
S&P Global

Commodity Insights

Petrochemical Feedstock

Is There Going to Be Enough in the Future?

Garrie Li

Chemical Insights APAC

May 31, 2024



Agenda

Naphtha – short-term supply/demand outlook

Naphtha – long-term supply outlook

NGL – long-term supply outlook

Mega trends and long-term petrochemical demand

Where will the additional naphtha come from?

Key messages





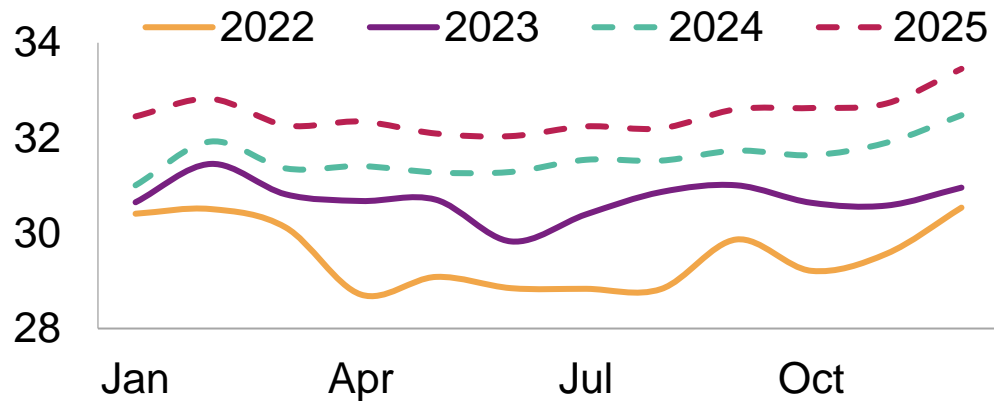
Naphtha – short-term supply/demand outlook

Asia naphtha market

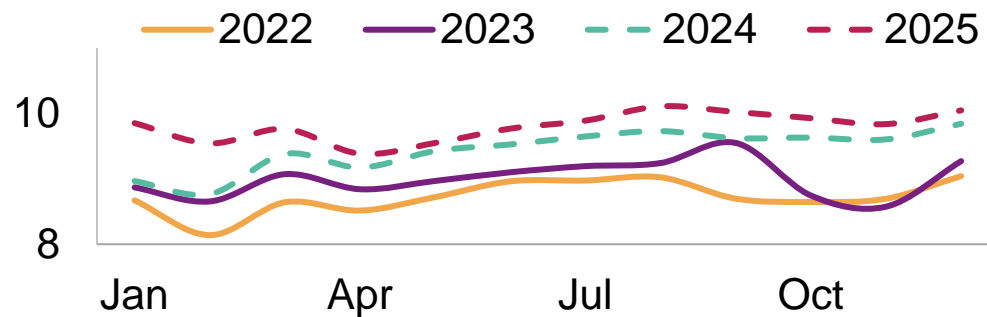


Refinery runs to remain high on healthy refining margins and new capacity additions, raising production of naphtha in the region

Asian refinery runs (million b/d)

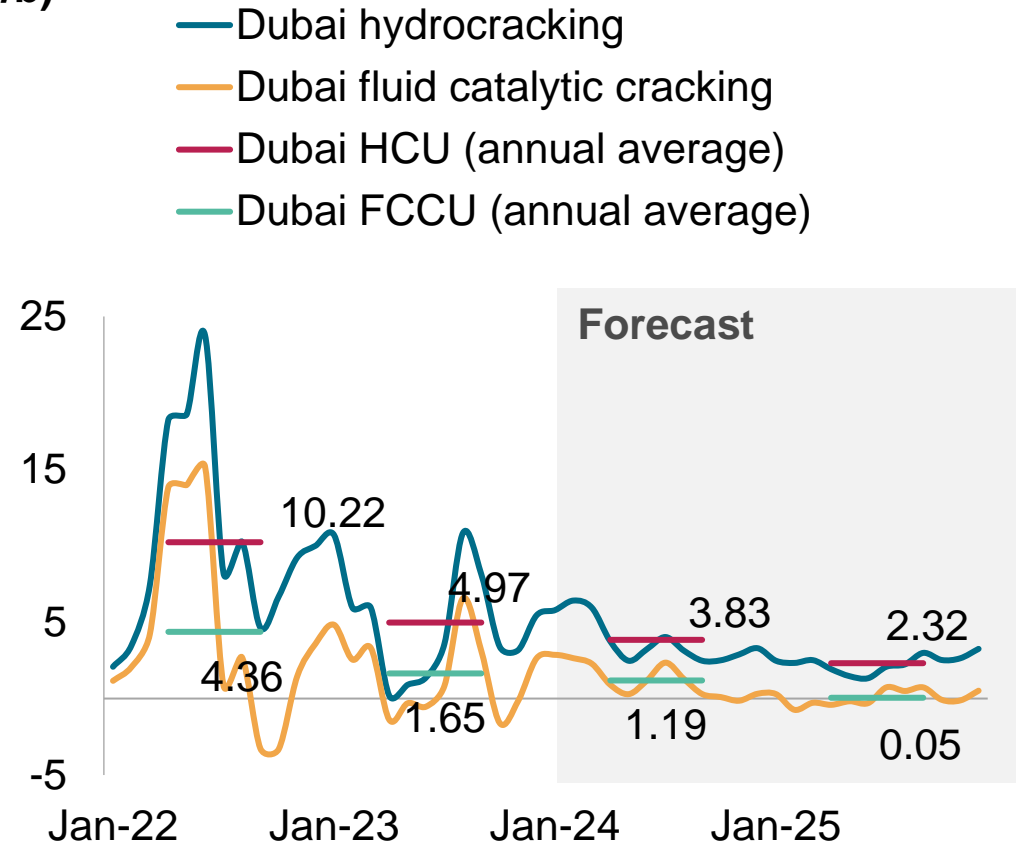


Middle Eastern refinery runs (million b/d)



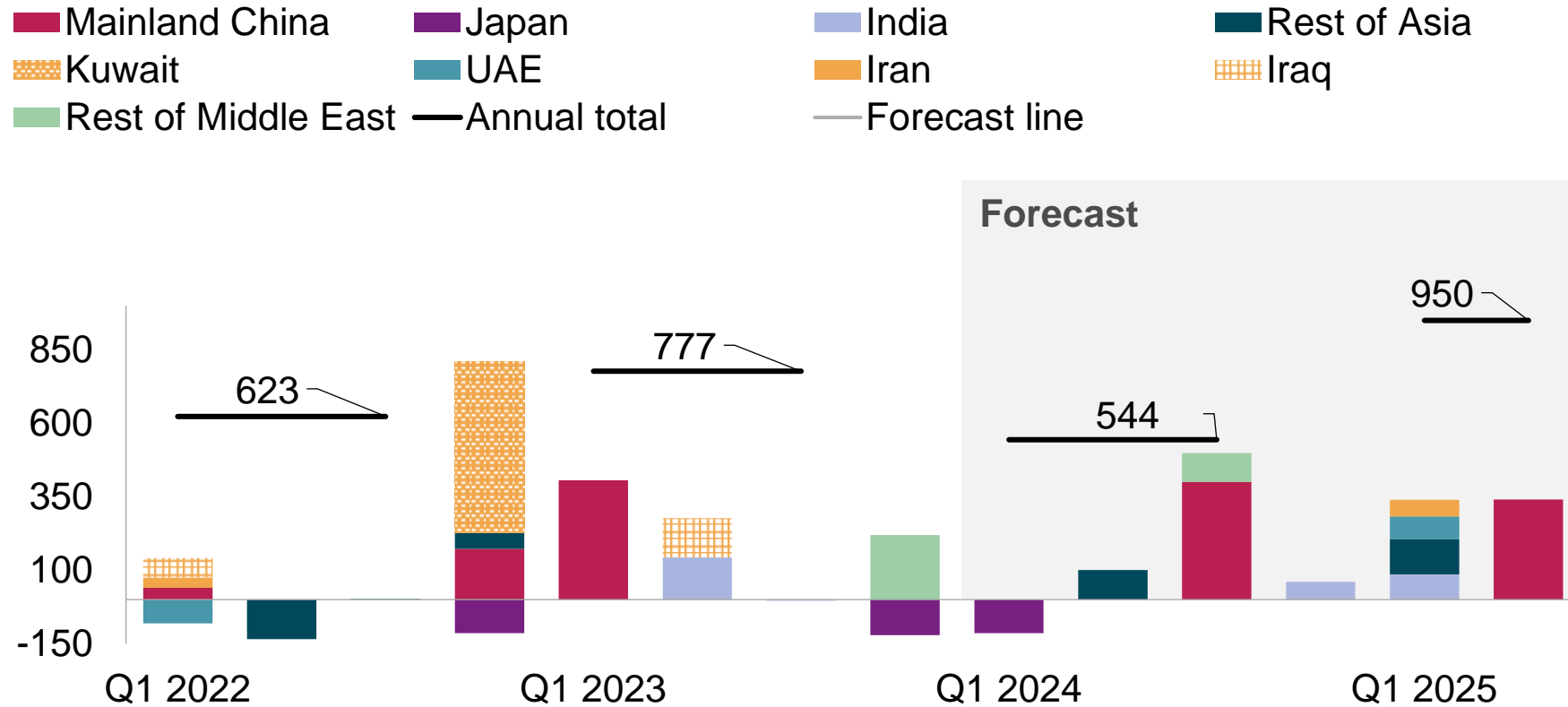
Source: S&P Global Commodity Insights

Singapore yardstick refining variable cost margins (\$/b)



Upcoming refinery capacity additions in Asia and Middle East

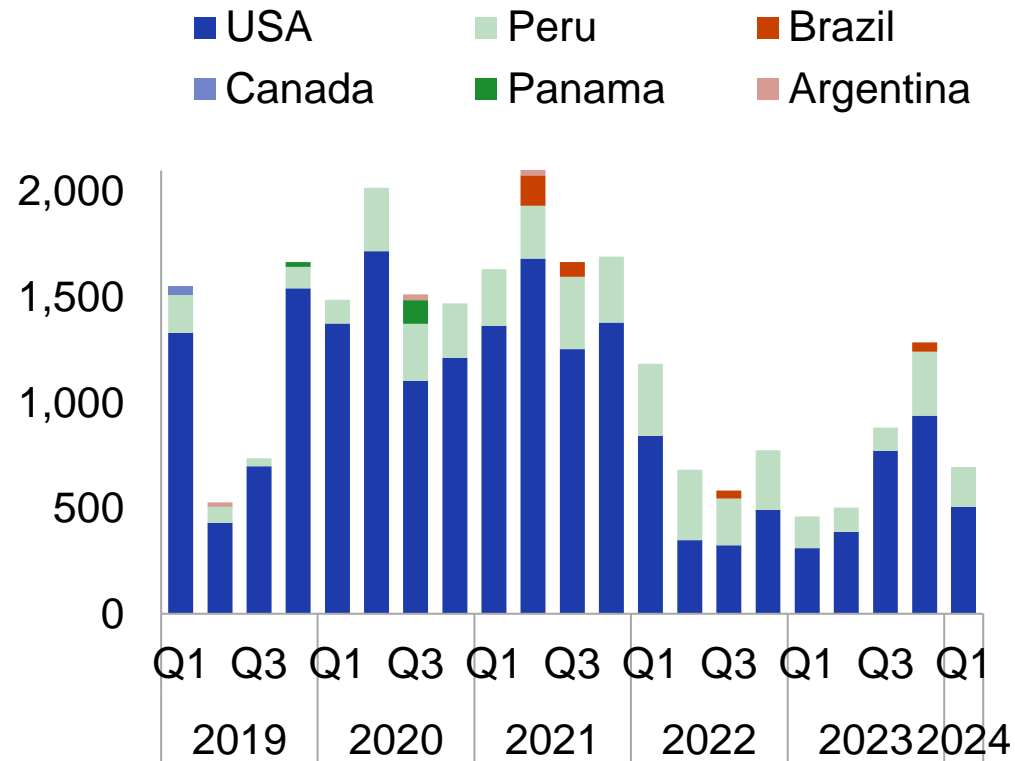
CDU and condensate fractionation capacity net additions (thousand b/d)



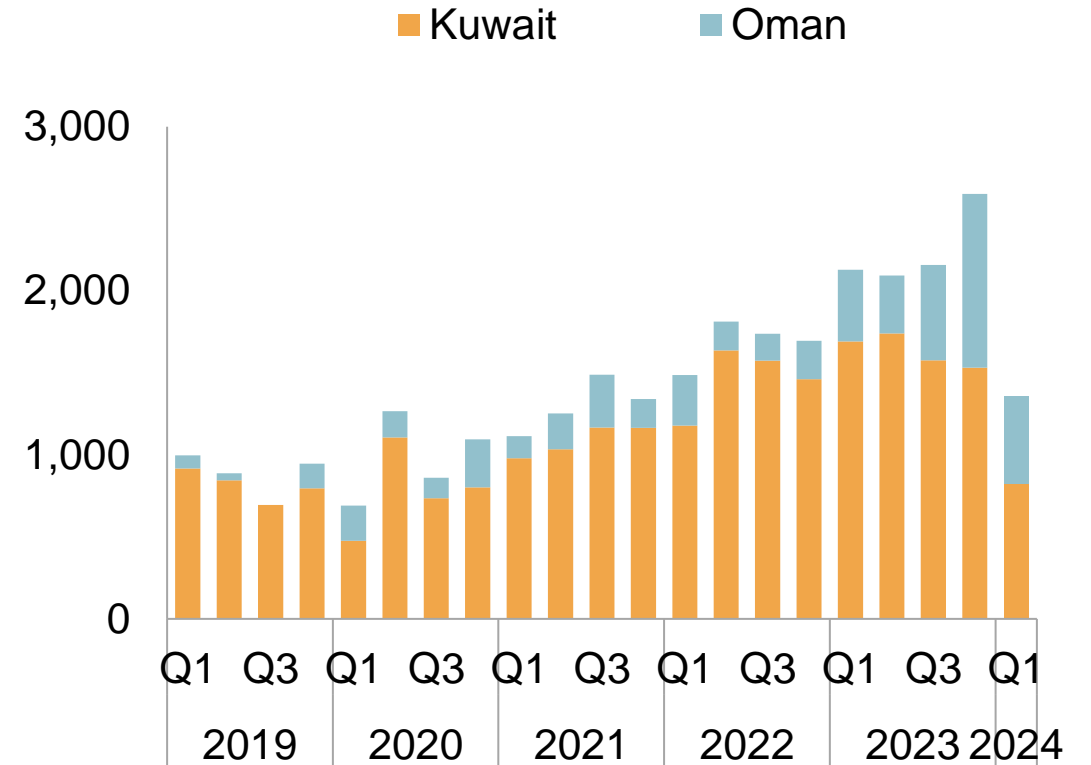
Source: S&P Global Commodity Insights

US & Middle East naphtha exports on the rise; Russian exports remain resilient

**Americas naphtha exports into Asia
(thousand mt)**



**New MDE naphtha exports into Asia
(thousand mt)**

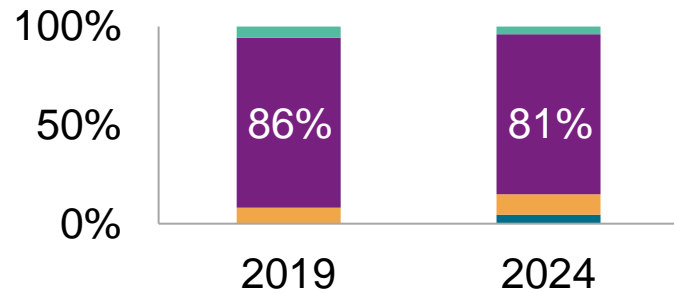


Source: Commodities at Sea, S&P Global Commodity Insights

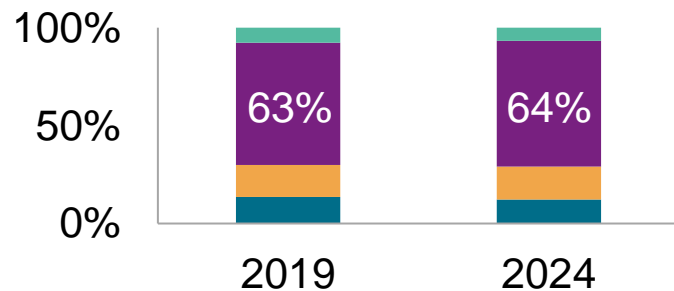
Steam cracking in Asia remains predominantly naphtha-based, but short-term market dynamics will force flexible crackers to optimize feedstock economics

■ Ethane ■ LPG ■ Naphtha ■ Others

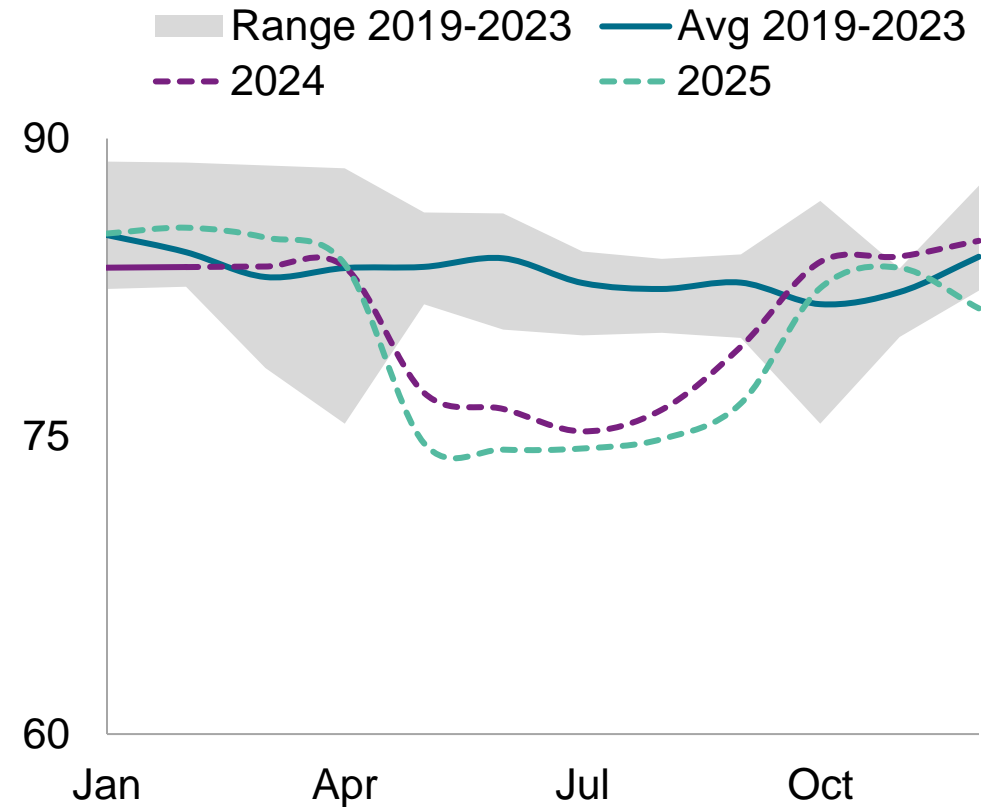
Northeast Asia



Southeast Asia + Oceania



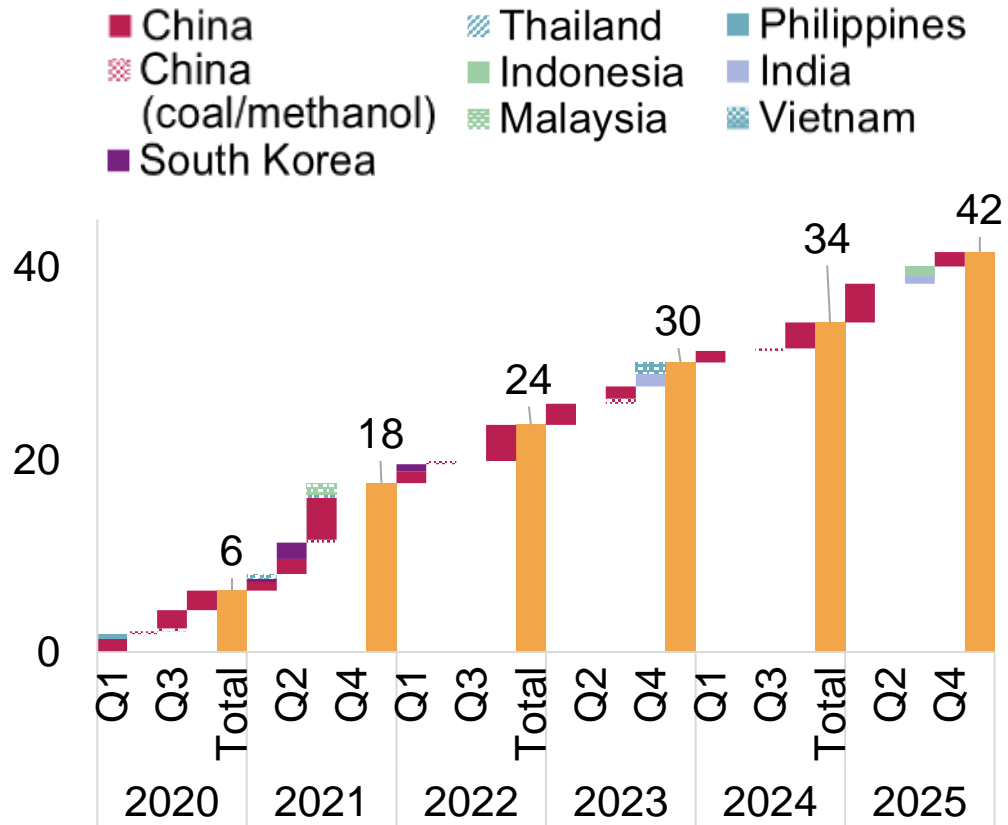
Northeast Asia steam crackers (naphtha, %)



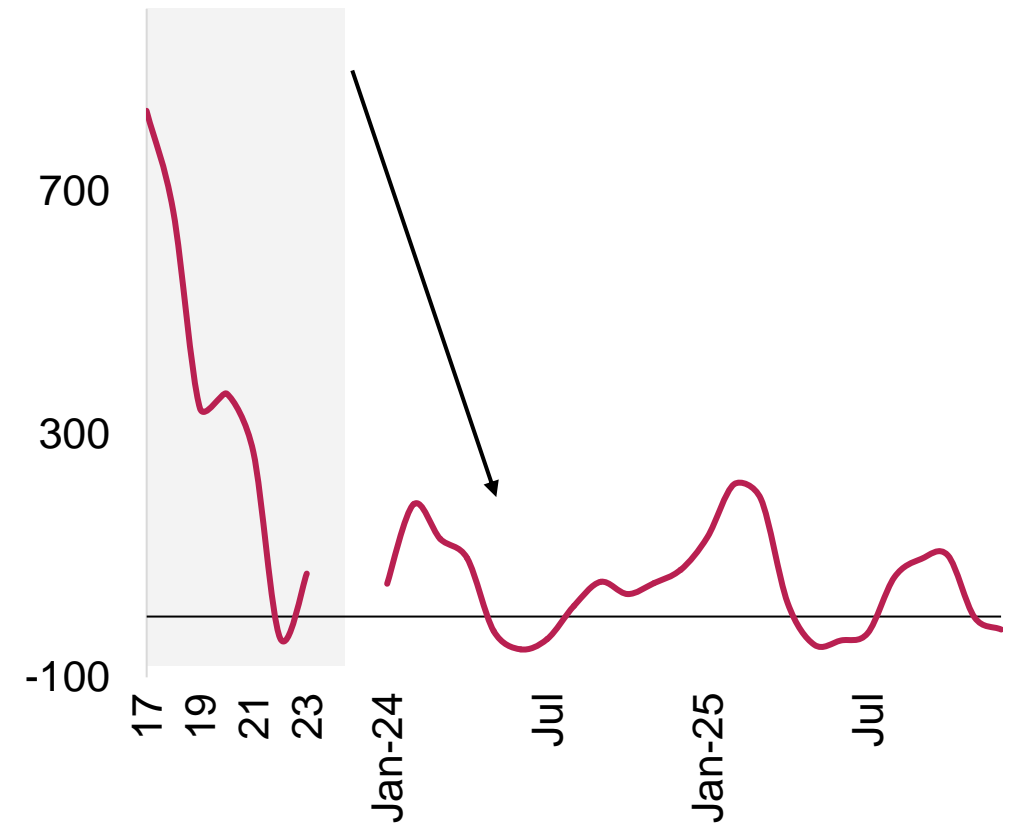
Source: S&P Global Commodity Insights

New cracker projects will continue to start up in Asia even as margins remain under pressure

Asia ethylene projects (million mt/year)



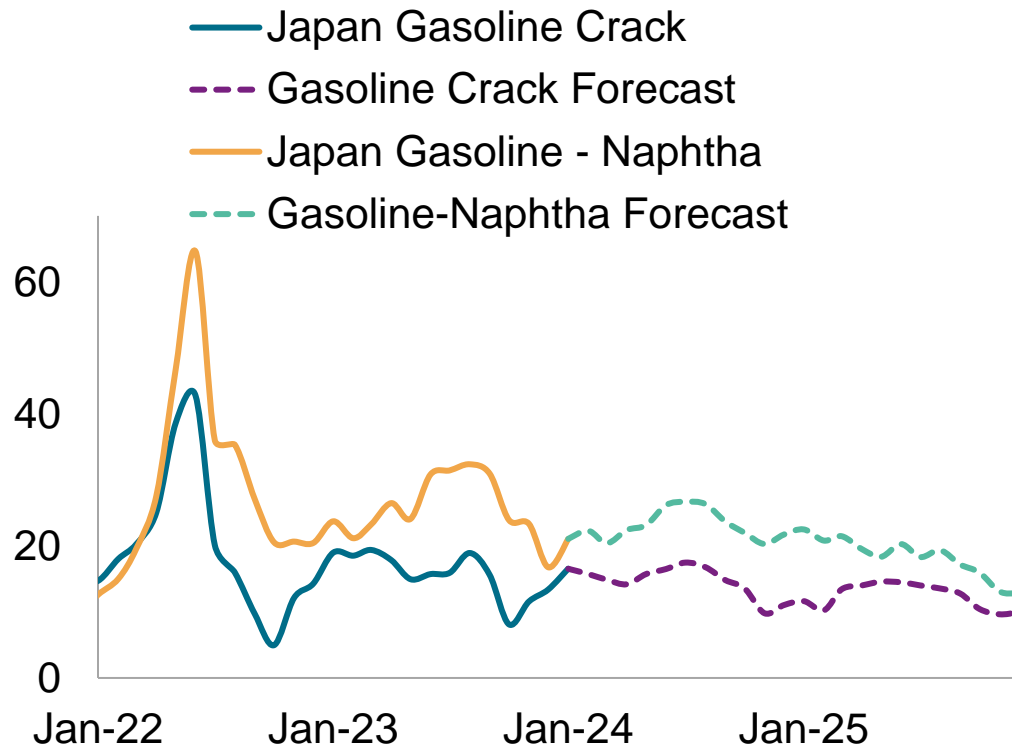
NE Asia naphtha cracker margins (\$/mt)



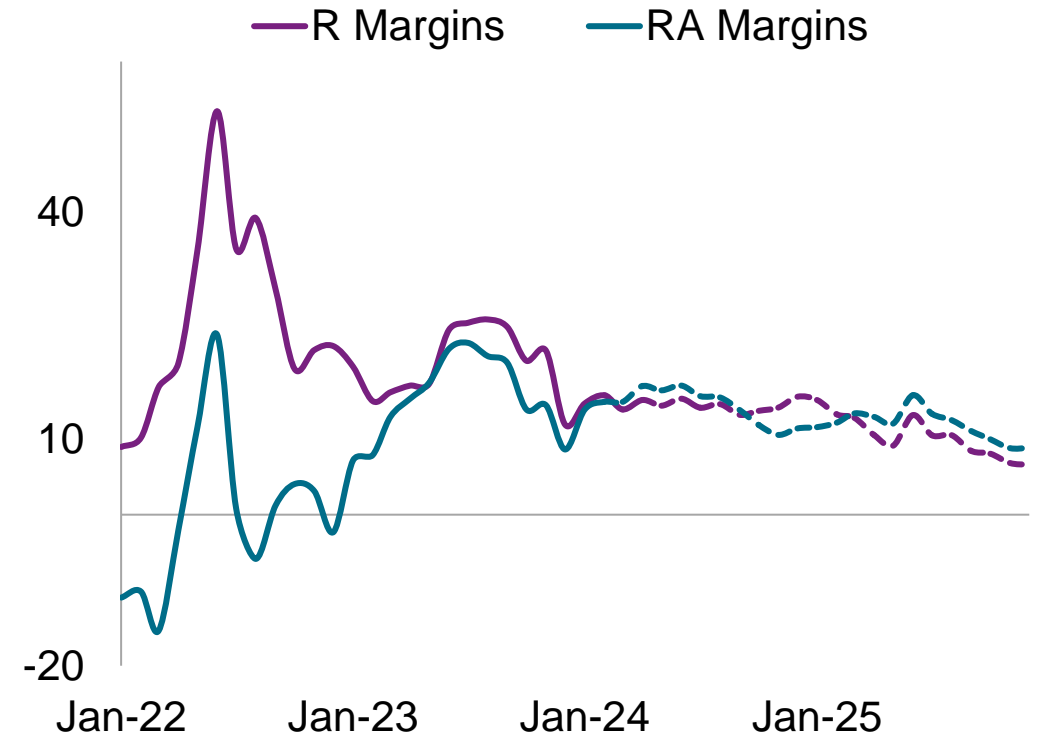
Source: S&P Global Commodity Insights

Wide gasoline-naphtha spread and recovery in aromatics margins will continue to keep reformer runs high, supporting heavy naphtha demand

Asia gasoline cracks (vs Dubai) and gasoline - naphtha spread (\$/b)



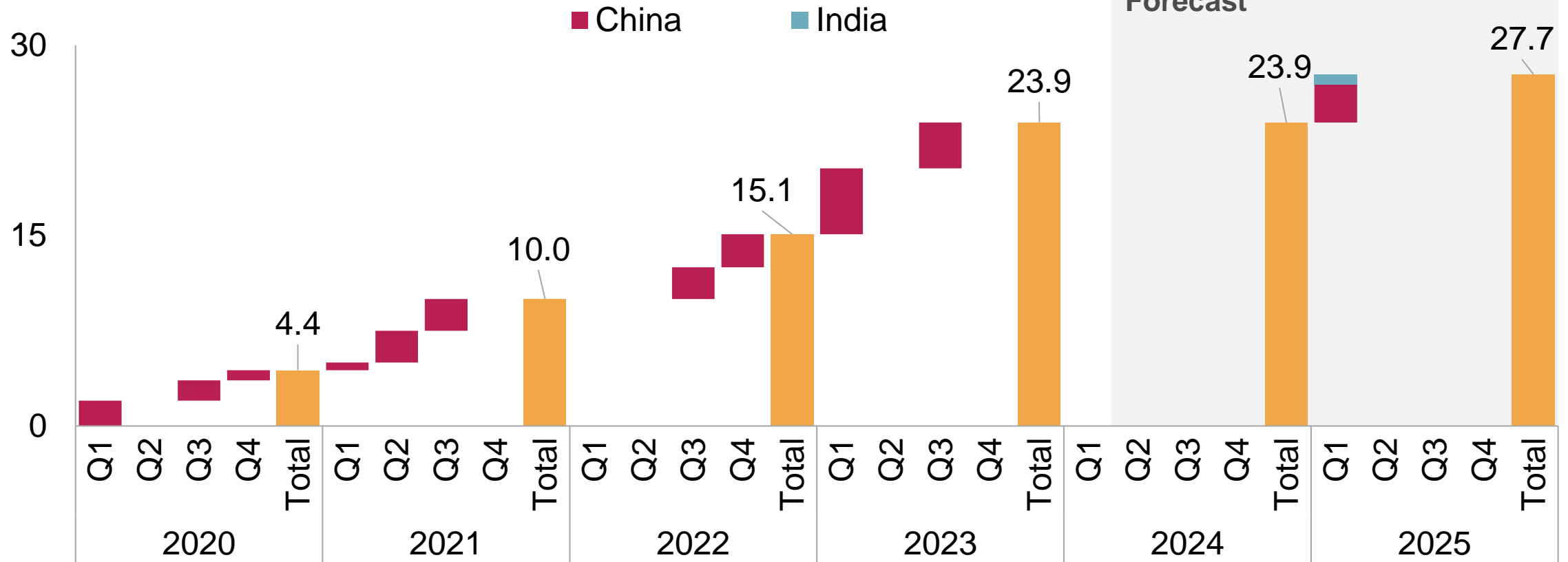
Naphtha reforming and aromatics extraction margins (\$/b)



Source: S&P Global Commodity Insights

Aromatics sector continue to drive demand for heavy naphtha

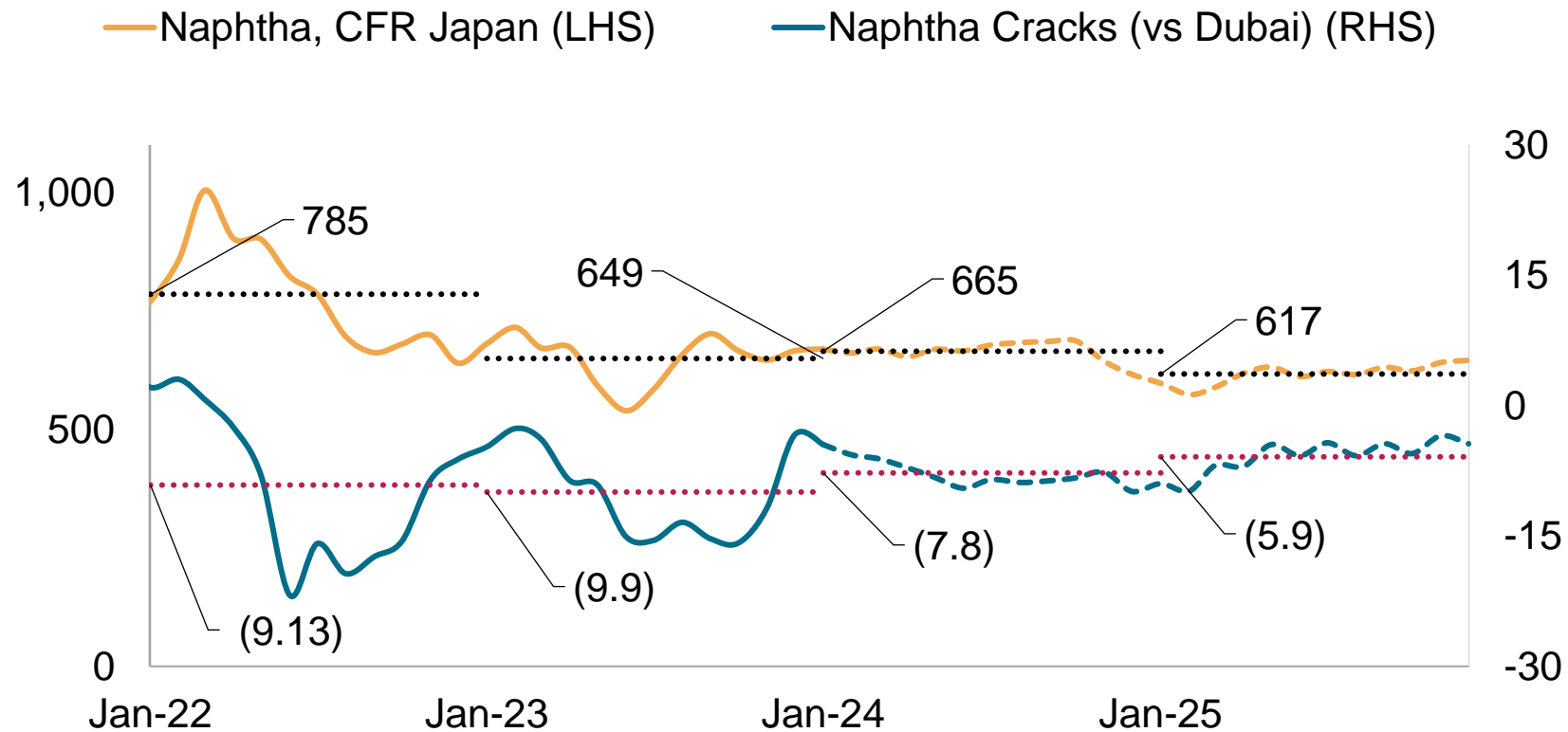
Asia PX projects (million mt)



Source: S&P Global Commodity Insights

Naphtha cracks to recover moderately toward 2025, but will remain negative as weak supply/ demand fundamentals persist

Platts naphtha CFR Japan (\$/t vs. \$/b)



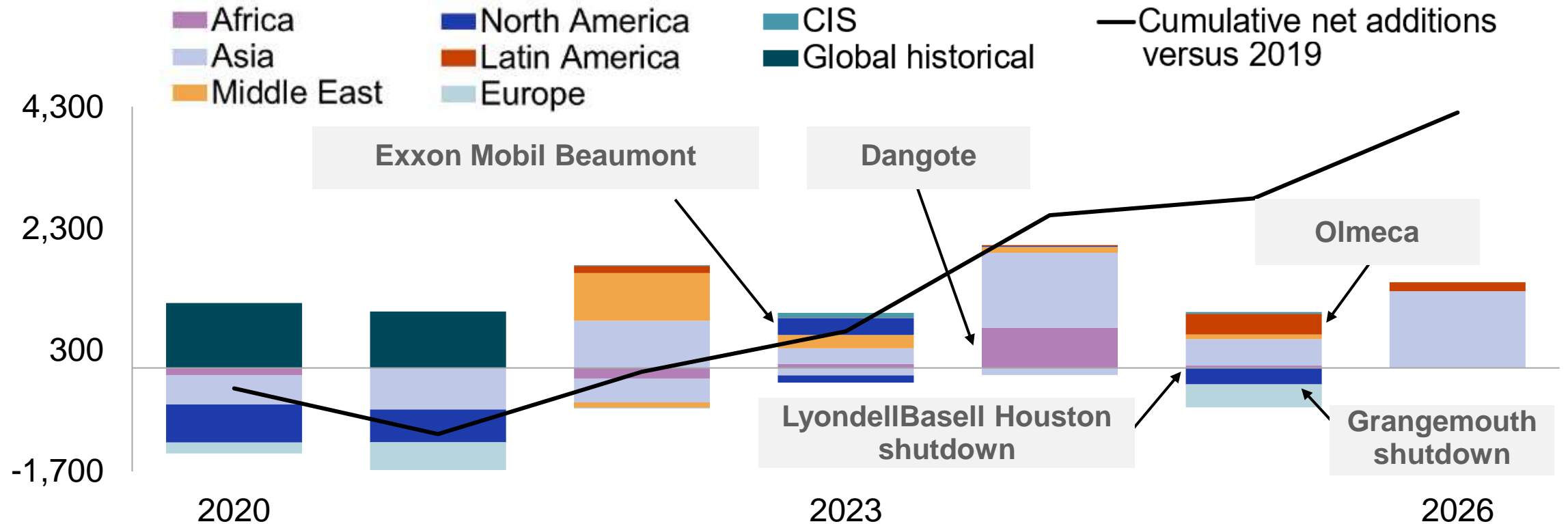
Source: S&P Global Commodity Insights



Naphtha – long-term supply outlook

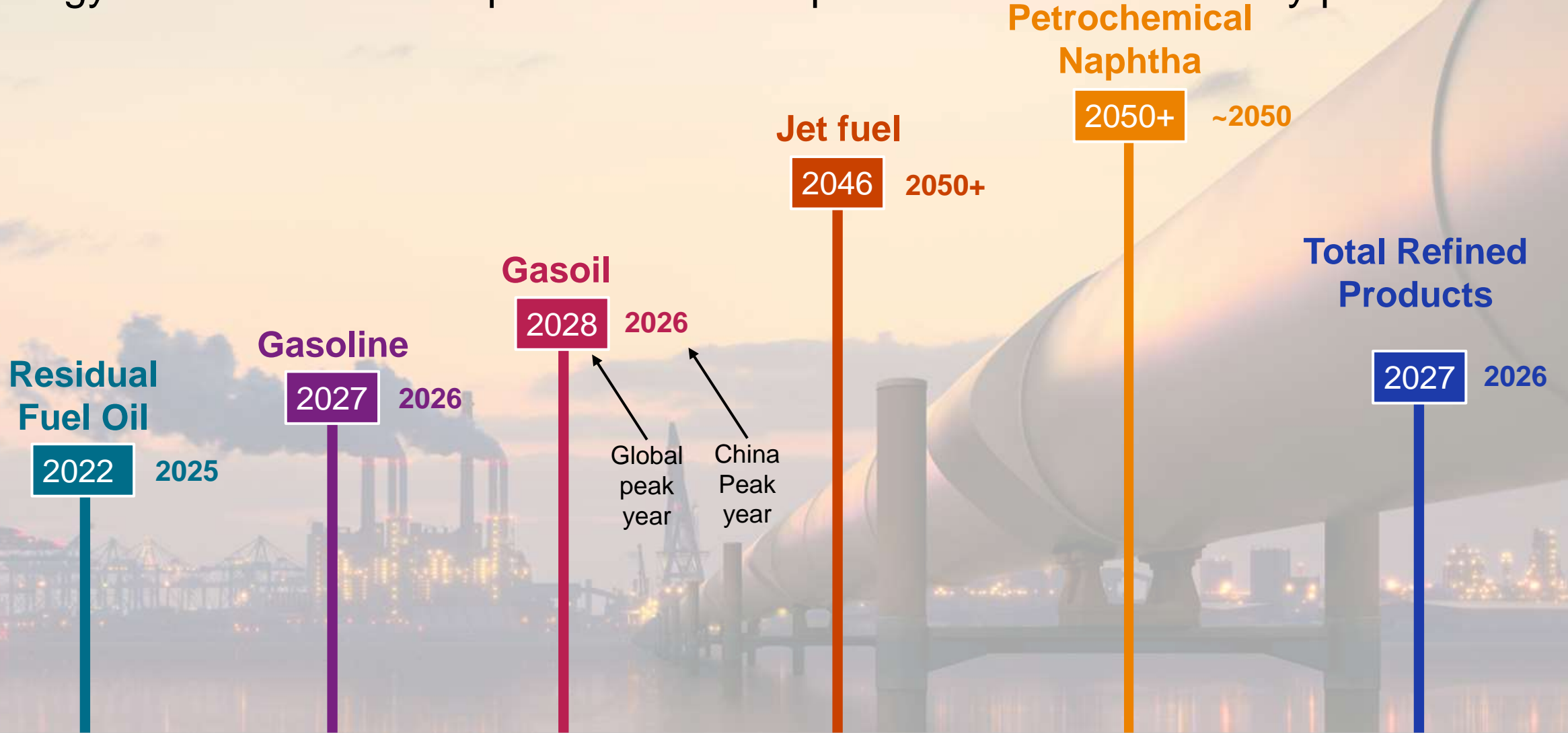
Refinery construction activity: What does it mean for naphtha?

Anticipated crude capacity additions and closures to 2026 (thousand b/d)



CIS = Commonwealth of Independent States.
Source: S&P Global Commodity Insights.

Energy transition – refined product demand peaks before 2030 for key products

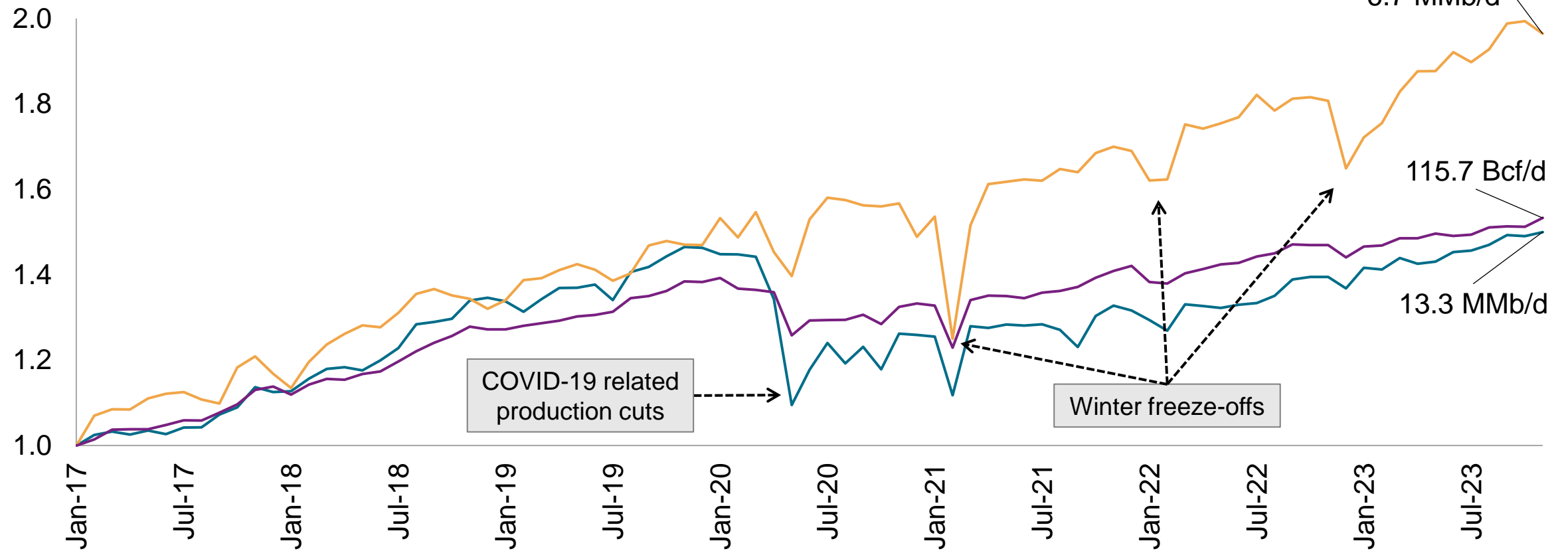


A nighttime photograph of an industrial facility, likely a natural gas processing plant. The scene is illuminated by warm, yellowish lights. In the foreground, several large, cylindrical storage tanks are visible, with their curved surfaces reflecting the light. In the background, there are tall distillation columns and a complex network of pipes and scaffolding. The overall atmosphere is industrial and active.

NGL – long-term supply outlook

US NGL supply has been outpacing crude and gas production – increasing associated gas and higher ethane recovery being the main contributors

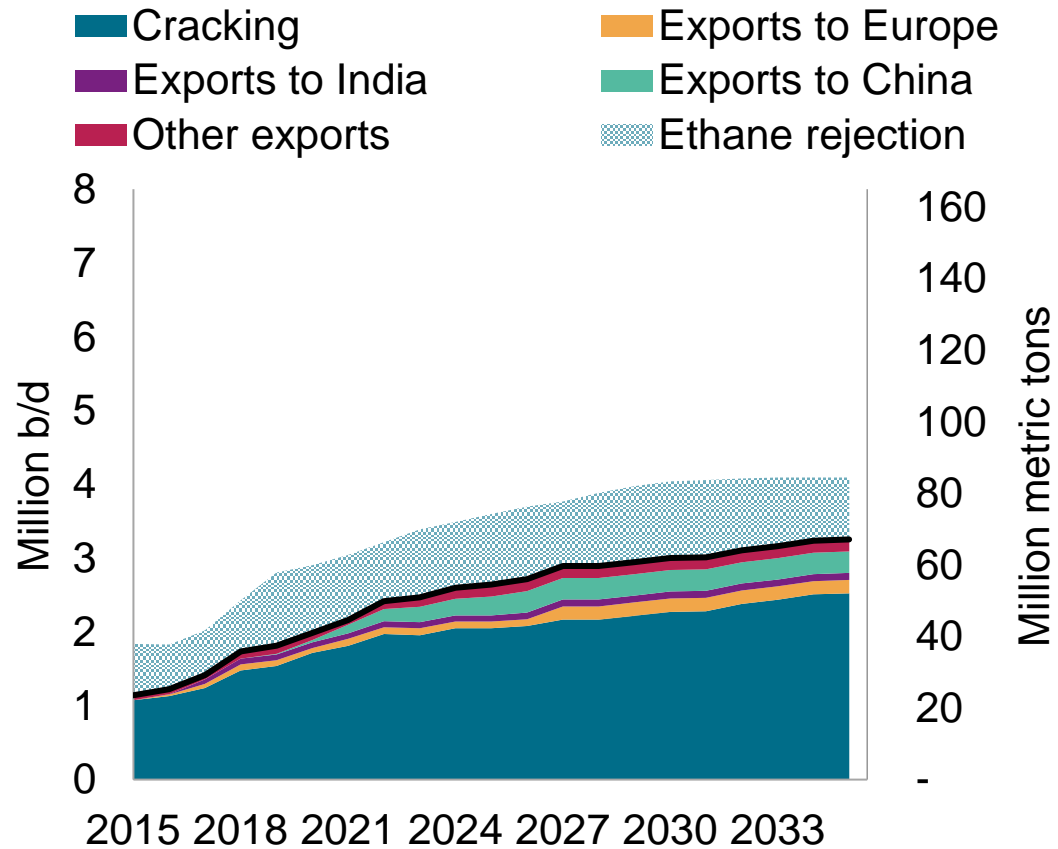
US crude, gas and NGL production growth index



Note: Data show EIA's last reported monthly data
Source: S&P Global Commodity Insights, EIA

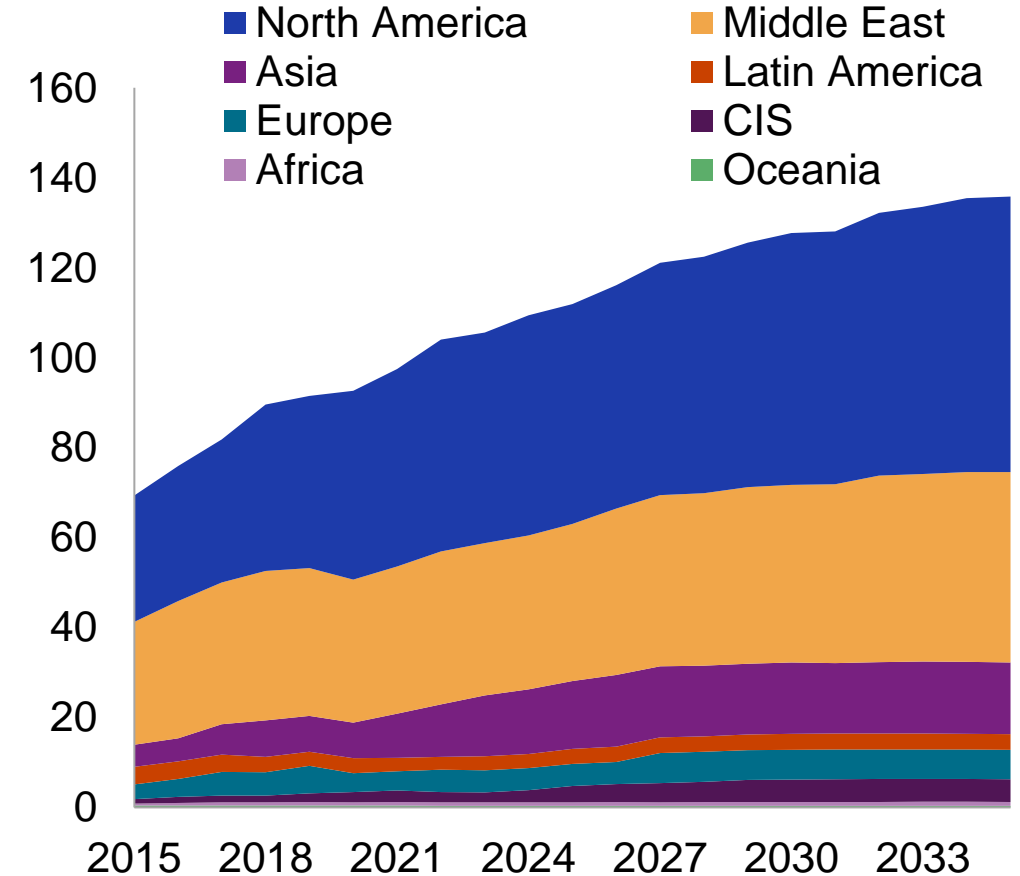
Increasing ethane availability can support additional ethane crackers in the US, as well as provide more for exports supported by petrochemical demand in Asia

US ethane availability and demand



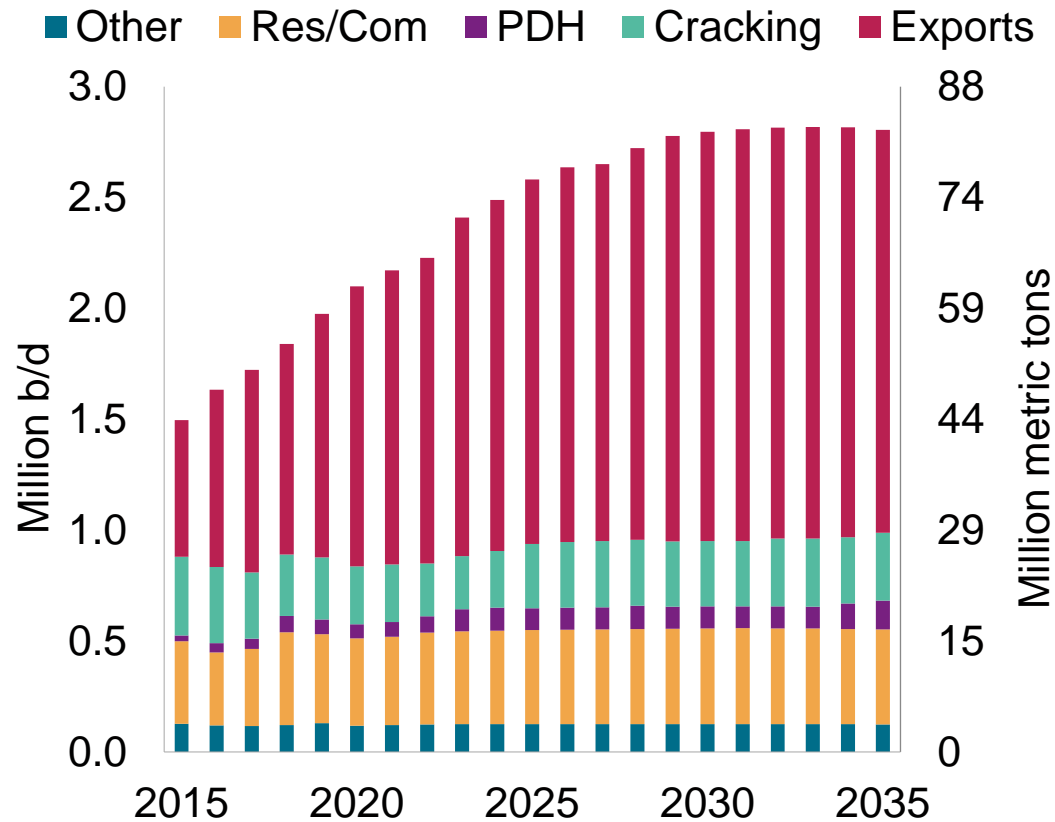
Source: S&P Global Commodity Insights.

Ethane consumption (Million metric tons)

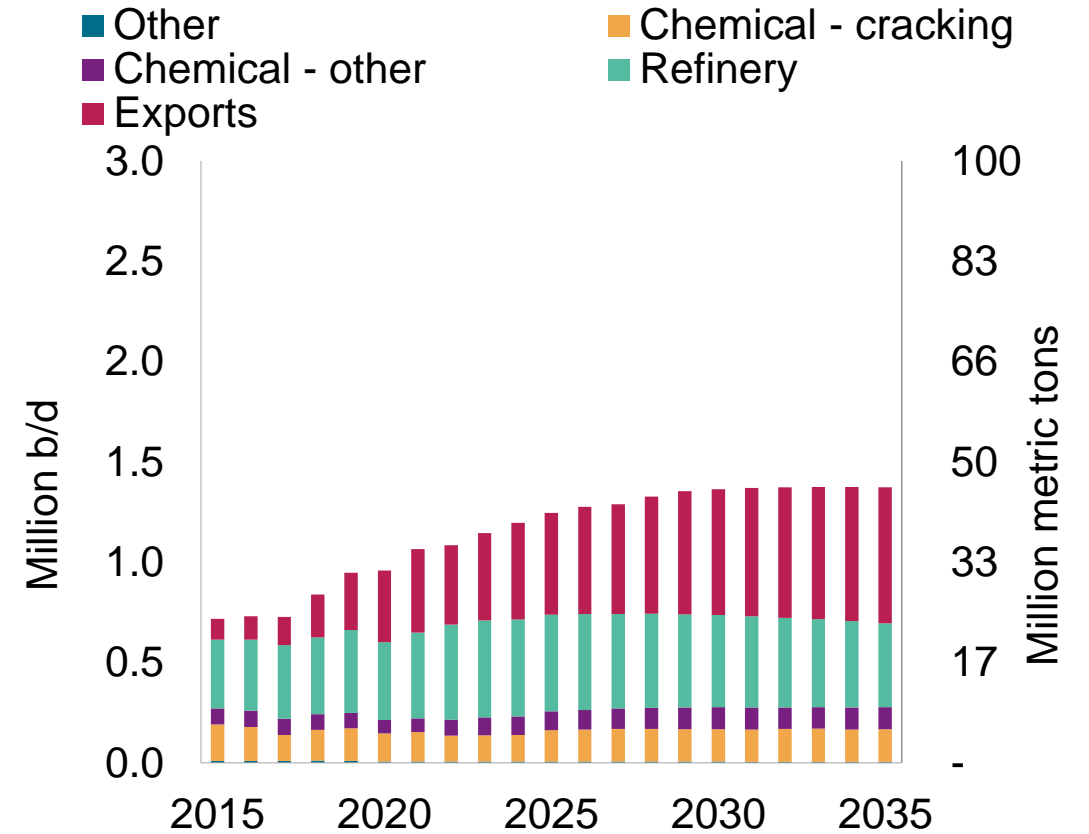


Propane and butane supply surplus will persist with flat to declining domestic demand, leading to more exports

US propane consumption and exports



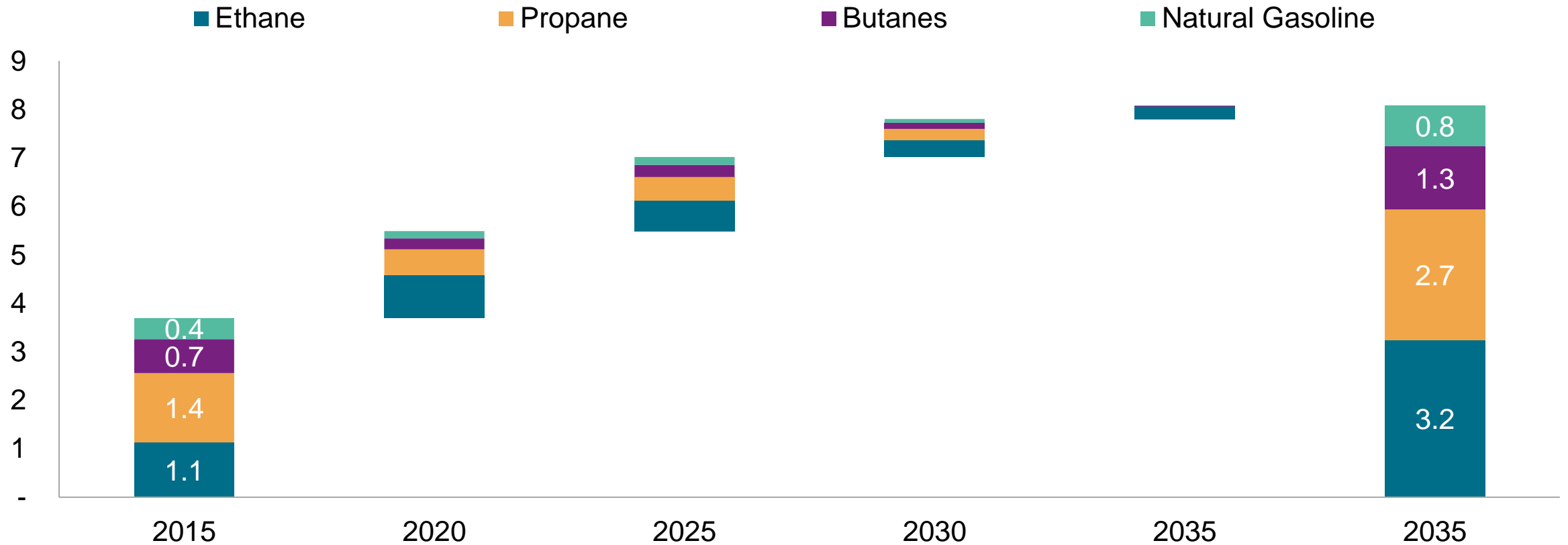
US butanes consumption and exports



Source: S&P Global Commodity Insights.

US NGL production to reach 8 million b/d – growth slows drastically post 2030 as declining oil demand decelerates oil and gas supply from key plays like Permian

US NGL production (million b/d)



Notes: Production includes both natural gas and refinery. Butanes include normal butane and isobutane.
Source: S&P Global Commodity Insights

A magnifying glass with a silver frame is positioned over a blue background. The lens of the magnifying glass is focused on the text "MEGA TRENDS", which is written in a bold, white, sans-serif font. The text is arranged in two lines: "MEGA" on the top line and "TRENDS" on the bottom line. The magnifying glass's handle is visible at the bottom right corner of the frame.

**MEGA
TRENDS**

Base chemical end-use is driven by global GDP and mega trends such as population growth and increasing urbanization



World population by 2050



... of world's population will live in cities by 2050



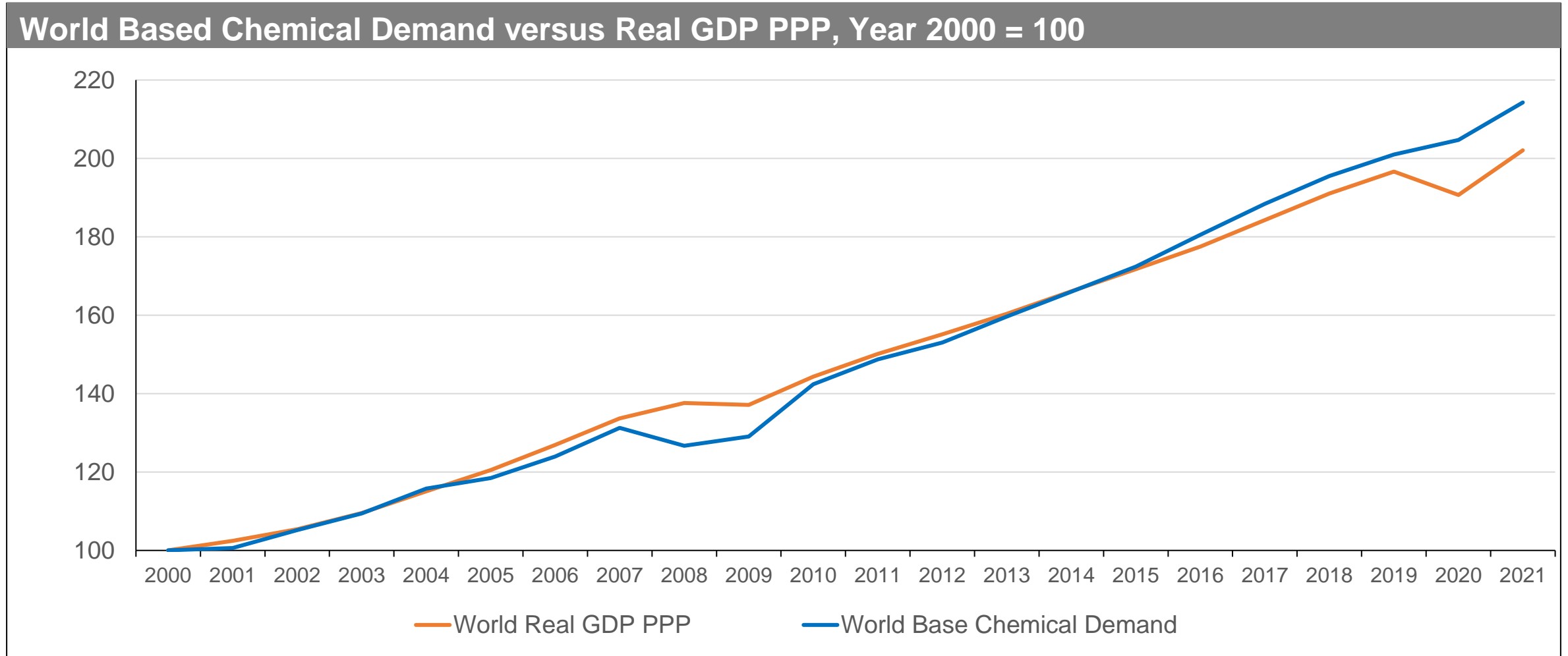
more energy will be consumed by 2050 vs 2018



more food will be needed by 2050 vs 2010

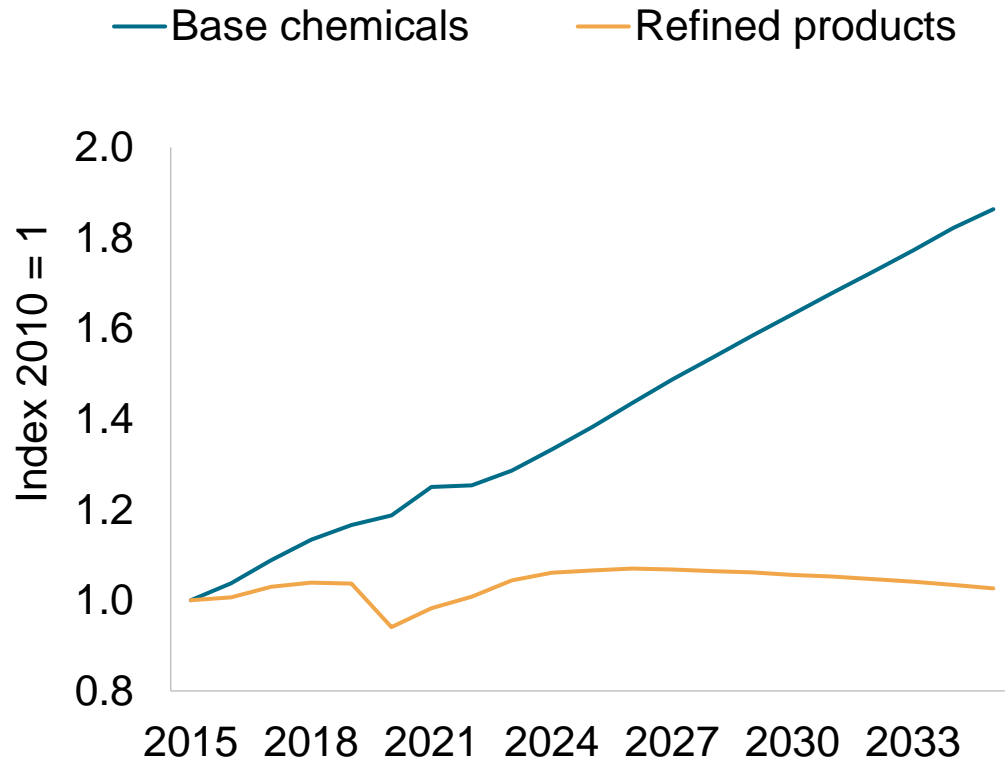


Base chemical demand has grown at or faster than GDP



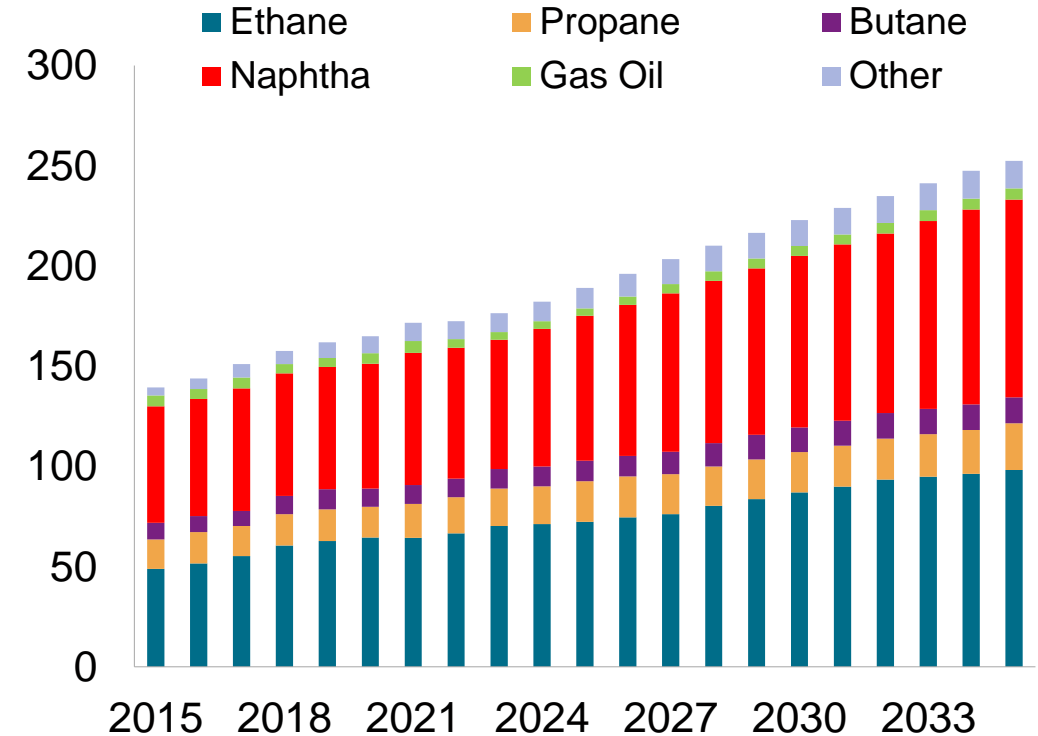
Peaking global LPG supply by mid 2035 means more naphtha will be required to support petrochemical demand

Index of base chemicals and refined products growth



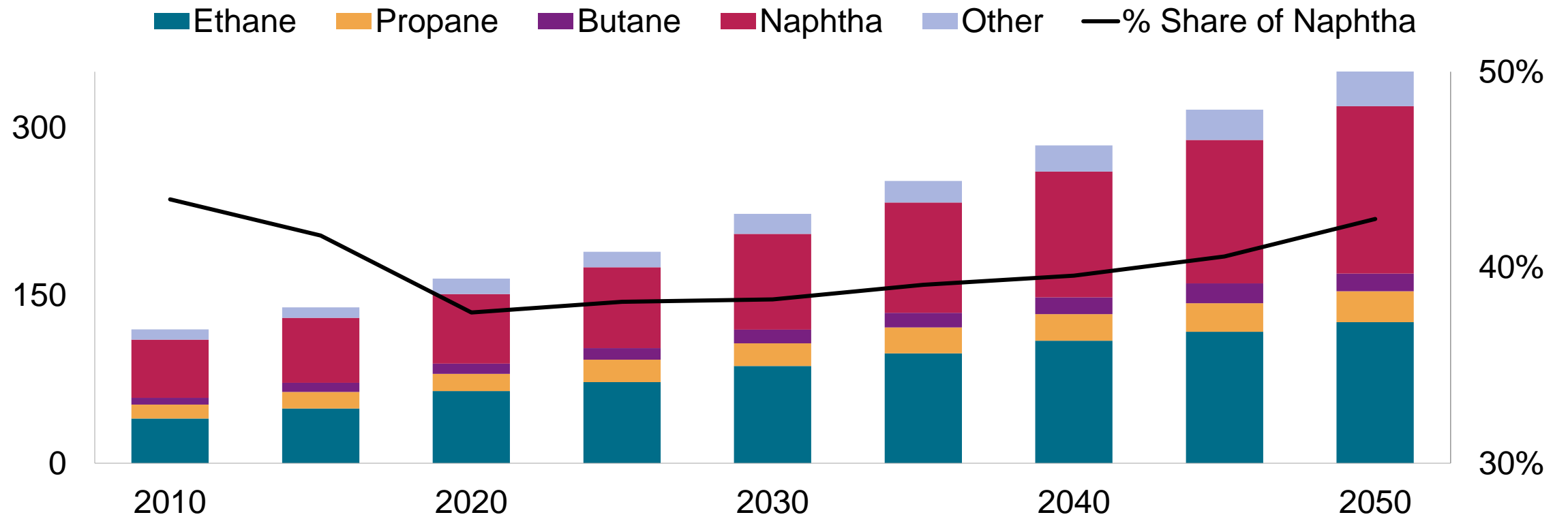
Base chemicals includes ethylene and propylene.
Source: S&P Global Commodity Insights.

Global ethylene production by feedstock (million metric tons)



Ethylene demand will grow at healthy pace with increasing use of light naphtha as feedstock, particularly in long term

Global ethylene production by feedstock (million metric tons per annum vs. % share of naphtha)



Source: S&P Global Commodity Insights.

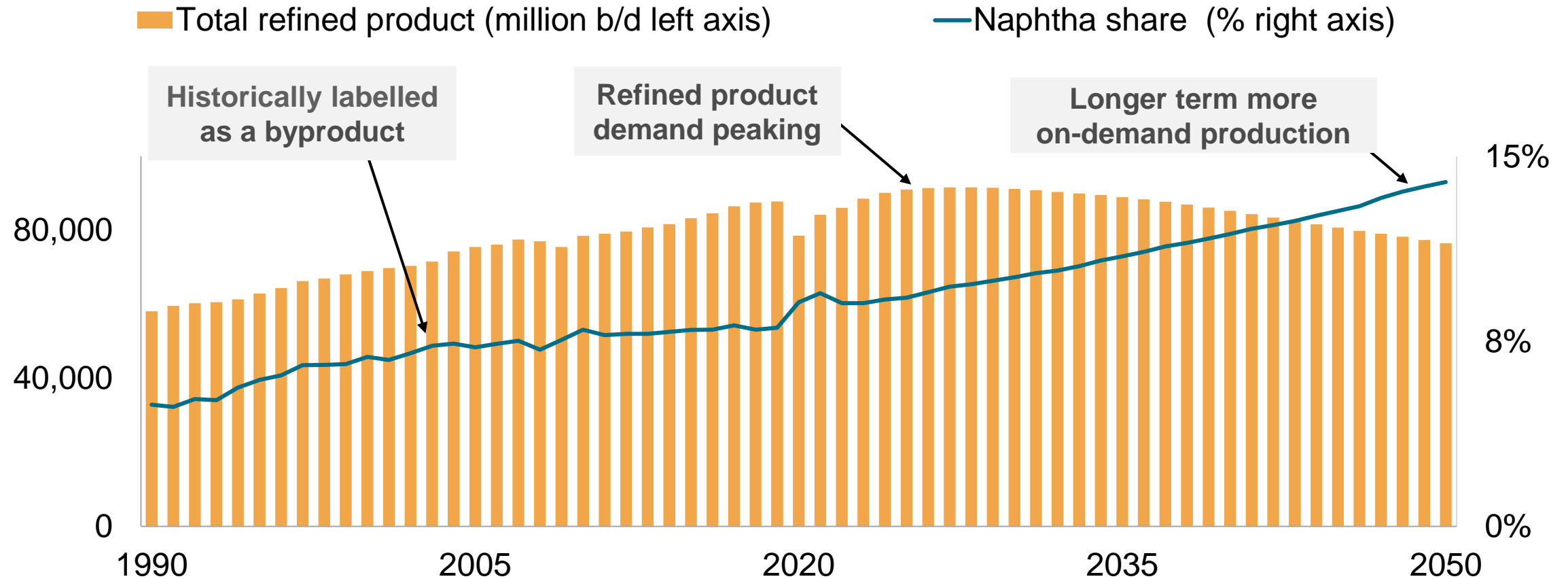


Where will the additional naphtha come from?



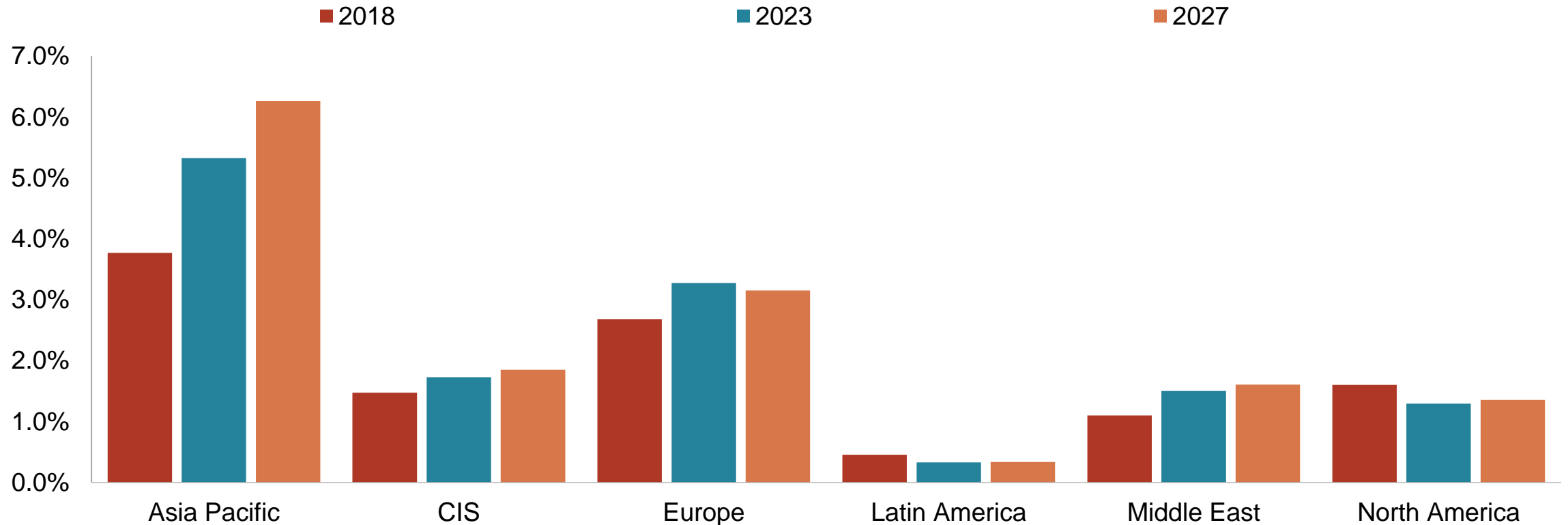
From Byproduct to On-Purpose: Will naphtha become a demand driven product?

Naphtha share of total refined production



Integration is trending up in most regions around the world

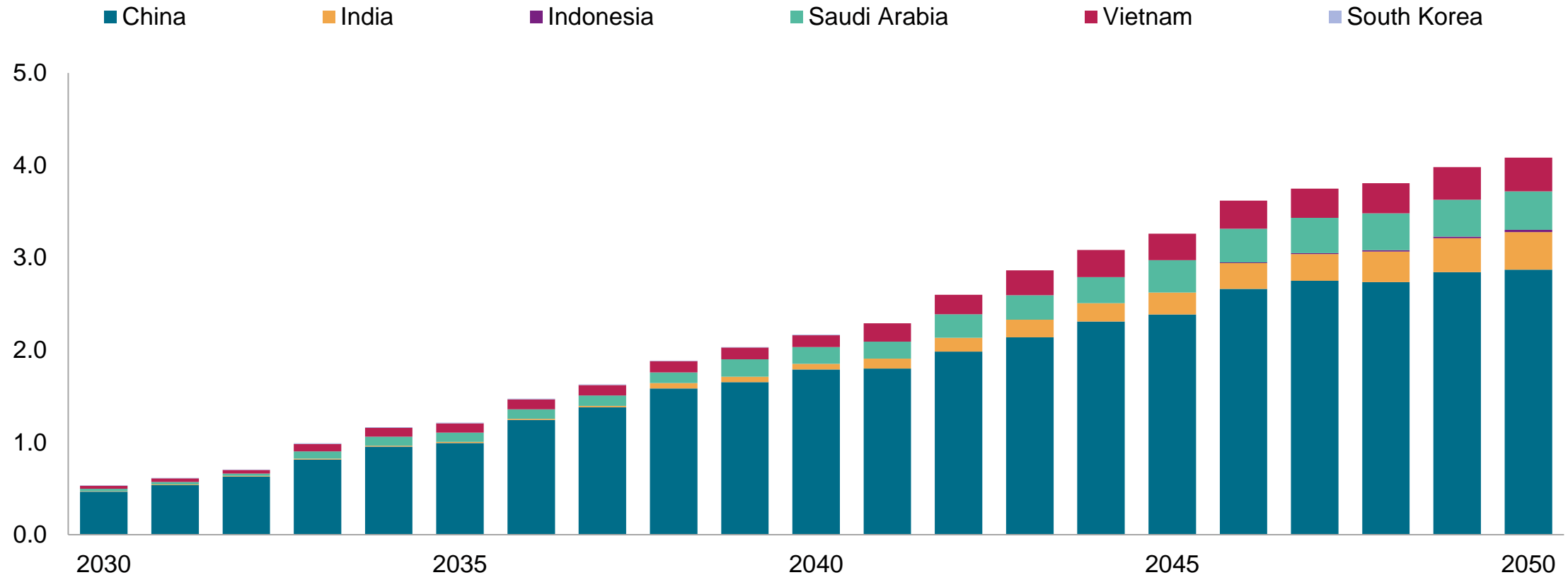
Refinery - petchem integration evolution by region (crude oil basis)



Source: S&P Global Commodity Insights

With the shift in focus from fuel to chemicals, direct crude oil-to-chemical (COTC) projects will account for 4 million b/d crude consumption led by China

Direct Crude Oil to Chemical Demand by Country (Million barrels per day)



Source: S&P Global Commodity Insights.

© 2024 S&P Global Commodity Insights®. All rights reserved.

Key messages

Oversupply of naphtha will remain, but naphtha cracks will see modest recovery through 2025

Energy transition means total refined product demand will peak before 2030

Global NGL supply increasing but expected to plateau by mid-2030s

No peak demand anticipated for petrochemicals

Long-term, on-purpose naphtha production will be required

Commodity Insights is committed to full compliance with all applicable antitrust laws. Accordingly, this presentation will be conducted in strict compliance with both the letter and the spirit of all applicable antitrust laws.

Commodity Insights expects participants to comply with all antitrust laws and not to use this event to coordinate their commercial activities. Any activity that could create even the appearance of a restriction or distortion of competition must be avoided. To ensure compliance with antitrust laws, Commodity Insights and all participants shall keep strictly within the presentation agenda, as circulated.

In particular, Commodity Insights prohibits any discussions/exchanges of information about any participant's individual, current or future: (1) prices (including discounts, rebates and reductions); (2) costs; (3) profits and profit margins; (4) capacity, output and sales; (5) supply and demand forecasts; (6) market shares and sales territories; (7) investments and marketing plans; or (8) unannounced capital expansion closure plans."

Restrictions on Use: You may use the analyses, prices, indexes, assessments and other related information (collectively, "Data") in this presentation only for your personal use. You may not publish, photocopy, reproduce, distribute, retransmit, resell, create any derivative work from, put into a computer system and/or otherwise provide access to Data or any portion thereof to any person (either within or outside your company including, but not limited to, via or as part of any internal electronic system or Internet site), firm or entity.

Disclaimer: S&P GLOBAL COMMODITY INSIGHTS, ITS AFFILIATES AND ALL OF THEIR THIRD-PARTY LICENSORS DISCLAIM ANY AND ALL WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO, ANY WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR USE AS TO THE DATA, OR THE RESULTS TO BE OBTAINED BY ITS USE OR AS TO THE PERFORMANCE THEREOF. A reference to a particular investment, security, rating or any observation concerning a security or investment provided in the Commodity Insights Information is not a recommendation to buy, sell or hold such investment or security or make any other investment decisions AND DOES NOT ADDRESS THE SUITABILITY OF ANY INVESTMENT OR SECURITY. NO user of the Commodity Insights information should rely on any INDEX, BENCHMARK, price assessment, observation, OPINION or other information contained IN THE COMMODITY INSIGHTS INFORMATION in making any investment or other decision. Commodity Insights does not sponsor, endorse, sell or promote any securities, other financial or investment products or services. THE COMMODITY INSIGHTS INFORMATION IS NOT A SUBSTITUTE FOR THE SKILL, JUDGMENT AND EXPERIENCE OF SUBSCRIBER, ITS MANAGEMENT, EMPLOYEES, ADVISORS AND/OR CLIENTS IN MAKING INVESTMENT AND OTHER BUSINESS DECISIONS.

Limitation of Liability: In no event whatsoever shall S&P Global Commodity Insights, its affiliates or their third-party licensors be liable for any indirect, special, incidental, punitive or consequential damages, including but not limited to loss of profits, trading losses, or lost time or goodwill, even if they have been advised of the possibility of such damages, whether in contract, tort, strict liability or otherwise. The Data is provided on an "as is" basis and your use of the Data is at your own risk.

The names "S&P Global Commodity Insights" and "Commodity Insights" and the Platts logo are trademarks of S&P Global Inc. Any commercial use of the S&P Global Commodity Insights logo must be granted in writing by S&P Global Commodity Insights.

Copyright © 2022 by S&P Global Commodity Insights, a division of S&P Global Inc. All rights reserved.