Index, Jan 2022 = 100



Source: Longzhong Information. LDPE = low-density polyethylene; LLDPE = linear low-density polyethylene; HDPE = high-density polyethylene.

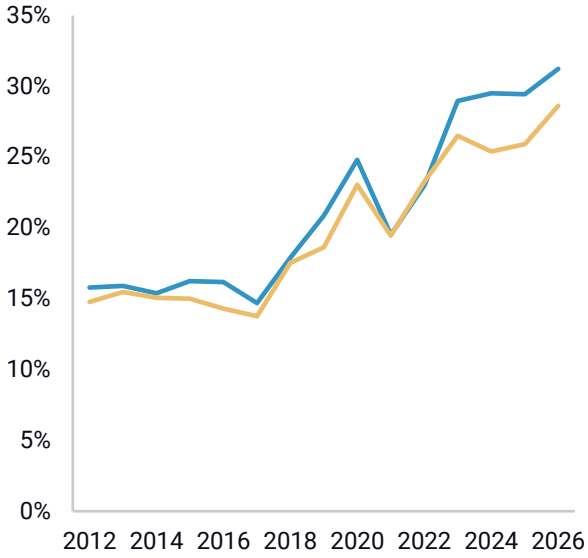
Falling prices have eroded industry profits. Aggregate industry profits have contracted for most of the past four years despite expanding output, with declining selling prices outweighing declining input costs (Figure 7). As many as 31% of Chinese chemicals producers and 29% of rubber and plastics producers are now loss-making (Figure 8). A recent windfall for base chemicals producers has not extended downstream to rubber and plastics, highlighting weak price passthrough given weak underlying demand. In the case of ethylene, gross margins have been consistently negative for both the dominant naphtha feedstock pathway and for the coal-to-chemicals route (Figure 9).

FIGURE 7
Chemicals industry profits
Year-on-year percent change



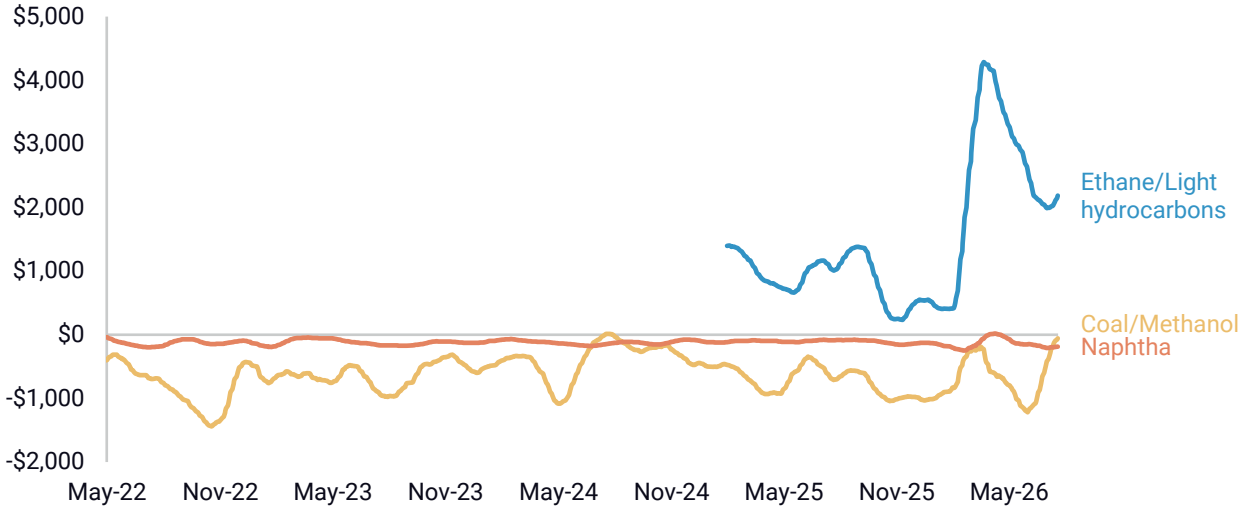
Source: National Bureau of Statistics

FIGURE 8
Loss-making enterprises
Share of industry total



Source: National Bureau of Statistics. Annual averages.

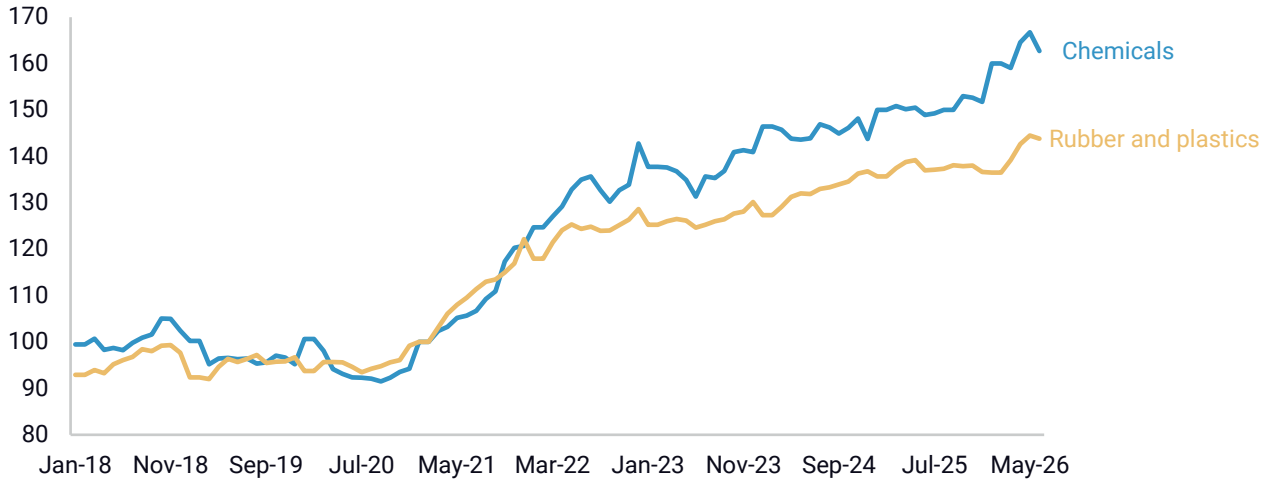
FIGURE 9
Gross ethylene profit margins in China by feedstock
USD per metric ton, 30-day trailing average



Source: Longzhong Information. Profit margins for ethane not reported prior to February 2025.

Sustained output growth despite weak demand resulted in large-scale inventory accumulation. The volume of chemicals inventories jumped by 38% during 2021-2, as collapsing aggregate demand led to unsold or unused product piling up in storage (Figure 10). Rubber and plastics inventories rose by 25% over those two years. Inventories have only grown since, rather than periodically stocking and destocking as would be expected in standard business cycles. The existence of large stockpiles creates additional downward pressure on prices in already slack markets.

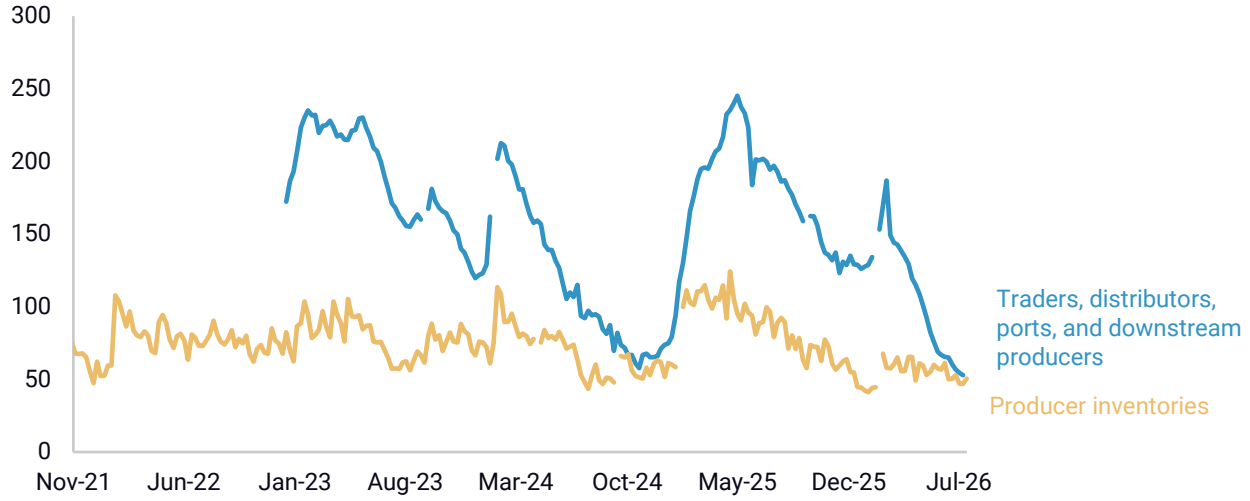
FIGURE 10
Rising industrial inventories of chemicals, rubber and plastics, Jan 2018 – Jun 2026
Volume index, Jan 2021 = 100



Source: National Bureau of Statistics, Rhodium Group calculations

Aggregate industry indicators might understate the true size of inventory stockpiles. In many product markets, inventories may be primarily held outside of producer warehouses, and therefore outside the coverage of the NBS industrial enterprise survey. While detailed and timely inventory statistics are not available for most individual products, low-density polyethylene (LDPE) offers one such example. For most of the past several years, a sizable majority of LDPE inventories have been held not by LDPE producers but by traders, distributors, ports, and downstream producers (Figure 11). These stocks also exhibit far greater cyclicality than those shown in official data series. If inventories are larger than aggregate industry data show, they could act as a restraint on LDPE prices as well as on demand for base chemicals and feedstocks further upstream.

FIGURE 11
LDPE inventories are mostly held outside of producer warehouses, outside official statistics
Thousand metric tons



Source: Longzhong Information

Capacity outlook: Slower growth, but imbalances persist

Even if China stopped building new chemicals capacity today, the damage to industry fundamentals would likely take years to resolve organically. Industry-wide capacity utilization rates in the US, Europe, and China have dipped down into the low-to-mid 70s, far below long-term averages, indicating major slack across the industry globally.[29] The picture is far worse for key individual products: in Japan, utilization rates for ethylene, PE, and PP now range from the 30s to 50s.[30]

Faster resolution would require either significant demand growth or unpalatable decisions by businesses or policymakers to close existing capacity. While Chinese chemicals producers are now slowing new investment following years of unprofitability, there are many upcoming projects still in the pipeline. Beijing has launched an "anti-involution" campaign to resurrect the ailing industry, but its preferred tactics for ending price wars rely on efficiency upgrades, tax policy adjustments, and minimum price commitments—not on forcing meaningful closures. To the contrary, Beijing is pushing domestic suppliers to upgrade into higher-value and higher-margin downstream products. The goal is to sustain demand for chemical intermediates even as domestic demand for end-use goods continues to slump, and the net effect will be negative for the global industry. The structural factors behind the depressed industry price environment are unlikely to resolve in the near term, and could deteriorate further, as export markets remain an important outlet for Chinese production.

Tracking the investment pipeline

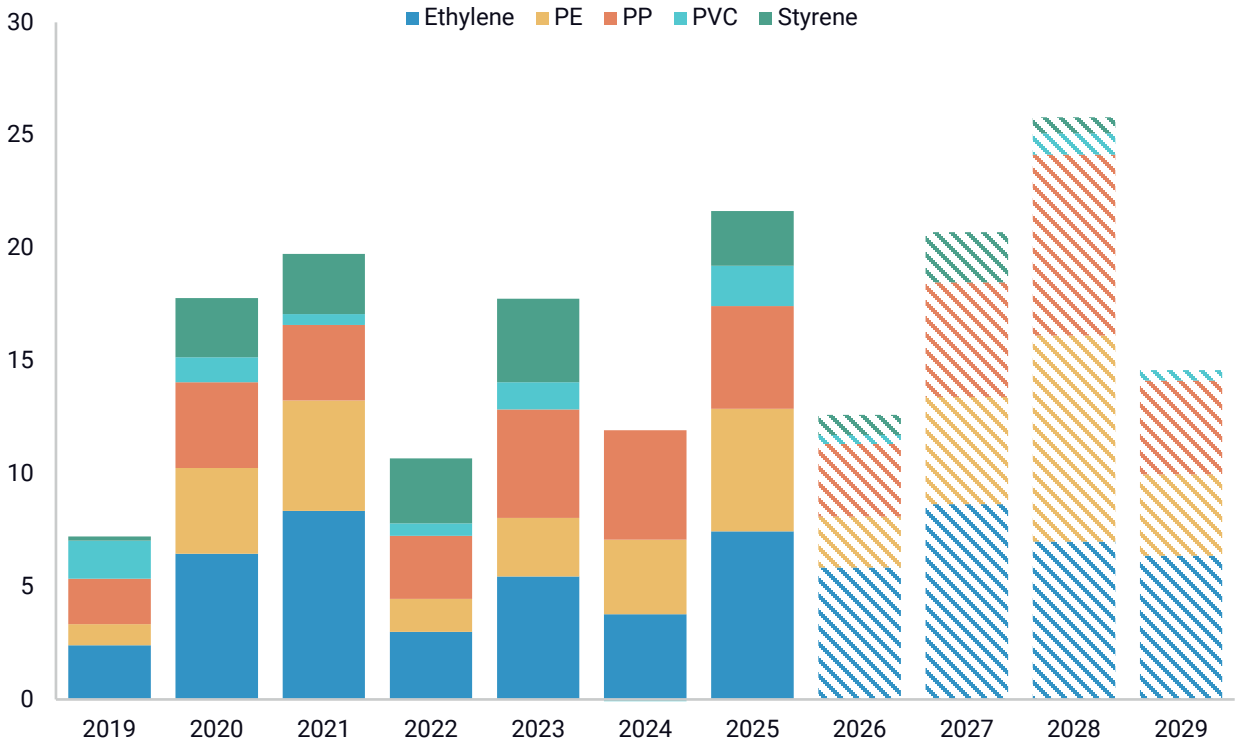
Many new petrochemical plants have already been approved and are baked into future supply growth projections. Given multi-year development timelines and high fixed capital costs, many facilities that will enter production over the next few years are already under construction. Investment decisions on these projects were made under better market conditions and a more supportive policy environment. A combined 73.7 million metric tons of ethylene, PE, PP, PVC, and styrene capacity additions are planned for 2026-9 (Figure 12). Although this represents a slowdown from 81.7 million metric tons (Mt) added from 2021-5, it is still enormous in international context: Producers in China plan to add 27.8

[29] Board of Governors of the Federal Reserve System, "Capacity Utilization: Manufacturing: Nondurable Goods: Chemical (NAICS = 325)," FRED, accessed August 21, 2026. *https://fred.stlouisfed.org/series/CAPUTLG325SQ*; Directorate-General for Economic and Financial Affairs, "Industry Survey (Quarterly Data for NACE Rev.2 Subsectors)," accessed August 21, 2026. *https://webgate.ec.europa.eu/ecfin/redisstat/databrowser/view/bcs_indu_sub_q__custom_9443/default/table?lang=en*; National Bureau of Statistics, "Capacity Utilization Rate at Industrial Enterprises Above Designated Size at 73.6% in 2026 Q1 [2026 年一季度全国规模以上工业产能利用率为 73.6%]," April 16, 2026. *https://www.stats.gov.cn/sj/zxfb/202604/t20260416_1963322.html*.

[30] METI, "Current Survey of Production: Revised Report," August 17, 2026. *https://www.meti.go.jp/english/statistics/tyo/seidou/index.html*.

Mt and 19.7 Mt of ethylene and PE capacity by 2029, exceeding the entire current installed capacity in Europe for both products.[31]

FIGURE 12
Capacity additions by product and year, 2019-25 (actual) and 2026-9 (planned)
Million metric tons

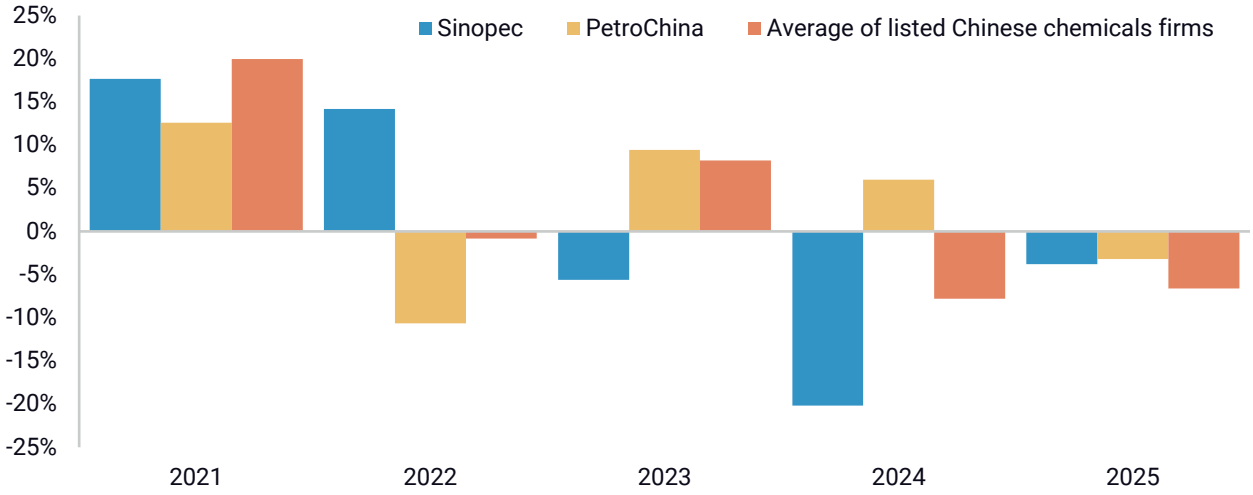


Source: Longzhong Information

However, deteriorating industry performance is factoring into future investment decisions. Forward-looking indicators suggest that new investment growth in China will slow from its recent pace. Figure 13 displays the annual growth rate of capital expenditure of Chinese chemicals producers whose stock trades on onshore and/or international exchanges. Capital expenditure by the average firm in this sample has declined in three out of four years since 2022. This represents a sharp slowdown from 2021, when capital expenditure rose by 20% with the development of plants that entered production within the past five years or are still under construction. Investment by the two central SOEs that sit at the core of China's petrochemicals supply chain, Sinopec and PetroChina, largely tracks the broader industry trend.

[31] S&P Global, "Platts Chemical Trends H1 2026: Ethylene," 2026. *https://www.spglobal.com/energy/en/news-research/special-reports/chemicals/chemical-trends-h1-2026/rationalisation/ethylene*; Eren Çetinkaya et al., "Polyethylene: Widely Produced—But Not One-Size-Fits-All," McKinsey Global Institute, June 30, 2026. *https://www.mckinsey.com/mgi/our-research/polyethylene-widely-produced-but-not-one-size-fits-all*.

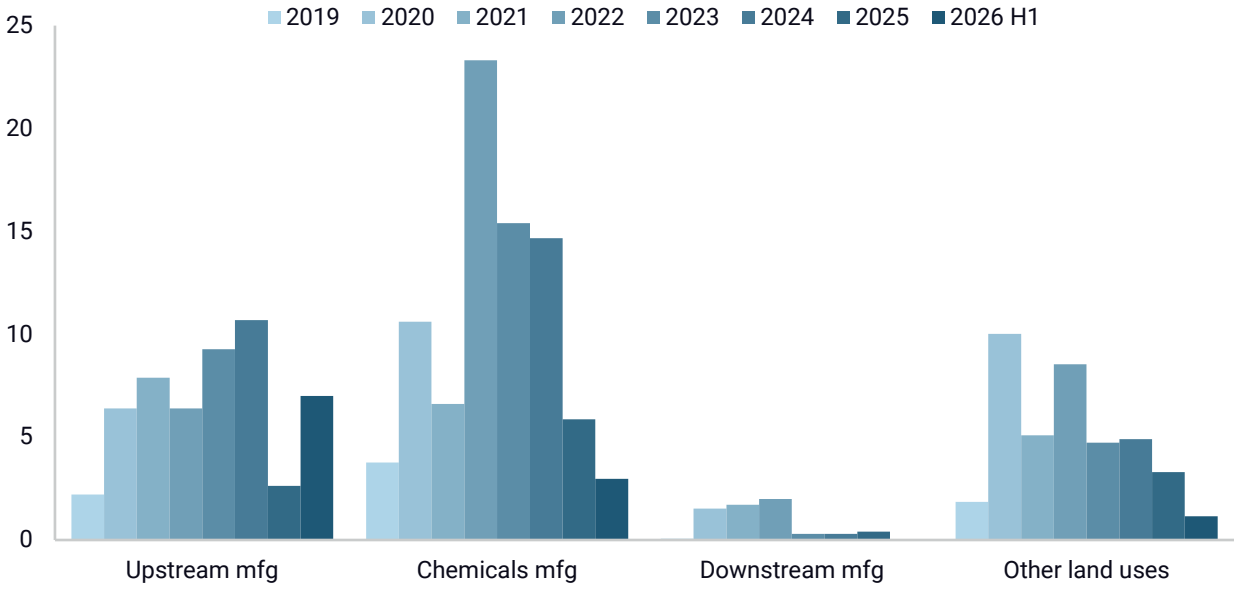
FIGURE 13
Capital expenditure of publicly traded Chinese chemicals producers
Year-on-year percent change



Source: Bloomberg, Rhodium Group calculations

Chinese chemicals companies are also purchasing less industrial land, a potential leading indicator that new facility construction is declining. Rhodium Group reviewed individual land transactions covering 56 major producers and their subsidiaries. Unlike capital expenditure, our land purchases database includes both listed and unlisted firms. Following a steady increase from 2019-22, land purchases by chemicals producers are now falling sharply on a square footage basis, both for chemicals manufacturing facilities and for other uses elsewhere along the value chain (Figure 14). This does not rule out the possibility of facility upgrades or expansions on existing plots of land.

FIGURE 14
Industrial land purchases by chemicals producers in China, 2019 – 2026
Million square meters



Source: Ministry of Natural Resources, Rhodium Group

China's "anti-involution" campaign

Beginning around mid-2024, Beijing launched a campaign to rectify "involutionary competition" plaguing Chinese industries. The campaign is best understood not as a singular policy or event but rather as a multi-pronged effort to restore profitability and healthier competitive dynamics across Chinese manufacturing and services industries. Following the July 2024 Politburo meeting, strong rhetoric on the need to phase out "backward" and inefficient capacity began to appear throughout state media and official meeting readouts.[32] While the concept of "involution" remains vaguely defined and manifests differently across industries, perhaps the most authoritative expression appeared in a July 1, 2025 commentary published in official Party journal *Qiushi*. The article called for an end to race-to-the-bottom price competition, redundant and homogenous investment, and local protectionism—all dynamics on full display in China's chemicals sector.[33] On the same day, Xi Jinping chaired a meeting of the Central Financial and Economic Affairs Commission, emphasizing the need for companies to compete on product quality rather than on price alone.[34] These themes were amplified at the Central Economic Work Conference and National People's Congress, the highest-profile annual economic policy meetings on China's political calendar.

Cutting capacity is not a major emphasis of the campaign as applied to the chemicals sector. Strongly worded top-level guidance led some industry observers to anticipate significant supply cuts, misreading Beijing's intent. Many observers and investors recalled China's 2015-6 "supply-side reform," when Beijing mandated closures to address overcapacity in traditional heavy industries, such as steel, aluminum, and cement. Yet specific implementation mechanisms adopted under the "anti-involution" umbrella slogan have revealed that policymakers' true priorities are very different in this round.

In chemicals, the campaign's primary policy objectives have been to restore industry profitability and upgrade outdated facilities to improve the efficiency of production. While reducing capacity can be a means toward those ends, it has rarely appeared as an explicit policy objective *per se.* Chinese policymakers at both the central and local levels view large-scale plant closures as highly undesirable, given the implications for employment and local economies. Capacity closures also cut against Beijing's self-sufficiency and supply chain security goals, for which redundancy is often seen as a source of resiliency, not as a burden on industry.

Policy mechanisms have instead focused on upgrading existing facilities, raising barriers to new capacity additions, and lifting prices. The net effect is unlikely to significantly reduce capacity, though expansion may slow going forward. Several policy measures are most illustrative:

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[32] *Xinhua News Agency*, "Politburo Holds Meeting on the Current Economic Situation and Economic Work [中共中央政治局召开会议 分析研究当前经济形势和经济工作]," July 30, 2024. *https://www.news.cn/politics/leaders/20240730/4c72f3d27e54447f9793c20d1d577ec2/c.html*.

[33] Ju Li, "Deeply Understand and Comprehensively Rectify 'Involution-Style' Competition [深刻认识和综合整治‘内卷式’竞争]," *Qiushi*, July 1, 2025. *https://www.qstheory.cn/20250629/6d682af56d64487f817084e890fbcdfd/c.html*.

[34] *Xinhua News Agency*, "Xi Jinping Chairs Sixth Meeting of the Central Financial and Economic Affairs Commission [习近平主持召开中央财经委员会第六次会议]," July 1, 2025. *https://www.gov.cn/yaowen/liebiao/202507/content_7030285.htm*.

- **Equipment trade-in program:** Recognizing an urgent domestic demand shortfall, Beijing in fall 2024 unveiled a stimulus package that included subsidized trade-ins for both consumer durables (home appliances, autos, etc.) and manufacturing equipment. Petrochemicals was the first priority industry targeted for equipment trade-ins in a September 2024 implementation document published by MIIT.[35] The document states that petrochemicals equipment upgrades should focus on raising energy efficiency, lowering pollution, improving equipment safety, increasing digitalization, and modernizing manufacturing operating systems and industrial software. The initial package was funded through RMB 150 billion in central government special treasury bonds, plus an interest-rate subsidy on commercial bank loans.[36] According to the NDRC, the full RMB 150 billion in bond funding was allocated toward over 4,600 projects, suggesting significant program uptake, but public data on the sector-specific funding allocation is limited and anecdotal.[37]

- **Pollution and safety standards:** Beijing has tightened environmental and safety regulations as a compliance mechanism to accelerate retirement of aging facilities and raise the bar for new entry, though the impact is limited by China's young petrochemicals asset base. Chemicals facilities have long created hazards for local communities in China, and policymakers have sought to curb recurring safety incidents.[38] The anti-involution campaign and Beijing's broader industrial upgrading goals have given renewed policy impetus to this agenda. In April 2026, MIIT and six other ministries published the "Action Plan for Strengthening Promotion of Renewal and Upgrading Equipment in the Petrochemicals Sector (2026-2029)."[39] The plan calls for investigation and appraisal of facilities over 20 years in age, with the goal of bringing all equipment up to more stringent pollution, energy efficiency, and safety standards by 2029. **Among facilities with available age profiles, just 4% of China's capacity for the five chemicals we surveyed is beyond the 20-year threshold, suggesting highly limited scope for capacity reductions through mandated closure of old facilities (Figure 15)**. By contrast, given a 30-year lifespan for a standard chemicals plan, the nearly 50% of China's capacity added within the past five years will continue to operate beyond 2050.[40] In parallel, policymakers have promoted the

[35] MIIT, "Guidelines for Equipment Renewal and Technological Upgrading in Key Industrial Sectors [工业重点行业领域设备更新和技术改造指南]," September 20, 2024. *https://www.gov.cn/zhengce/zhengceku/202409/P020240920589870622754.pdf*.

[36] NDRC, "Notice on Issuing 'Certain Measures to Strengthen Support for Large-Scale Equipment Renewal and Consumer Goods Trade-Ins'," July 24, 2024. *https://www.gov.cn/zhengce/zhengceku/202407/content_6964409.htm*.

[37] NDRC, "Large-Scale Equipment Renewal and Consumer Goods Trade-Ins Work Achieves Significant Results in 2024, [2024 年大规模设备更新和消费品以旧换新工作取得显著成效]," February 11, 2025. *https://www.ndrc.gov.cn/fggz/202502/t20250211_1396082.html*.

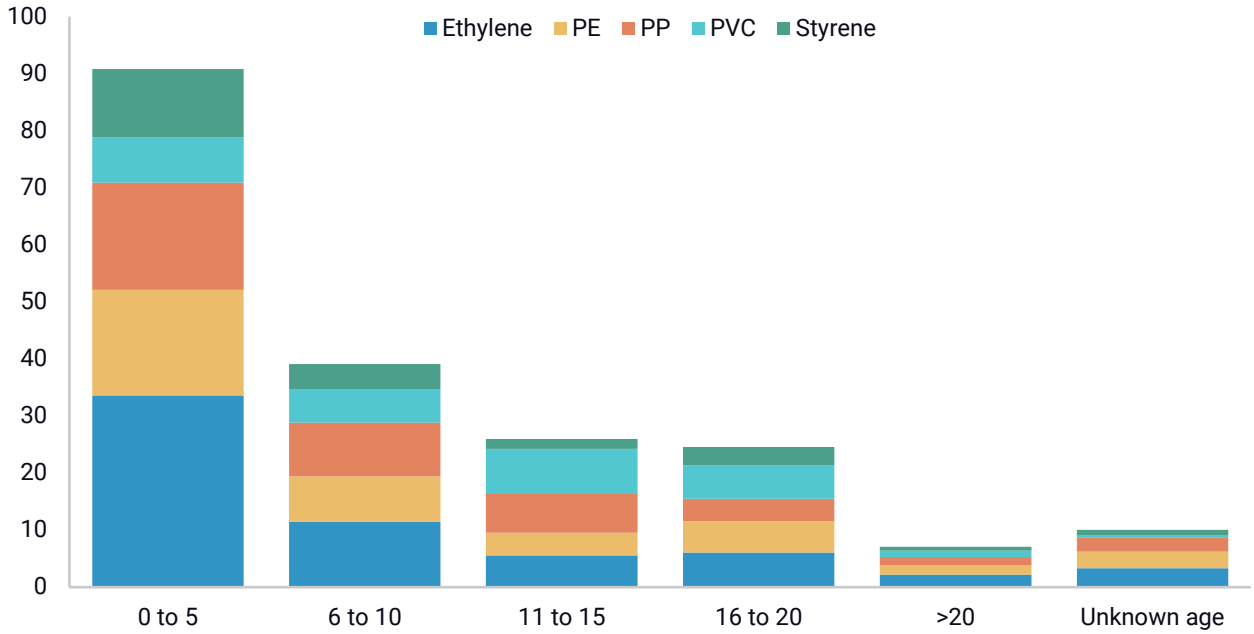
[38] In one high-profile disaster, a 2015 explosion at a chemicals storage facility in Tianjin caused 173 deaths and over $1 billion in estimated economic losses. See *BBC*, "Tianjin Chemical Blast: China Jails 49 for Disaster," November 9, 2016. *https://www.bbc.com/news/world-asia-china-37927158*.

[39] MIIT, "Notice on Issuing the 'Action Plan for Strengthening Promotion of Renewal and Upgrading of Aging Equipment in the Petrochemicals Industry (2026-2029)' [关于印发《加力推进石化化工行业老旧装置更新改造行动方案（2026－2029 年）》的通知]," April 3, 2026. *https://www.miit.gov.cn/zwgk/zcwj/wjfb/tz/art/2026/art_5fbbef2f9f6d4aba8eedb1e05b43dd94.html*.

[40] Peter Levi et al. "Aligning Investment and Innovation in Heavy Industries to Accelerate the Transition to Net-Zero Emissions," IEA, July 20, 2020. *https://www.iea.org/commentaries/aligning-investment-and-innovation-in-heavy-industries-to-accelerate-the-transition-to-net-zero-emissions*.

movement of new facilities out of urban centers, where pollution affects local residents, and into industrial parks with integrated value-chain complexes.

FIGURE 15
China's petrochemicals capacity by facility age in years, selected products
Million metric tons



Source: Longzhong Information, Rhodium Group calculations. Data as of August 2026.

- **Emissions intensity targets:** The petrochemicals industry is a major carbon emitter, accounting for around 20% of China's total industrial emissions.[41] Beyond the energy efficiency requirements and equipment upgrade incentives mentioned above, the upcoming addition of chemicals plants to China's national emissions trading scheme (ETS) could raise the cost of operating old and inefficient facilities, providing some marginal incentive to accelerate retrofitting or retirement.[42] However, China's ETS is based on emissions intensity rather than absolute emissions, the carbon price remains very low and largely unrestrictive, and most allowances are allocated for free, significantly limiting the scheme's overall impact on industry capacity.
- **Export VAT rebate removal**: In April 2026, China's Ministry of Finance and State Taxation Administration canceled the value-added tax export rebate for over 80 chemicals, including methanol, PVC, and polyether polyols.[43] Many affected products appear on the China Petroleum and Chemical Industry Federation's list of chemicals

[41] Mathias Larsen and Joachim Peter Tilsted, "The Future of Fossil Fuels, Chemicals, and Feedstocks: Outlining a Research Agenda on the Role of China in the Global Petrochemical Industry," *Energy Research & Social Science* 118 (December 2024): 103750, https://doi.org/10.1016/j.erss.2024.103750.
[42] Zhao Xuan, "China to Add Petrochemicals, Chemicals to National Carbon Market," *Caixin Global*, August 15, 2026. https://www.caixinglobal.com/2026-08-15/china-to-add-petrochemicals-chemicals-to-national-carbon-market-102474336.html.
[43] Ministry of Finance, "Notice on Adjusting the Export Tax Refund Policy on Photovoltaics and Other Products [关于调整光伏等产品出口退税政策的公告]," January 8, 2026. https://fgk.chinatax.gov.cn/zcfgk/c102416/c5246745/content.html.

at risk of market oversupply.[44] By increasing the cost of exporting, Beijing aims to slow price declines, reduce trade frictions, and recover forgone government revenue.[45] Without VAT refunds, higher-cost Chinese producers are less able to export excess output, potentially applying some pressure toward industry consolidation in certain segments.[46]

- **"Industry self-discipline":** In an effort to end price wars without intervening directly, Beijing has urged industries to resolve unhealthy competitive dynamics on their own.[47] Under this longstanding practice, an industry association may convene to agree upon an informal price floor and/or production cuts.[48] Unlike other forms of Chinese industry strategy, self-discipline commitments are highly ad hoc and do not appear in official policy documents, making them difficult to track systematically. Yet the body of evidence points to "industry self-discipline" as a key mechanism of the anti-involution campaign, including in chemicals. In one example, members of the China Association of Fluorine and Silicone Industry held closed-door meetings in November 2025, following which the price of DMC quickly shot up by 20% (Figure 16).[49] The Chinese financial press has also reported on similar meetings among refrigerant producers.[50] Yet self-discipline commitments are non-binding and can easily break down. A recent *People's Daily* commentary by the head of China's State Administration of Market Regulation accused industries of cartel-like behavior, abusing the concept of self-discipline to collude on prices and divide up the market without honoring capacity reduction commitments.[51]

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[44] China Petroleum and Chemical Industry Federation, "List of Petrochemical Products Facing Oversupply Risk (2025 Edition)," February 6, 2025. https://wap.miit.gov.cn/jgsj/ycls/shhg/art/2026/art_b6af40e247c84673ad9dfe0e774fc2fb.html.

[45] *Xinhua News Agency*, "China to Adjust or Cancel Export Tax Rebates for Photovoltaic and Battery Products," January 12, 2026. http://english.scio.gov.cn/pressroom/2026-01/12/content_118274454.html.

[46] See Yan Wong, "Implications of Changes in Mainland China's VAT Refund Policy on the Polyether Polyols Market," OPIS Chemical Market Analytics, March 19, 2026. https://chemicalmarketanalytics.com/insights/implications-of-changes-in-mainland-chinas-vat-refund-policy-on-the-polyether-polyols-market/.

[47] For instance, the July 2024 Politburo meeting readout called for the need to "strengthen industry self-discipline and prevent vicious 'involutionary' competition."

[48] Scott Kennedy, "Involution and Industry Self-Discipline: Echoes from the Past," Center for Strategic and International Studies, September 17, 2025. https://www.csis.org/blogs/trustee-china-hand/involution-and-industry-self-discipline-echoes-past.

[49] *Xinhua Finance*, "Mainstream Silicone Manufacturers Resume Quoting Prices, With Prices Significantly Higher Than Before the Suspension. Industry Insiders: Production Cuts are Expected to Gradually be Implemented [主流有机硅厂商恢复报价，价格较停盘前大幅上涨，业内人士：减产有望逐步落实]," November 19, 2025. https://www.cnfin.com/yw-lb/detail/20251119/4337870_1.html.

[50] Liu Yingjie and Tan Dinghao, "Driven by the Dual Forces of Policy and Self-Discipline, Petrochemicals Industry Approaches Cyclical Turning Point [政策和自律双轮驱动 化工行业周期拐点临近]," *Securities Times*, August 15, 2025. https://www.stcn.com/article/detail/3119523.html.

[51] Luo Wen, "Thoroughly Rectify 'Involution-Style' Competition, Create a Healthy Market Environment [深入整治"内卷式"竞争 营造良好市场环境]," *People's Daily*, July 20, 2026. https://paper.people.com.cn/zgnyb/pc/content/202607/20/content_30170377.html.

FIGURE 16
Shandong market price of DMC silicone, Jan 2025 – Aug 2026
RMB/metric ton



Source: Longzhong Information

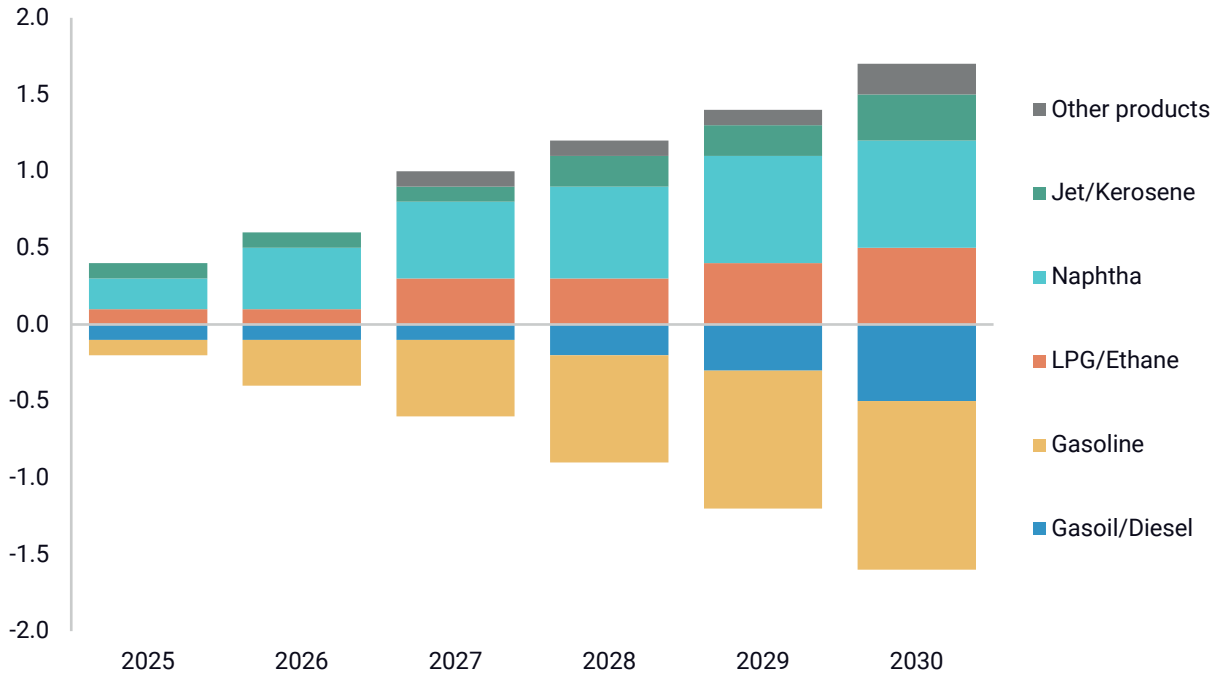
Lengthening the chemicals supply chain

UPSTREAM SUPPLY PUSH BINDS REFINERIES TO PETROCHEMICALS

Petrochemical feedstocks are responsible for nearly all of the expected growth in China's future oil demand. Refineries recognize that the future of China's oil demand is in petrochemical feedstocks, not in transport fuels. According to IEA projections as of June 2025, China's demand for naphtha and LPG/ethane will increase by 1.2 million barrels per day (b/d) from 2024 to 2030, while its demand for diesel and gasoline will decrease by 1.6 million b/d (Figure 17).[52] By now, China's demand for fuels is likely falling on an even steeper trajectory, given increasing displacement by electric vehicles and trucks.[53]

[52] IEA, "Oil 2025: Forecast and Analysis to 2030," June 2025. *https://iea.blob.core.windows.net/assets/c0087308-f434-4284-b5bb-bfaf745c81c3/Oil2025.pdf*.
[53] Rogan Quinn, "Electric Trucks and the Future of Chinese Oil Demand," Rhodium Group, July 1, 2025. *https://rhg.com/research/electric-trucks-and-the-future-of-chinese-oil-demand/*.

FIGURE 17
China's oil demand by product, 2025 – 2030
Projected change from 2024, million barrels per day



Source: IEA

As China's oil demand shifts from transport fuels to feedstocks, both policy and market drivers are reorienting refineries toward the petrochemicals supply chain. In 2022, China's *14th Five-Year Plan for Promoting High-Quality Development in the Petrochemicals Industry* prescribed "orderly promotion of refining projects to reduce fuels and increase chemicals production [降油增化].[54] Refineries are increasingly seeking to co-locate with their customers within large petrochemicals complexes. In practice, a vertically integrated industry player such as state-owned Sinopec can refine naphtha for its own usage at preferential prices.[55] Binding refineries together with steam crackers will increase logistical and scale advantages, lock in long-term supplier relationships, and drive output growth in olefins and aromatics.

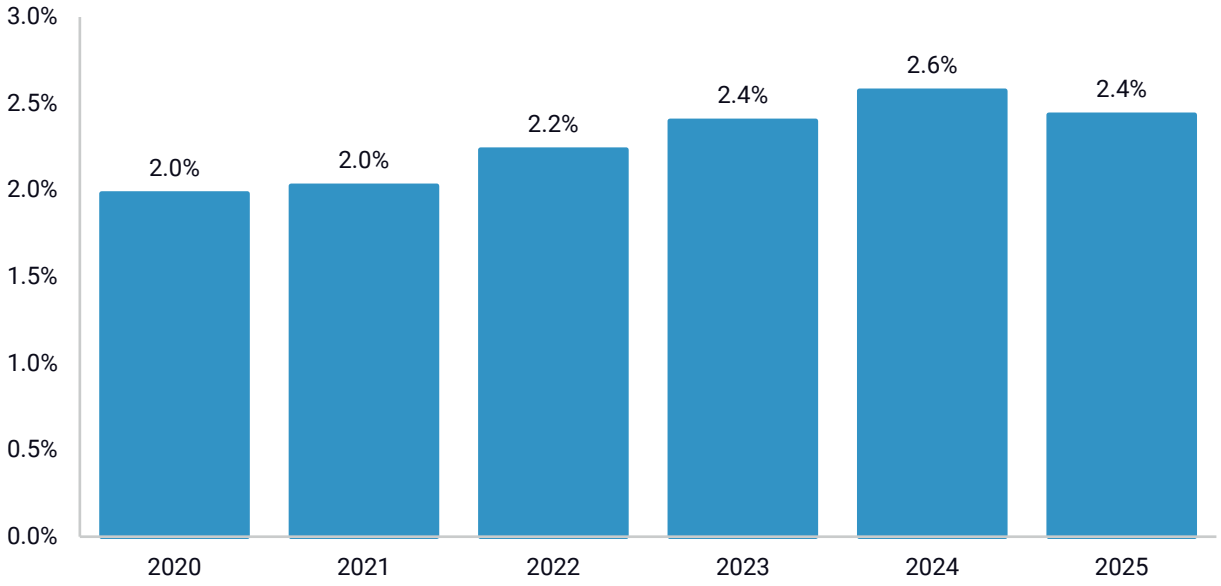
INVESTING IN DOWNSTREAM INDUSTRIES TO SUSTAIN DEMAND FOR BASE CHEMICALS

Higher value-added downstream products will sustain domestic demand for base chemicals and primary plastics. In recent years, the focal point of China's chemicals industrial policy has shifted toward promotion of specialty chemicals, fine chemicals, and advanced materials, where product innovation matters more than pure cost and scale

[54] MIIT, "Guiding Opinions on the 14th Five-Year Plan for Promoting High-Quality Development in the Petrochemicals Industry [关于"十四五"推动石化化工行业高质量发展的指导意见]," https://www.miit.gov.cn/zwgk/zcwj/wjfb/yj/art/2022/art_4ef438217a4548cb98c2d7f4f091d72e.html.
[55] Sinopec, "China Should be a First Mover in the 'Reduce Fuels and Increase Chemicals' Refinery Transformation [中国应在炼厂"减油增化"转型中走在前列] ," August 6. 2025. http://www.sinopecnews.com.cn/xnews/content/2025-08/06/content_7130624.html.

advantages.[56] This shift can be observed in the rising R&D intensity of listed Chinese chemicals firms (Figure 18). Beijing aims to encourage development of differentiated products and curb redundant investments in homogenous capacity, which led to fierce price competition. By strengthening their position in higher-end downstream products, companies can generate margins on their combined operations even if they produce at a loss upstream. Given the logistical advantages of China's industrial clustering relative to imported materials, this has the effect of pulling along demand for domestic base chemicals and intermediates, while discouraging capacity reductions in those mid-value chain segments.

FIGURE 18
Average ratio of R&D expenditure to revenue for listed Chinese chemicals producers
Percent

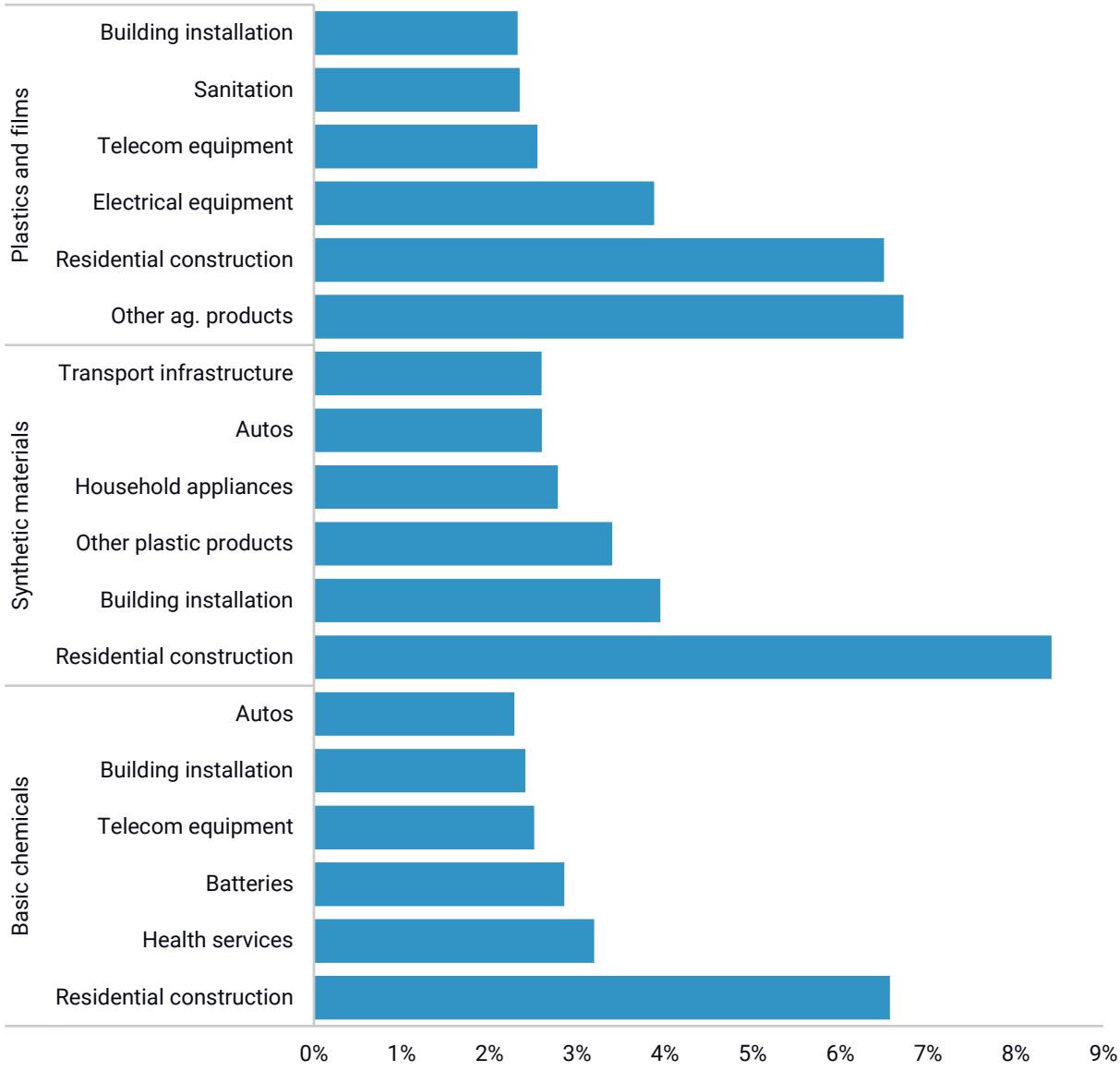


Source: Bloomberg, Rhodium Group calculations

Domestic demand for the end-use applications of chemicals is far weaker than for intermediates, making exports an increasingly important outlet for downstream products. Figure 19 shows the Chinese industries that ultimately absorb the highest share of chemicals content through both direct purchases and indirect channels. The data highlight the broad-based usage of chemicals throughout China's economy, with no single industry absorbing more than 8% of basic chemicals or more than 7% of plastics, films, or synthetic materials. Major end-users range from housing and infrastructure construction, autos, electronics, agriculture, and healthcare and sanitation—industries that have taken widely divergent paths in recent years. Residential construction in China has collapsed, with new housing starts now at their lowest level since the early 2000s, while automotive exports have boomed. Demand conditions therefore vary significantly based on the industrial applications of individual products.

[56] MIIT, "Notice on Issuing 'Implementation Plan for Innovative Development of the Fine Chemicals Industry' [关于印发《精细化工产业创新发展实施方案（2024—2027 年）》的通知]," July 14, 2024. *https://www.hlj.gov.cn/hljzqc/c100116/202407/c00_31751925.shtml*.

FIGURE 19
Final demand for chemicals in China by industry, 2023
Share of total value added consumed



Source: Rhodium Group calculations using National Bureau of Statistics input-output tables. Industry own-use not shown.

Global spillovers and policy responses

For global chemicals producers, competition with China takes place in a complex global marketplace. China's export volumes and market shares are rising across a broad range of chemicals (though often from a low base), especially in fast-growing emerging markets, which thus far often well exceed China's direct exports to advanced economies. Foreign producers are also losing sales in the China market as domestic production rapidly replaces imports as well as losing sales in their own and third country markets. Competitive spillovers also operate through indirect channels, including through sales of final goods containing embedded chemicals content, as well as the downward pressure that China's capacity expansion exerts on global prices even when selling domestically.

Neither market forces nor policy actions are likely to force significant capacity cuts in China, so producers and policymakers elsewhere should expect spillover pressures to continue. Significant capacity closures are already affecting Europe and Northeast Asia. Many countries have taken defensive measures, thus far primarily leaning on conventional, narrowly scoped trade remedies.

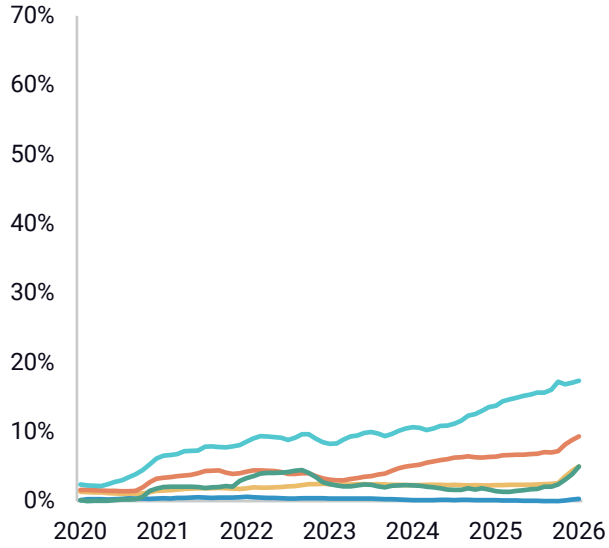
Trade pressures rising in all directions

IMPORT SUBSTITUTION AND RISING EXPORTS

Foreign producers are losing sales to competitors in China as domestic production displaces imports. China's imports-to-output ratio, a measure of import reliance, has fallen dramatically across major petrochemicals products (Figure 21). Imports of PE have declined by 42 percentage points as a share of output since 2020, from 63% to 21%, and China nearly eliminated imports of styrene entirely over the same period. By volume, China's imports of PE, PP, PVC, and styrene have all fallen significantly, with declines over the past five years ranging from 33% to 93%. Import volumes from US, Middle Eastern, and Northeast Asian economies have fallen the most (Figure 23). Of the five products examined in this report, only China's imports of ethylene have increased. Much of China's new ethylene capacity is captive, meaning non-integrated downstream facilities continue to require ethylene imports, which are primarily shipped from South Korea to facilities on China's nearby eastern coast.[57]

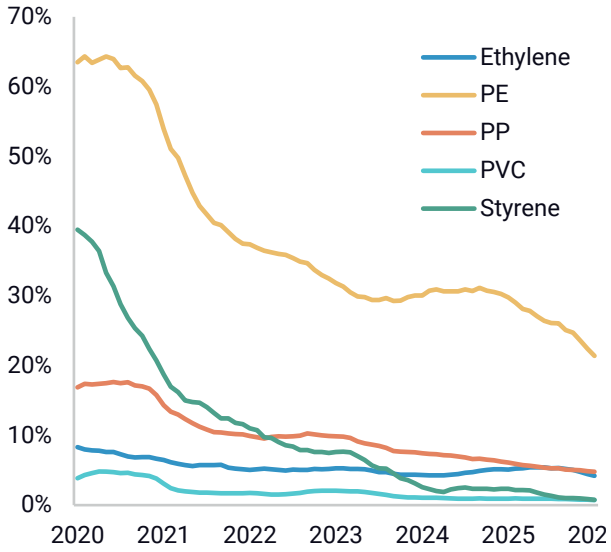
[57] Although ethylene is the world's largest petrochemical product by output volume, it is not widely traded internationally due to its complex and expensive transport and storage requirements. Ethylene is produced in gaseous form and is typically transported through pipelines or on cryogenic ships. See Emily Dickinson, "Understanding the Global Ethylene Supply Chain: From Production to End Use," *ChemAnalyst*, August 4, 2025. *https://www.chemanalyst.com/NewsAndDeals/NewsDetails/understanding-the-global-ethylene-supply-chain-from-production-to-end-use-38349;* Oh Jieun, "Ethylene Demand Gap Along China's Coast Narrows as Capacity Expansion Accelerates," *Asia Business Daily*, August 14, 2025. *https://view.asiae.co.kr/en/article/2025081409475211995*.

FIGURE 20
Ratio of exports to domestic output
Percent, 12-month trailing average



Source: Trade Data Monitor, Longzhong Information, Rhodium Group calculations

FIGURE 21
Ratio of imports to domestic output
Percent, 12-month trailing average



Source: Trade Data Monitor, Longzhong Information, Rhodium Group calculations

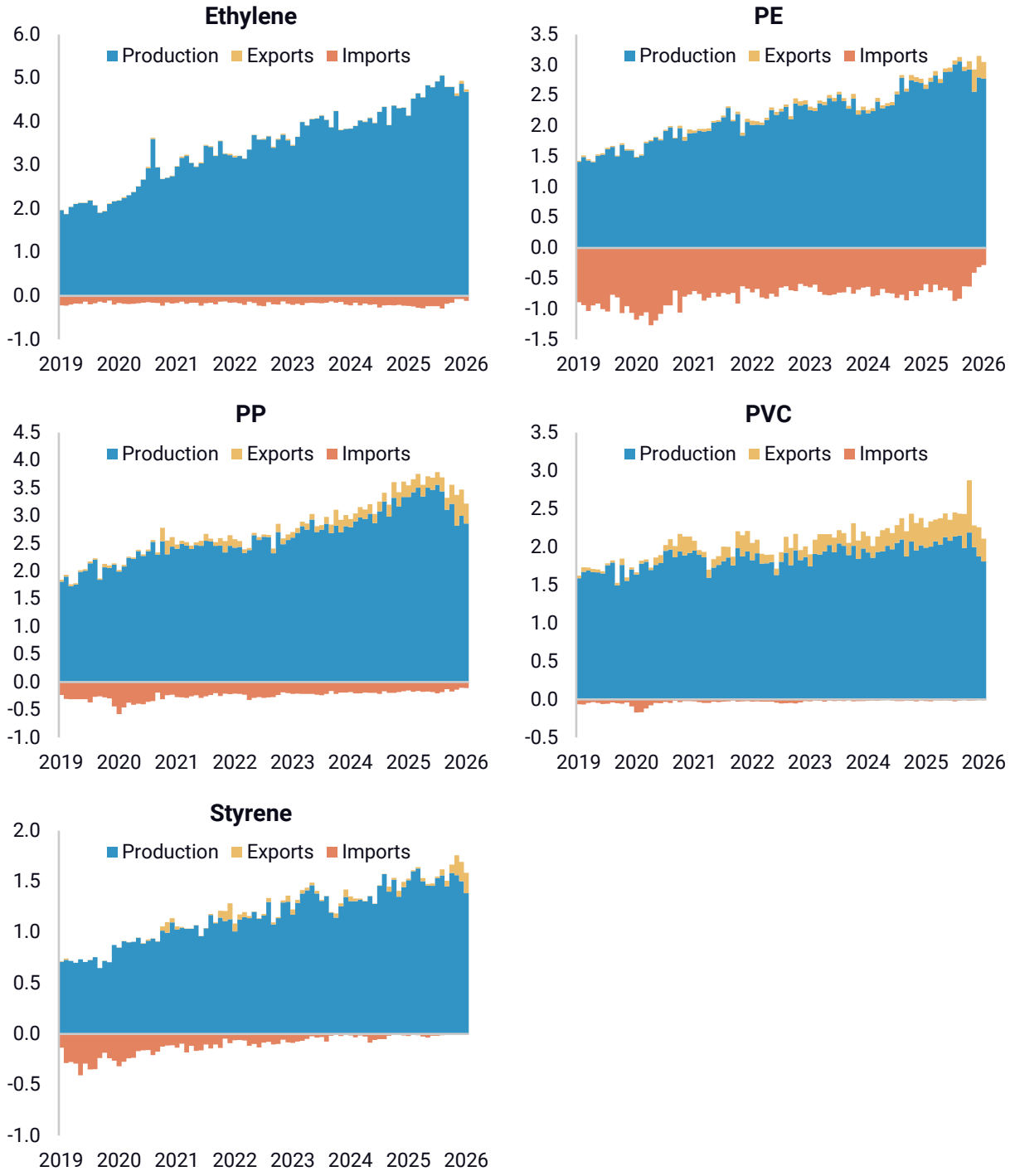
On the exports side, competitive pressures are most acute in emerging markets. China's petrochemical exports are surging, with average year-on-year growth rates in PE, PP, PVC, and styrene all exceeding 40% over the past five years. China overwhelmingly sends its exports to the developing world, especially ASEAN, South Asia, and Africa (Figure 23). Emerging markets account for a large portion of global incremental demand growth for chemicals, and they generally lack sufficient domestic production capabilities to meet that demand. By contrast, as of June 2026 the United States and the EU received under 5% of China's direct exports of all five products.

In absolute terms, however, exports remain a small portion of China's output—generally below 10% for our sample chemicals (Figure 20 above). China's market therefore remains the principal battleground for competition with Chinese producers. But this understates the global shift: China's expanding share of downstream manufacturing concentrates chemicals demand within China, including for goods ultimately exported, displacing foreign chemicals production even without direct chemicals exports. Pressure is likely to compound as China continues onshoring chemical intermediates, capturing demand once served by foreign suppliers, while excess capacity increasingly seeks overseas markets (Figure 22). Given China's scale, these forces could simultaneously erode foreign producers' sales in China and expose them to rising Chinese competition abroad.

FIGURE 22

China's monthly production and trade in ethylene, PE, PP, PVC, and styrene

Million metric tons

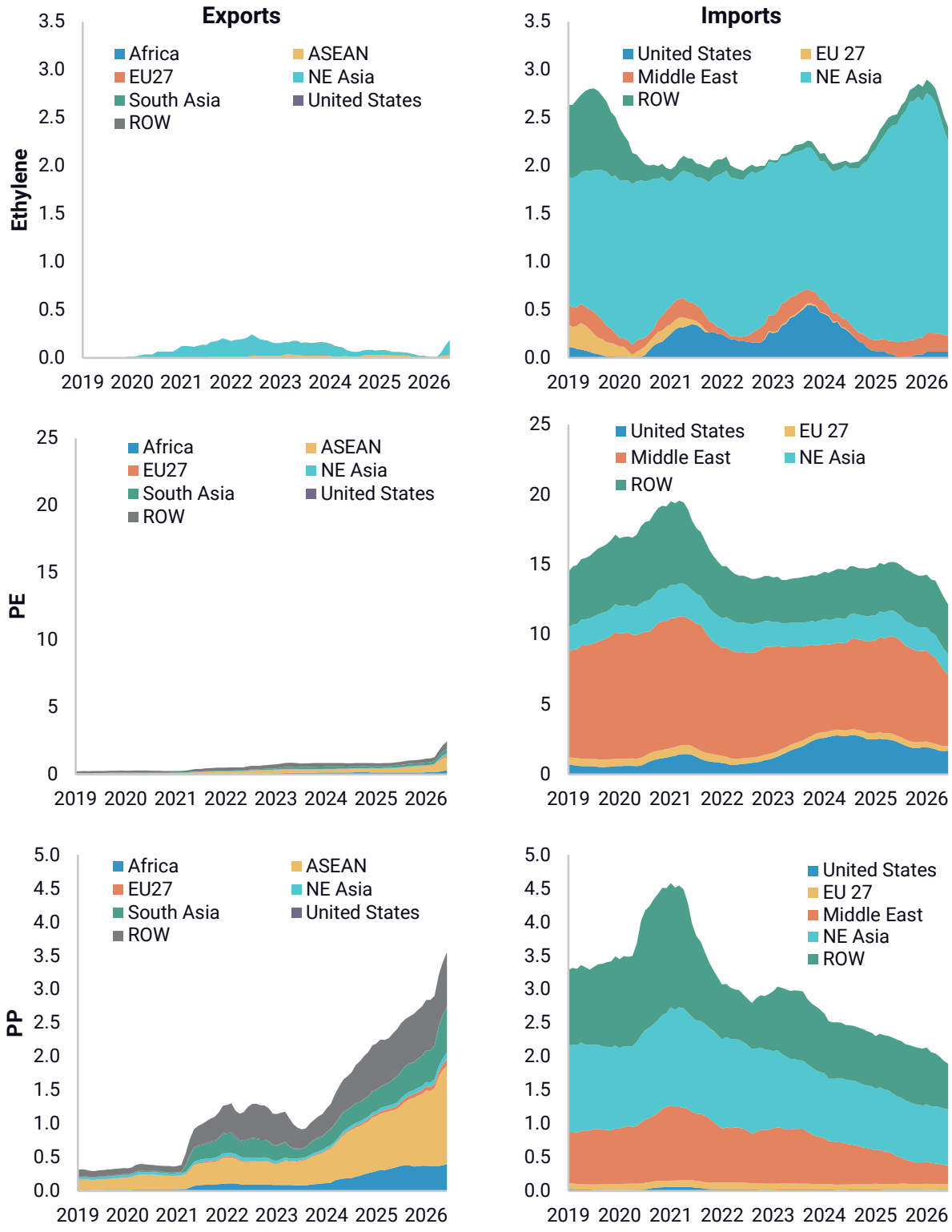


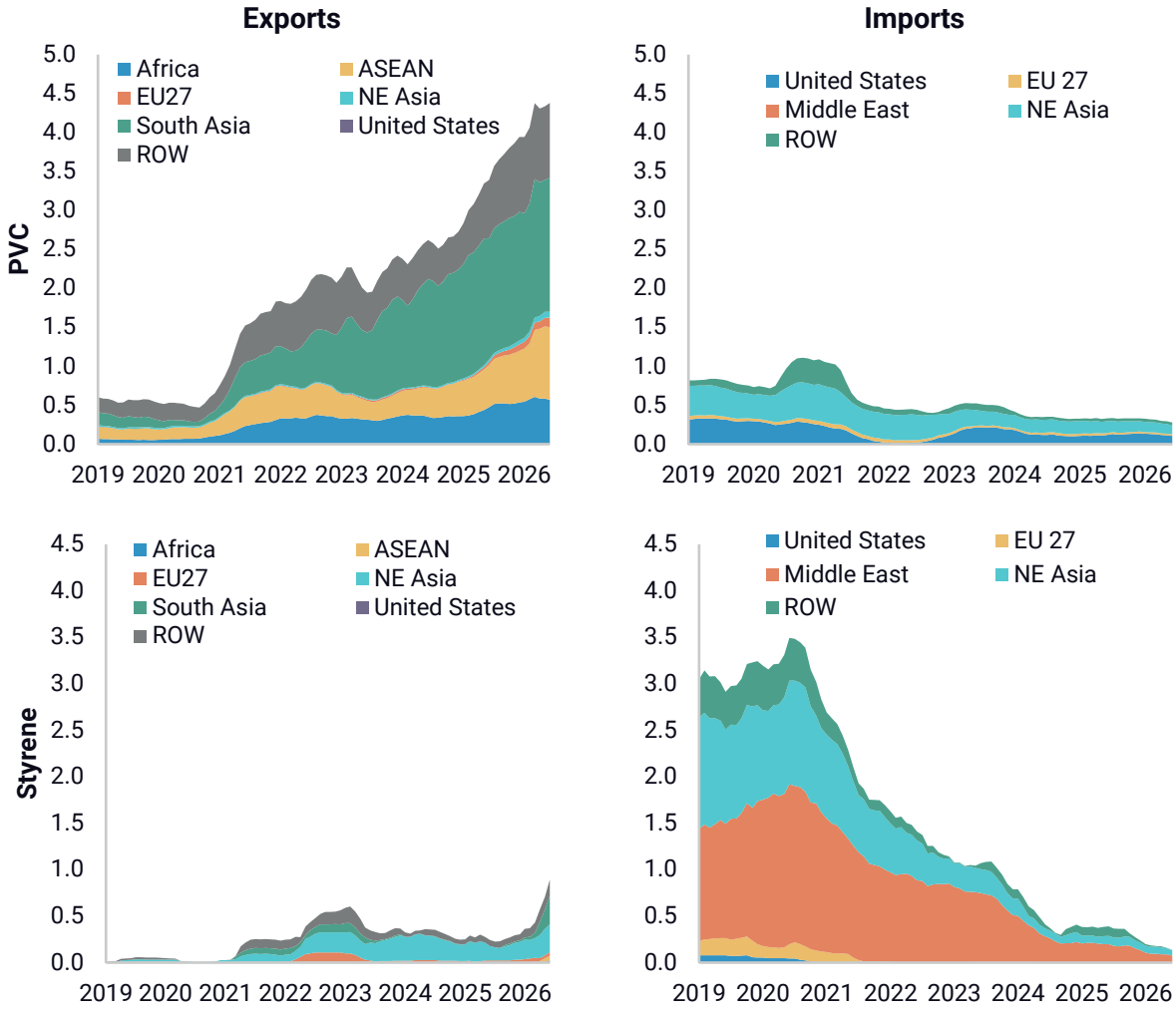
Source: CEIC, Rhodium Group calculations. HS codes: 290121 (ethylene); 390110, 390120, 390140 (PE); 390210 (PP); 390410 (PVC); 290250 (styrene).

FIGURE 23

China's trade in ethylene, PE, PP, PVC, and styrene by trading partner

Million metric tons, 12-month trailing sums





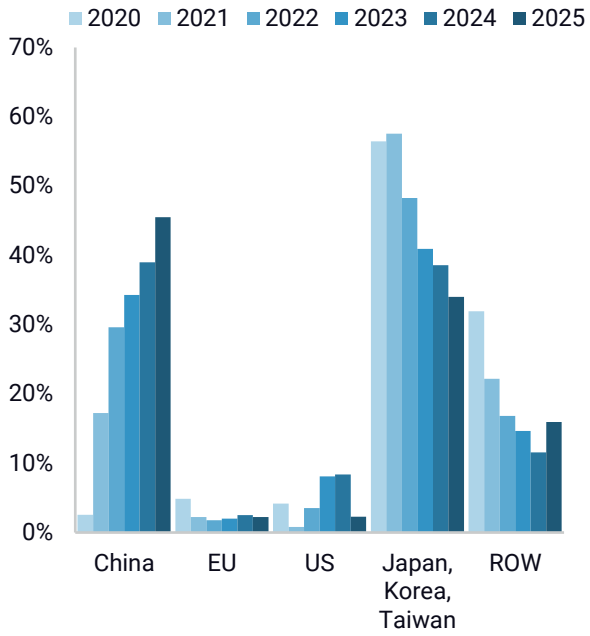
Source: Trade Data Monitor, Rhodium Group calculations. HS codes: 290121 (ethylene); 390110, 390120, 390140 (PE); 390210 (PP); 390410 (PVC); 290250 (styrene).

Chinese exporters are claiming market share from incumbent industry leaders. Figures 24 and 25 highlight competitive dynamics in PVC and PP, two products for which China's exports have risen the most on an absolute volume basis. In PVC, the collapse of domestic housing construction led to an export wave beginning in mid-2021. In India, the largest destination for those exports, China's export market share grew from 3% in 2020 to 45% by 2025, while the combined shares of Japan, South Korea, and Taiwan fell from 56% to 34%. This also has affected Europe. Between 2022-2025, the capacity announced for closure increased six-fold from 2.9 Mt in 2022 to 17.2 Mt in 2025, and doubled in the last year.[58] China's PP exports to ASEAN have grown at a similarly rapid race: China has gained 29 percentage points of PP market share in ASEAN since 2022, while the share of Persian Gulf exporters fell by 30 points. Geographic proximity is an important factor in bulk

[58] Cefic, "European Chemical Closures and Investments Radar 2022-2025," January 28. 2026. *https://cefic.org/resources/european-chemical-closures-investments-radar-2022-2025/*.

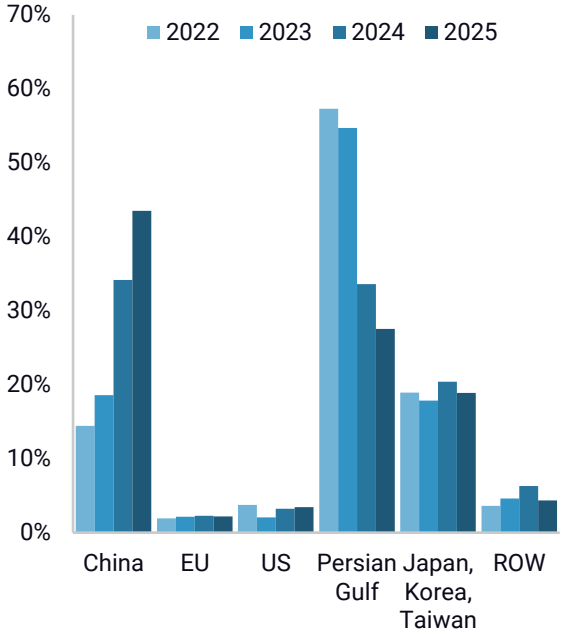
chemicals trade, given the cost of shipping heavy, low-margin plastic materials over long distances.

FIGURE 24
PVC export market shares in India by exporting country/region
Percent



Source: International Trade Centre, Rhodium Group calculations

FIGURE 25
PP export market shares in ASEAN by exporting country/region
Percent

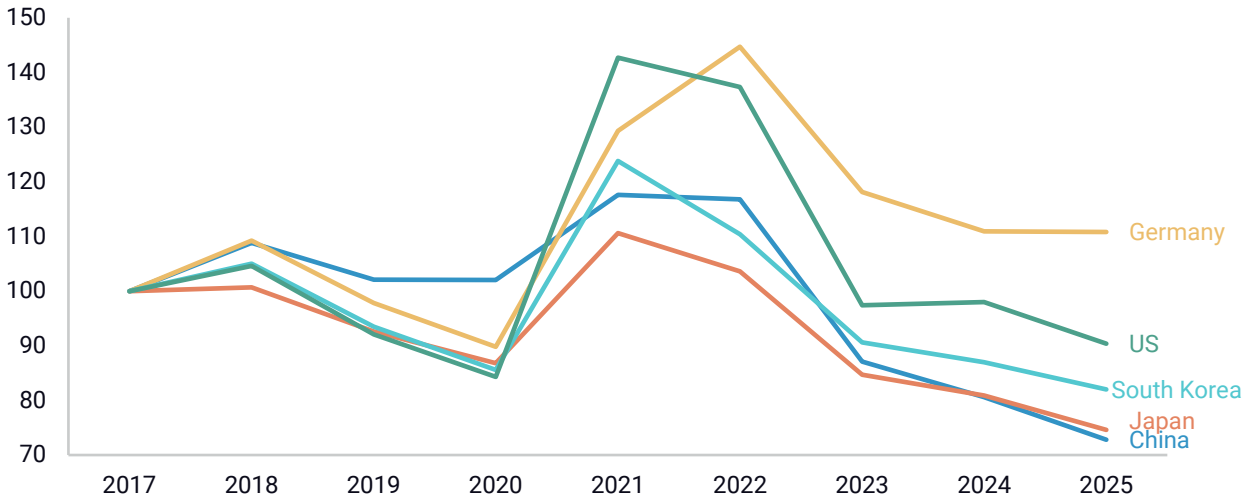


Source: International Trade Centre, Rhodium Group calculations

EXPORTING DEFLATION AND EMBEDDED CONTENT

Prices of chemicals exports are falling globally, not just in China. The industry slack caused in part by China's chemicals capacity expansion and depressed domestic demand has driven down the price of its exports in addition to its domestic prices. Given the scale of China's production, this contributes to downward pressure on world prices in commoditized bulk chemicals markets, even when foreign producers are not directly competing with Chinese exports. A Rhodium Group price index of China's petrochemicals export basket has dropped by 28.2 percentage points since 2017 and by 44.0 percentage points since 2022 in dollar terms, coinciding with similar declines in Japan, the United States, South Korea, and Germany (Figure 26).

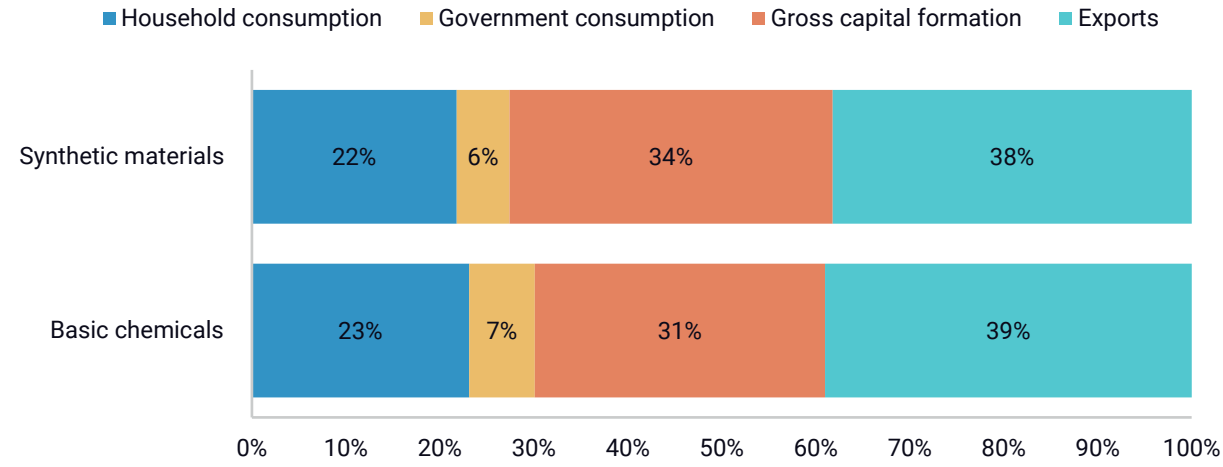
FIGURE 26
Petrochemicals export price index, selected countries and products
Index, 2017 = 100



Source: UN Comtrade. Rhodium Group calculation of Fisher price index based on each country's reported annual export values and volumes at an HS 6-digit level. Each country's product basket is re-weighted to mirror the composition of China's exports of the same products. HS codes: 290121 (ethylene); 390110, 390120, 390140 (PE); 390210 (PP); 390410 (PVC); 290250 (styrene).

Foreign exposures to Chinese chemicals content extend far beyond direct exports. While the vast majority of chemicals produced in China are directly sold to other industries in China, nearly 40% of the value of chemicals content generated in China is ultimately absorbed in other countries (Figure 27). This content is embedded in home appliances, autos, clothing, electronics, and a vast number of other products that use domestic chemical inputs prior to exporting.

FIGURE 27
Composition of final demand for Chinese basic chemicals and synthetic materials, 2023
Share of industry value added



Source: Rhodium Group calculations using National Bureau of Statistics input-output tables

Policy solutions remain elusive

Countries are adopting defensive trade actions and other economic security measures to protect their chemicals industries. Anti-dumping (AD) duties targeting chemicals have proliferated globally in an effort to stem the shock to the industry. For instance, the EU launched 12 AD investigations targeting chemicals imports from China in 2024 alone, over a third of all new EU AD cases that year.[59] Yet conventional AD duties are increasingly seen as ineffectual: investigations are narrow in scope, trade diversion can re-route supplier relationships without reducing imports or lifting prices, and targeted producers can simply respond by exporting from another portion of the long chemicals value chain.[60] Newer policy instruments have sought to overcome these shortcomings, including in emerging markets. For example, to address trade diversion, India imposed a minimum import price floor on PVC resin, and Brazil increased tariffs on 30 chemical products, with both measures covering all trading partners. [61] The European Commission is actively considering new chemicals safeguard tariffs that would target all of its trading partners, and has built a chemicals import monitoring tool to evaluate candidate products for trade defense.[62] Countries are also increasingly pairing trade defense with industrial policy. One example is the EU Chemicals Industry Action Plan, which employs a public-private coalition, the Critical Chemicals Alliance, to identify at-risk capacity most in need of protection, while also implementing measures to address challenges to broader industry competitiveness, like high energy costs.[63]

Those actions have yet to stall an ongoing wave of closures, especially in Europe. European producers are confronting rising imports, falling market shares in China and in third markets, and the decline and increased offshoring of key chemicals-consuming industries, threatening to hollow out the broader supply chain. According to analysis by Deloitte, global industry margin compression led to over 120 global chemical plant closures and mothballings from 2022-5, with over 80% of those closures occurring in

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[59] European Commission, "43rd Annual Report from the Commission to the European Parliament and the Council on the EU's Anti-Dumping, Anti-Subsidy and Safeguard Activities and the Use of Trade Defence Instruments by Third Countries Targeting the EU in 2024," July 28, 2025. *https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52025DC0428*.

[60] John Richardson, "The Illusion of Protection: Why Europe Needs More Than ADDs to Compete," ICIS, December 4, 2025. *https://www.icis.com/asian-chemical-connections/2025/12/the-illusion-of-protection-why-europe-needs-more-than-adds-to-compete/*.

[61] *Economic Times*, "India's New Import Rule That Could Make Homes and Infrastructure Costlier," July 28, 2026. *https://economictimes.indiatimes.com/news/economy/foreign-trade/india-dgft-pvc-resin-import-rule-homes-infrastructure-pipes-costlier/articleshow/132675606.cms#google_vignette*; Daniel Rittner, "In a controversial Decision, the Government Raises Import Tariffs on 30 Chemical Products [Em decisão polêmica, governo eleva tarifas de importação para 30 produtos químicos]," *CNN Brasil*, September 18, 2024. *https://www.cnnbrasil.com.br/economia/macroeconomia/em-decisao-polemica-governo-eleva-tarifas-de-importacao-para-30-produtos-quimicos*.

[62] Carlo Martuscelli, "China is Killing Europe's Chemicals Industry. Brussels Wants to Intervene." *Politico*, June 7, 2026. *https://www.politico.eu/article/europes-fightback-against-china-may-come-too-late-for-its-chemicals-industry/*; Critical Chemicals Alliance, "2nd Monthly Import Trends Monitoring Tool Report," August 2026. *https://webgate.ec.europa.eu/circabc-ewpp/d/d/workspace/SpacesStore/da542866-06ec-470e-a579-93ac963d92b4/download*.

[63] European Commission, "Commission Strengthens Europe's Chemical Industry," July 7, 2025. https://ec.europa.eu/commission/presscorner/detail/en/ip_25_1755.

Europe.[64] Facility closures generally began in intermediate aromatics (e.g., styrene), which are most exposed to global competition, before expanding upstream to steam crackers. Cefic, Europe's chemicals industry association, identified closures representing around 9% of total European chemicals production capacity and 20,000 direct jobs over 2022-5.[65] Ethylene producers in Japan, South Korea, and Southeast Asia have also announced closures or consolidations in an effort to improve profit margins.[66]

A more comprehensive trade defense strategy will require creative and careful policy coordination. Addressing the full spectrum of chemicals trade exposure would require a broad approach to cover multiple value chain stages and cut off trade diversion channels. A narrower approach prioritizing certain chemical value chains aligned with third party data and proposed defense measures actions by the United States and other countries may be more feasible. Adopting broad measures unilaterally would risk raising prices for domestic consumers, disrupting supply chains for producers with multinational supply chains, and deflecting trade flows onto partner economies. This would risk shifting the problem downstream to different segments of the value chain. A more targeted, data driven approach would help to minimize these effects. The complexity of protecting full value chains also would likely require the development of novel trade defense instruments as well as significant investments in customs enforcement capacity to identify and target embedded chemicals content in intermediate and finished goods, with uncertain results over an extended time period. Alignment among current trade defense and customs enforcement measures may therefore be easier to achieve. Robust and timely cooperation among partner economies will almost certainly be necessary to manage the complex political and economic tradeoffs between upstream and downstream companies who produce and consume targeted products.

Outlook and implications

China's chemicals sector is entering a phase of efficiency upgrading, not capacity reduction. A degree of policy tightening and the industry's poor performance in recent years have reduced the incentive for Chinese producers to invest in new basic chemicals capacity going forward. Yet Beijing's primary objective is not to shrink net capacity and restore supply-demand balance, but rather to upgrade plants and equipment and build more interconnected industrial clusters to make its chemicals sector more competitive for the long haul.

Companies and policymakers in the rest of the world should expect the low-price environment to continue for the foreseeable future, which will likely pressure more foreign firms to exit the market. Even if China's new investments slow, the combination of

[64] David Yankovitz et al. "The Domino Effect: Implications of Chemical Plant Closures on Supply Chains," Deloitte, May 27, 2026. *https://www.deloitte.com/us/en/insights/industry/chemicals-and-specialty-materials/reshaping-chemical-supply-chains-plant-closures.html*.

[65] Cefic, "European Chemical Closures & Investments Radar 2022-2025," January 28, 2026. *https://cefic.org/resources/european-chemical-closures-investments-radar-2022-2025/*.

[66] Katsumori Matsuoka, "Deluge of Petrochemicals from China Swamps Other Asian Countries," *C&EN*, January 29, 2026. *https://cen.acs.org/business/petrochemicals/Deluge-petrochemicals-China-swamps-Asian/104/web/2026/01*; Kenji Kawase, "Harsh Reality of China Petrochemical Overcapacity Drives Japanese Merger," *Nikkei Asia*, September 11, 2025. *https://asia.nikkei.com/business/markets/commodities/harsh-reality-of-china-petrochemical-overcapacity-drives-japanese-merger*.

weak domestic demand and new capacity additions that are already in the pipeline suggest that import substitution and export growth will likely continue for years to come. This will mean tougher competition and sustained price deflation both in China and in third markets. Given the scale of China's chemicals output, China's domestic imbalances will continue to exert downward pressure on the industry's profit margins.

China's depressed prices in bulk commodity chemicals will cause competitive pressures to continue migrating downstream. Beijing's intentional strategy to push down the price of chemical intermediates will continue to create cost advantages throughout China's manufacturing value chains. The fact that chemicals support Beijing's overall industrial strategy likely increases its tolerance for low returns and unprofitability in the chemicals sector itself. For other economies, this means that the challenge originating in China's chemicals buildout will also affect a wide range of downstream industries for years to come.

Competition will also stiffen in higher-end chemicals. To date, foreign producers have retained advantages in advanced chemicals technology and intellectual property. But China is making a strong push into specialty and fine chemicals, both to secure supplies of critical materials and to pursue higher profit margins and offset the price wars that have plagued bulk commodity segments.[67] This suggests that foreign chemicals companies will face increasing pressures in product segments that remain key sources of industry profitability in advanced economies.

The Iran war has had highly divergent impacts on chemicals supply chains across regions, but overcapacity in China will remain a common challenge. Since the Strait of Hormuz closed in late February, the most pressing challenge facing the chemicals industry has shifted from low prices to feedstock scarcity. Petrochemicals producers in Japan and South Korea have been hit hardest, due to their heavy reliance on crude oil and naphtha from the Persian Gulf.[68] Meanwhile, some US producers have enjoyed short-term windfall profits due to the stable and inexpensive supply of ethane, a feedstock produced from natural gas.[69] China's petrochemical supply chains have been disrupted but remain comparatively well intact, largely due to its large inventory stockpiles and feedstock diversification strategy. China was able to draw on crude oil and naphtha stockpiles and substitute toward gas- and coal-based feedstocks, allowing it to sustain ethylene output even while cutting crude oil imports by 4-5 million barrels per day. This experience has likely validated Beijing's worldview on the strategic importance of energy security and self-reliance, making Chinese policymakers even more reluctant to cut domestic capacity. If and when the Strait of Hormuz reopens and energy exports out of the Persian Gulf normalize, market oversupply will return, and Chinese players will look to consolidate their recent market share gains in a changed competitive landscape.

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[67] Robert D. Atkinson, "How Innovative Is China in the Chemicals Industry?" Information Technology & Innovation Foundation, April 15, 2024. *https://itif.org/publications/2024/04/15/how-innovative-is-china-in-the-chemicals-industry/*.

[68] Emi Okada, "What Naphtha Shortage? China Extends Petrochemicals Lead During Iran War," *Nikkei Asia*, June 11, 2026. *https://asia.nikkei.com/business/markets/commodities/what-naphtha-shortage-china-extends-petrochemicals-lead-during-iran-war*.

[69] Alexander Tullo, "US and European Chemical Companies Expect Iran War Profit Surge," *C&EN*, May 4, 2026. *https://cen.acs.org/business/petrochemicals/us-european-chemical-companies-expect-iran/104/web/2026/05*.

Policymakers looking to defend local chemicals industries face complex tradeoffs. International momentum toward stronger trade defense is gaining steam, but tariffs won't be a one-size-fits-all solution. As this report has shown, the challenges posed by China's capacity buildout operate through many direct and indirect channels. Trade defenses will only be effective at slowing imports and will not address third market competition or lost exports to China. In many cases, tariffs may be counterproductive, given adverse impacts on downstream producers, including in other strategic industries who would be disadvantaged in global markets by higher input prices.

Policy solutions will have to make creative use of a broader set of economic security tools along full value chains and in coordination with partners. Robust international cooperation is needed to overcome the shortcomings of conventional trade instruments and protect chemical supply chains that cross borders many times. Coordination across production nodes may help ensure that trade defense measures to protect upstream inputs don't put downstream producers at a disadvantage. Policy solutions will also have to balance each country's reshoring goals against the complex interests of multinational chemical producers, who operate and trade across many jurisdictions with competing priorities, including in China. And policymakers will have to move quickly to reverse the industry disruption now unfolding around the world.

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