Argus Olefins Margins

19 February 2025

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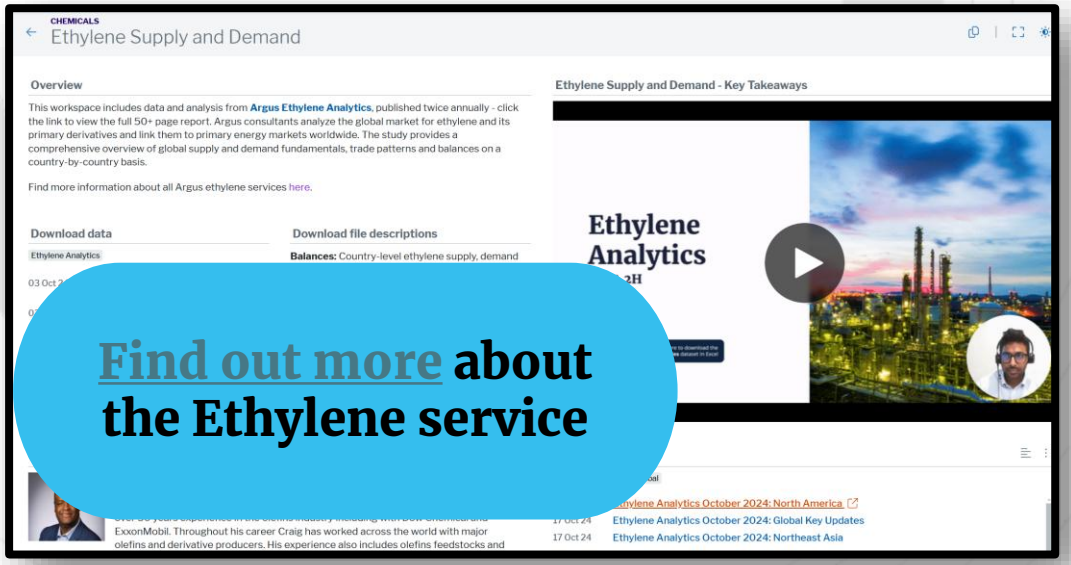

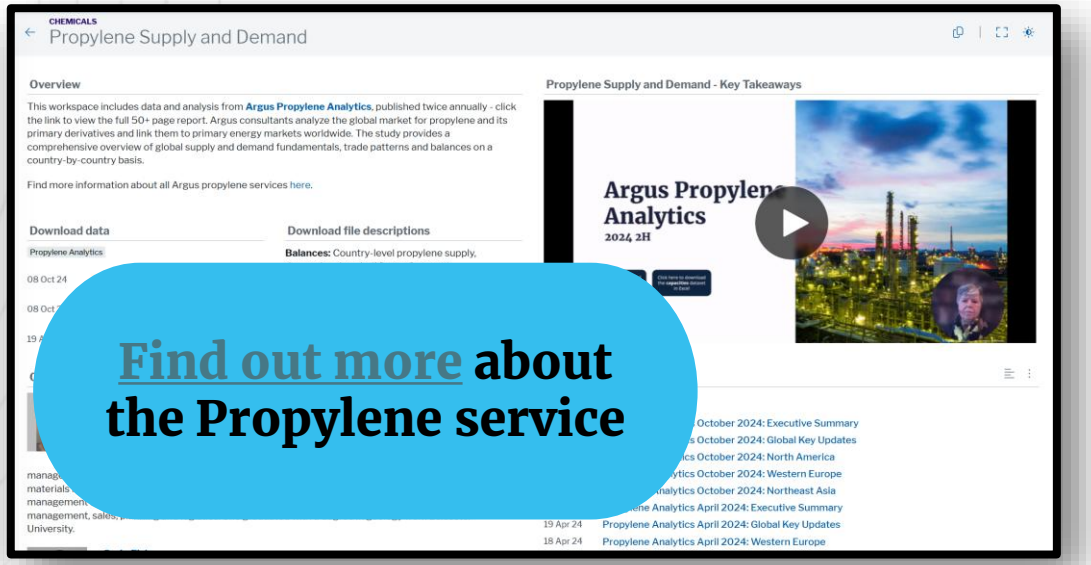

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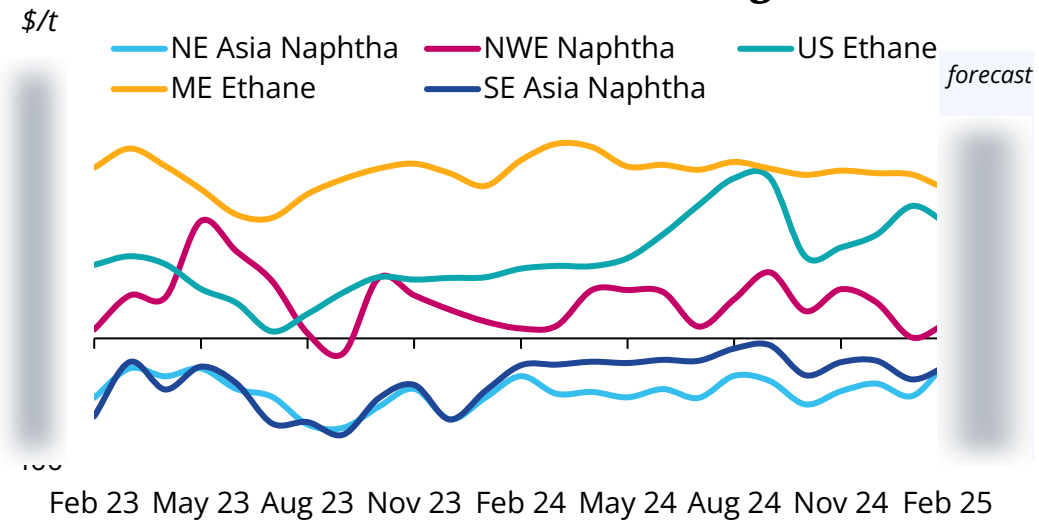
Executive summary

Click here to download the price dataset in Excel

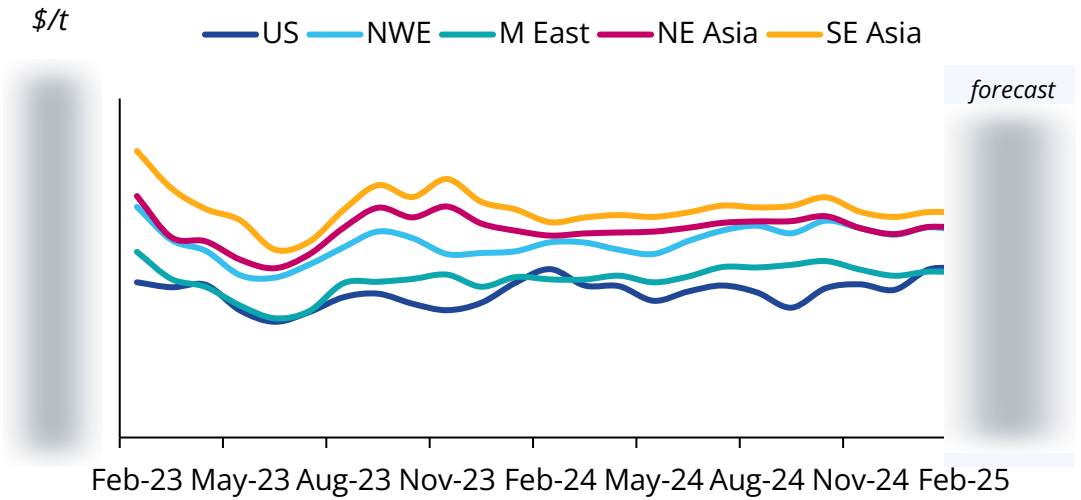
Some markets are tight at present but underlying demand remains weak

- **US:** Ethane margins are expected to weaken as ethylene prices recede.
- **Northwest Europe:** Increased discounts to contract prices will pressure cracker margins in 2025.
- **Middle East:** Saudi Aramco increased its ethane prices for a second year in a row, effective from 1 January.
- **Asia:** The market was tight during the lunar new year holiday in January-February, but is expected to be weak but stable for the rest of the year.

Steam cracker cash margin

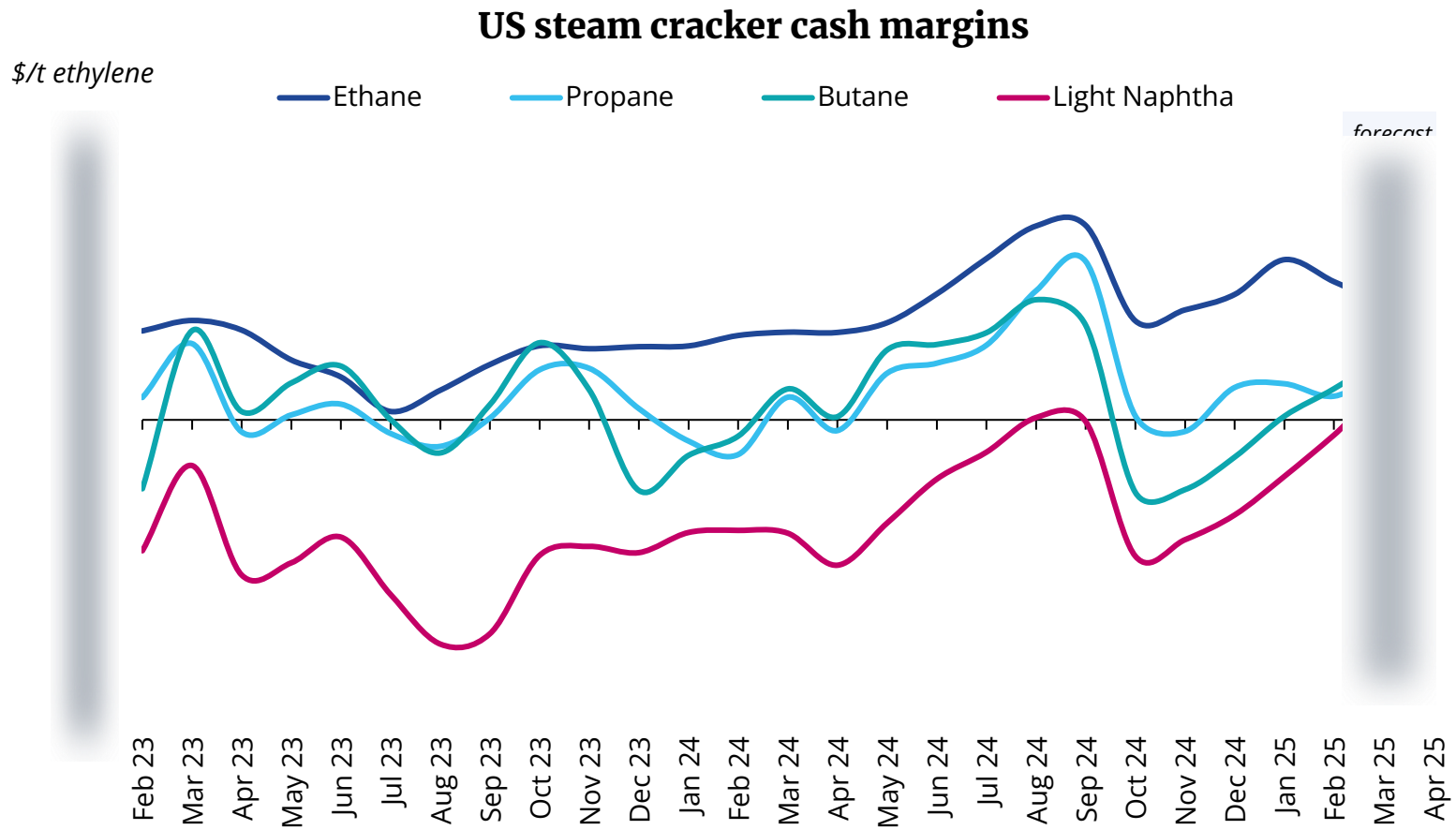


PDH cash costs



US: Steam cracker margins

Ethane margins will steadily decline over forecast period with ethylene prices



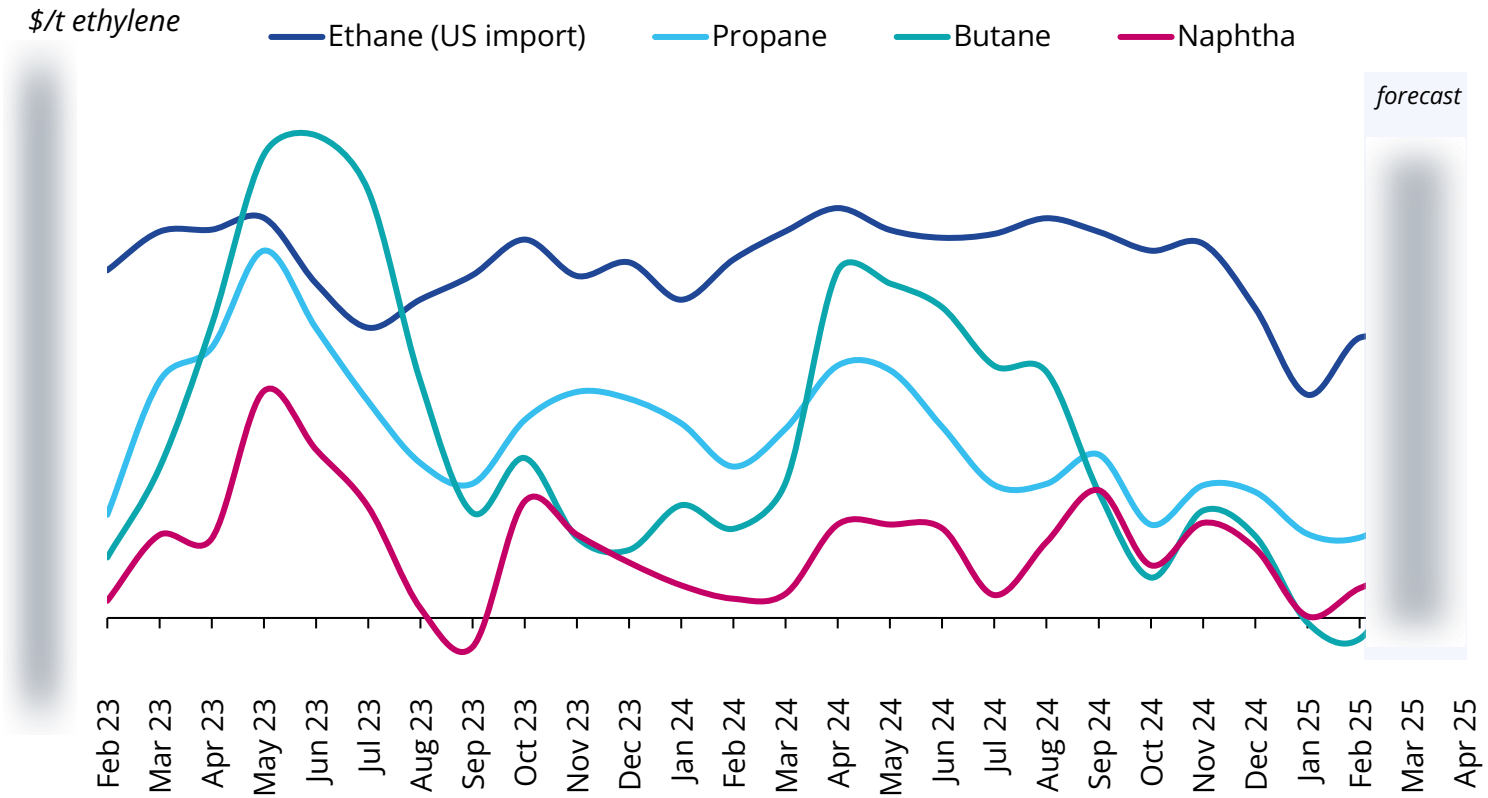
- Ethylene prices had been supported by a heavy cracker turnaround season in the first quarter, but these will gradually decline over the forecast period as capacity is brought back on line. Ethane margins will weaken in step with the decreases in ethylene prices.
- Supply constraints will elevate propylene prices. Both of US midstream firm Enterprise's PDH units — accounting for 1.5mn t/yr of capacity combined — have run into issues. PDH-1 will be shut until the end of February, and PDH-2 has declared force majeure because of reduced operating rates resulting from a design problem with the unit.
- Peak winter heating demand has passed, which will cause LPG prices to fall back to seasonal norms, boosting margins for propane and butane.
- Butane margins are forecast to surpass ethane in April but ethane will still be the most used feedstock.

Based on *Argus'* models, see page 20 for assumptions

Northwest Europe: Steam cracker margins

Increased feedstock costs narrow cracker margins

Northwest Europe steam cracker cash margins



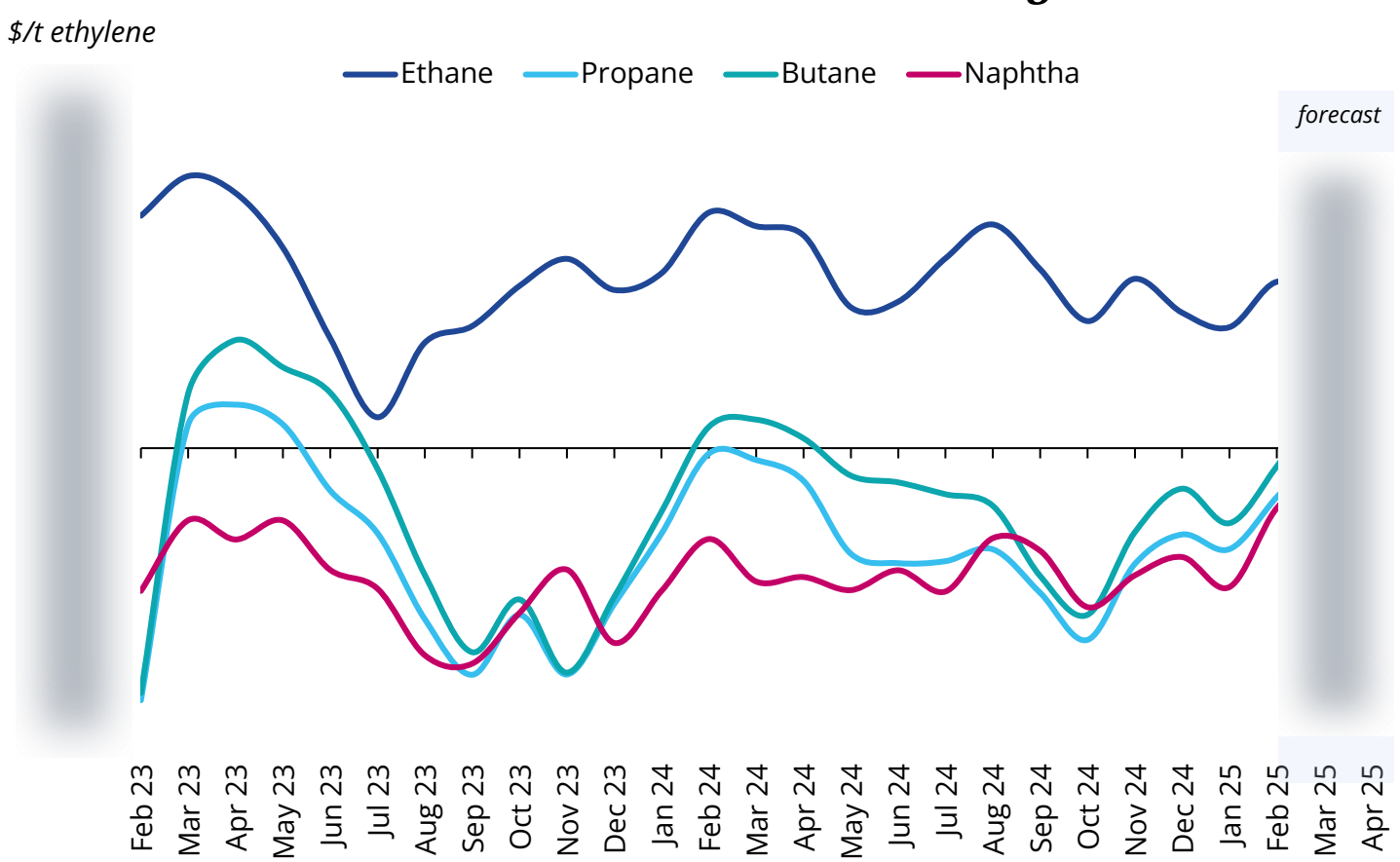
- *Argus*-modelled steam cracker margins weakened across all feedstock types in January, as a result of increased feedstock prices.
- US imported ethane and naphtha prices increased by [redacted] from December, while propane and butane prices increased by [redacted] and [redacted], respectively.
- Gross ethylene and propylene monthly contract prices increased by [redacted] ([redacted]) in February, rising with the feedstock cost increment from January.
- US imported ethane prices are expected to remain elevated in 2025, owing to higher natural gas prices and increased export demand. Winter heating demand pushed up propane prices, while seasonal gasoline blending demand and the mothballing of a key refinery in the Amsterdam-Rotterdam-Antwerp region supported higher butane prices.
- Two crackers closed in the Netherlands and France last year, and two more are expected to close in Italy this year.
- US imported ethane will remain the feedstock that yields the highest margins this year, but only a few crackers in the region are able to crack ethane.

Based on *Argus'* models, see page 20 for assumptions

Northeast Asia: Steam cracker margins

Margins are expected to strengthen in February as feedstock prices decrease

Northeast Asia steam cracker cash margins



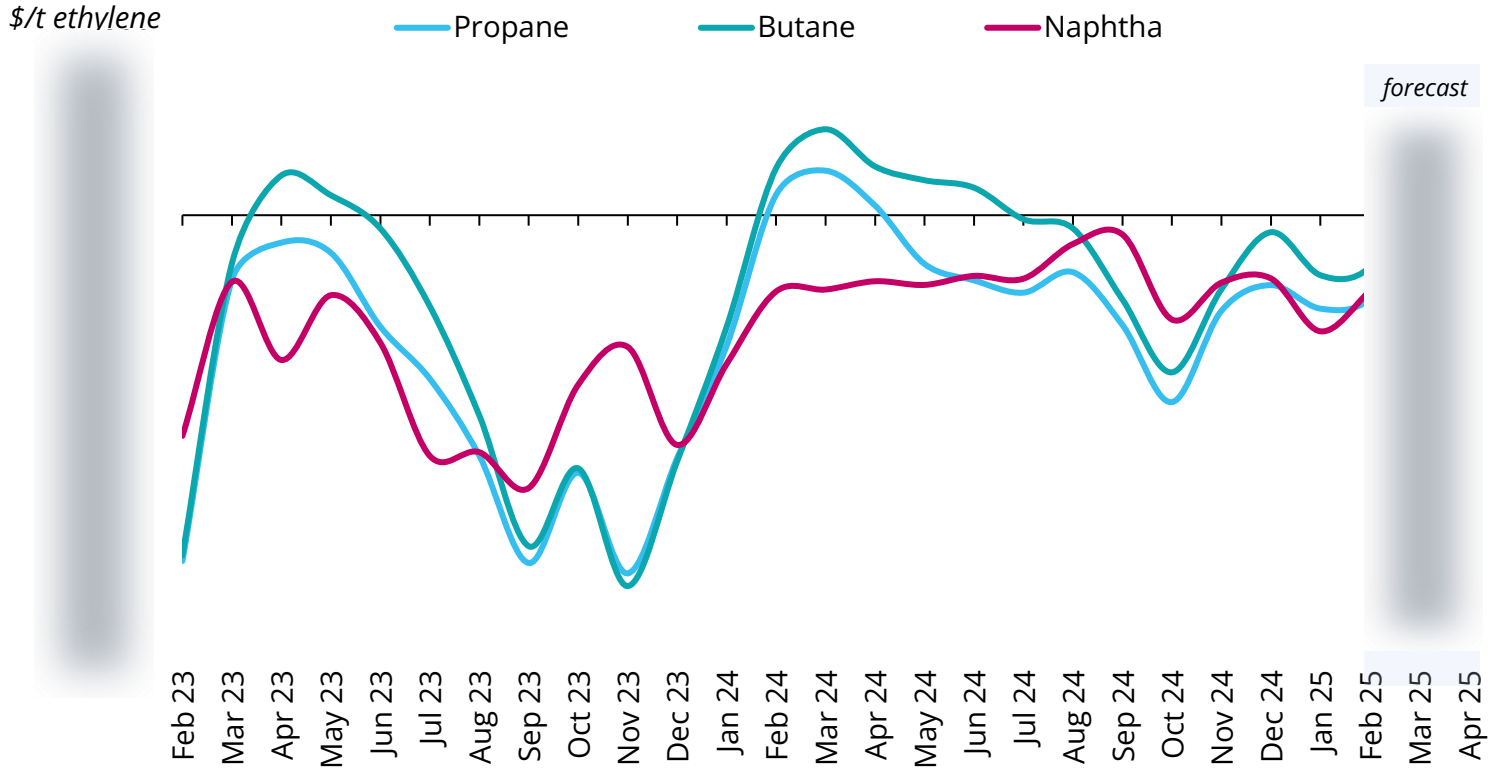
- Margins for all *Argus*-modelled feedstock types weakened in January, as a result of lower ethylene prices owing to slow demand and tepid market sentiment. But all modelled feedstock margins are expected to strengthen in February, except for US imported ethane, because of lower feedstock prices. Ethylene prices held steady this month because of tight supply and tepid buying during the lunar new year holiday in January-February.
- Naphtha prices were supported by tight supply, which weakened petrochemical cracker margins. *Argus* models show naphtha margins strengthening over the next few months, as naphtha supply is set to increase while petrochemicals demand weakens, which will lower the feedstock price.
- Propane and butane prices are expected to drop as the heating demand off-season kicks in. And *Argus* forecasts show LPG supply will increase globally, weighing on prices further, meaning margins for propane and butane-based cracking could turn positive in March.
- US imported ethane prices are expected to fall because of lower natural gas prices and ample supply. US imported ethane will remain the most profitable feedstock, but only a limited number of crackers in northeast Asia can run on ethane.

Based on *Argus'* models, see page 20 for assumptions

Southeast Asia: Steam cracker margins

Naphtha cracking margins remain negative for non-integrated producers

Southeast Asia steam cracker cash margins



- Naphtha is the most widely used feedstock in the region, and prices are expected to fall through to June. But the price drop will not be enough for margins to turn positive for non-integrated producers.
- Ethylene producers integrated into refineries operate on a different economic model.

Based on *Argus'* models, see page 20 for assumptions

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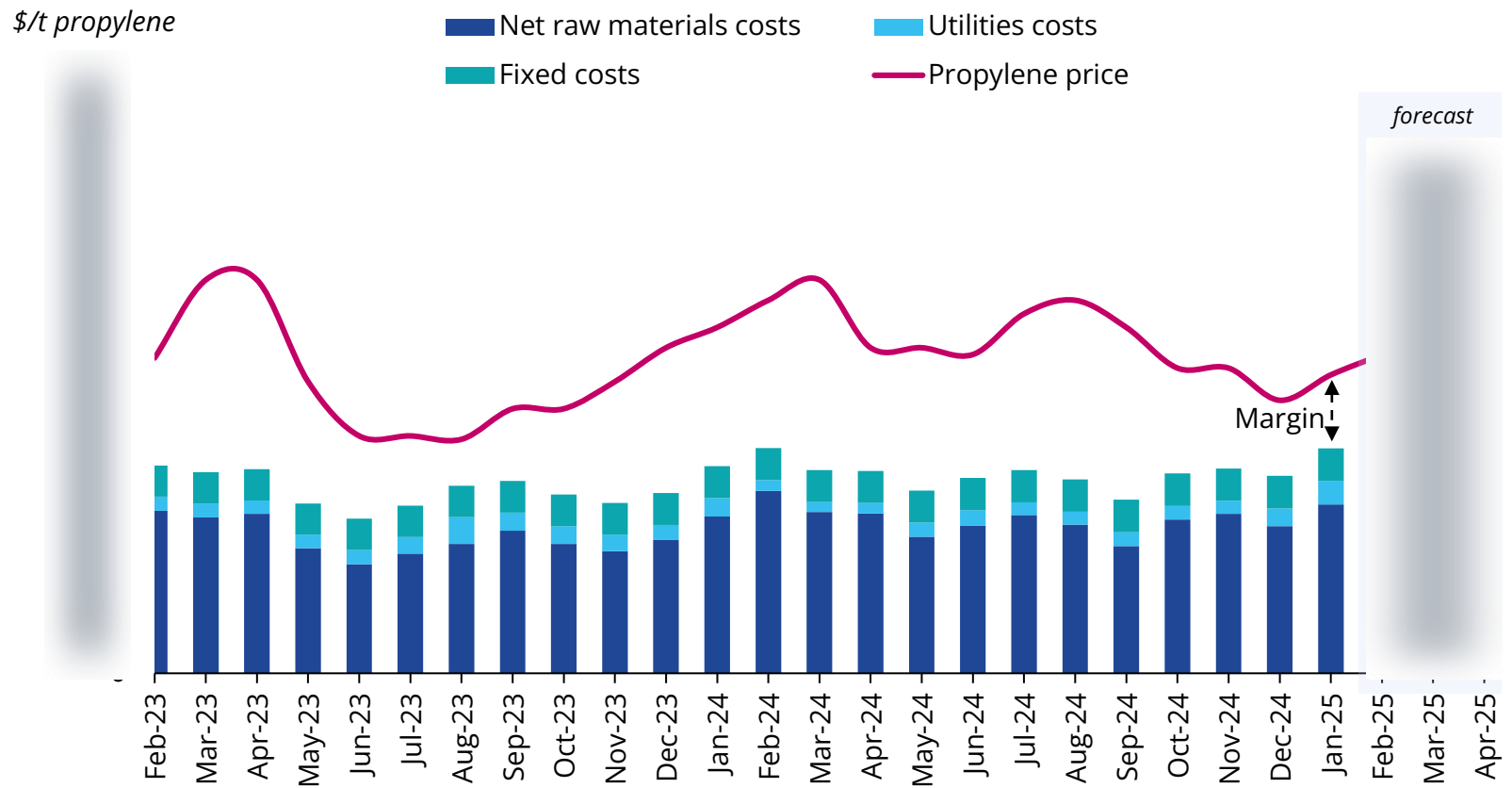
US: PDH

Propylene prices rebound in the first quarter owing to tight supply and seasonal demand

US PDH cash costs



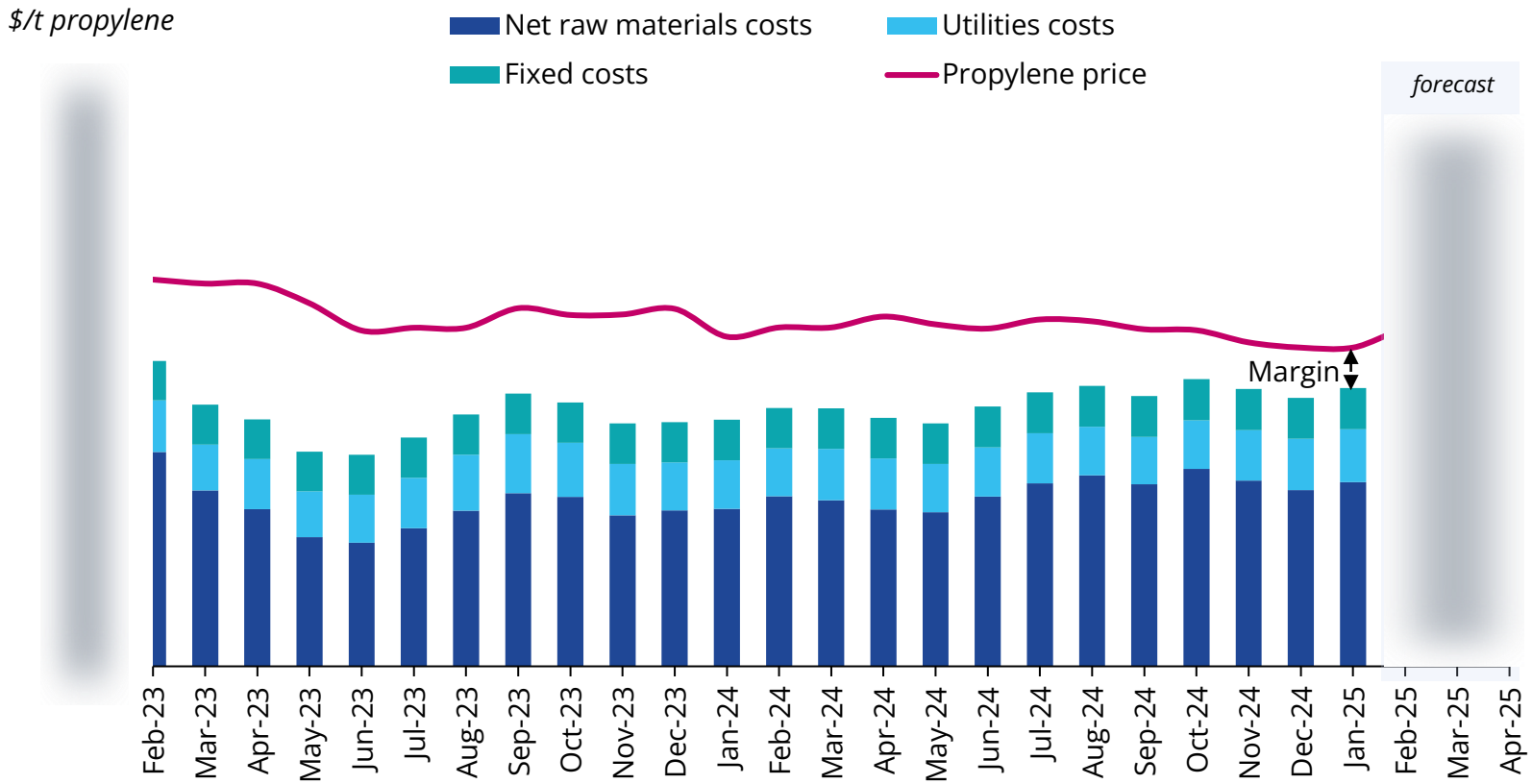
Based on *Argus'* models, see page 20 for assumptions

- Tighter propylene supply and seasonally higher demand are expected to support prices and margins in the first quarter.
- US-based chemicals firm LyondellBasell started the planned closure of its refinery in Houston, Texas, in mid-January and expects to complete the process by April. The closure will take [redacted] of propylene supply from the market.
- Propylene supply will be further tightened by PDH disruptions. Midstream firm Enterprise's [redacted] PDH-1 unit in Mont Belvieu, Texas, shut down on 20 January and will be off line until the end of February. Enterprise's [redacted] unit declared force majeure in January because of reduced operating rates resulting from a design problem with the unit.

Northwest Europe: PDH

PDH margins are tight, while propylene prices are expected to strengthen

Northwest Europe PDH cash costs



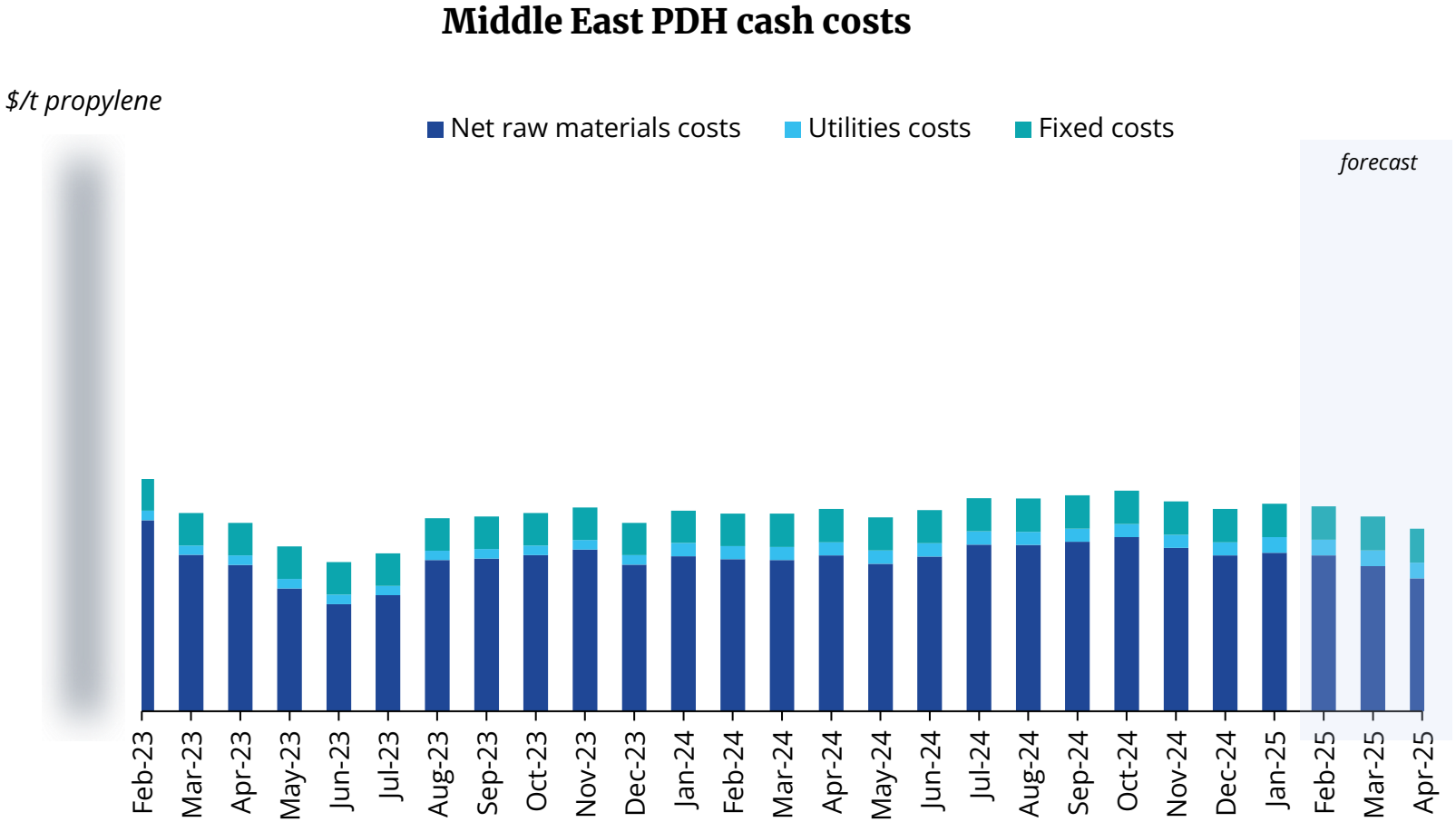
- The propylene market balance will tighten in the first quarter owing to cracker closures and stronger restocking demand.
- Higher propane prices during the winter should ease in the spring and fall further relative to other feedstocks in 2025, as the US brings on more export capacity.
- Western Europe's third PDH unit is expected to start up in 2026. This will pressure the market balance but announced cracker closures and reviews will reduce regional capacity. Refinery capacity will decline in the medium term, as fuel demand falls and producers adapt to meet emissions-reduction targets.

Based on *Argus'* models, see page 20 for assumptions

Middle East: PDH

Middle East cash costs stable

Middle East PDH cash costs



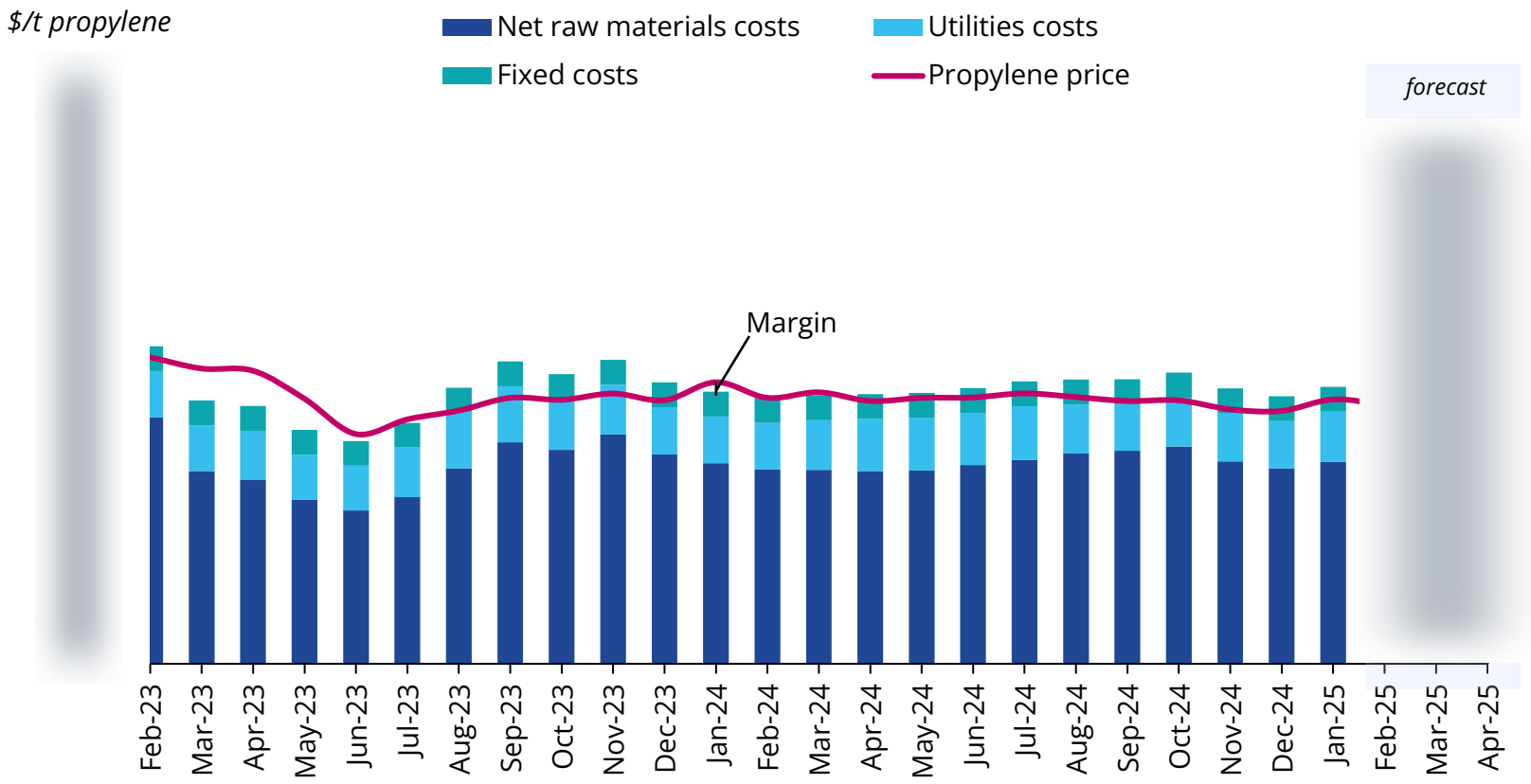
- Middle East spot propane prices are expected to soften over the forecast period. Prices are driven by Asian market dynamics, as most Middle East propane is exported.
- All Middle East PDH operators are integrated downstream with polypropylene and margins for integrated units are strong.

Based on *Argus'* models, see page 20 for assumptions
Propylene price is not shown as most producers are integrated downstream.

Northeast Asia: PDH

PDH units due to restart soon will pressure the propylene market

Northeast Asia PDH cash costs



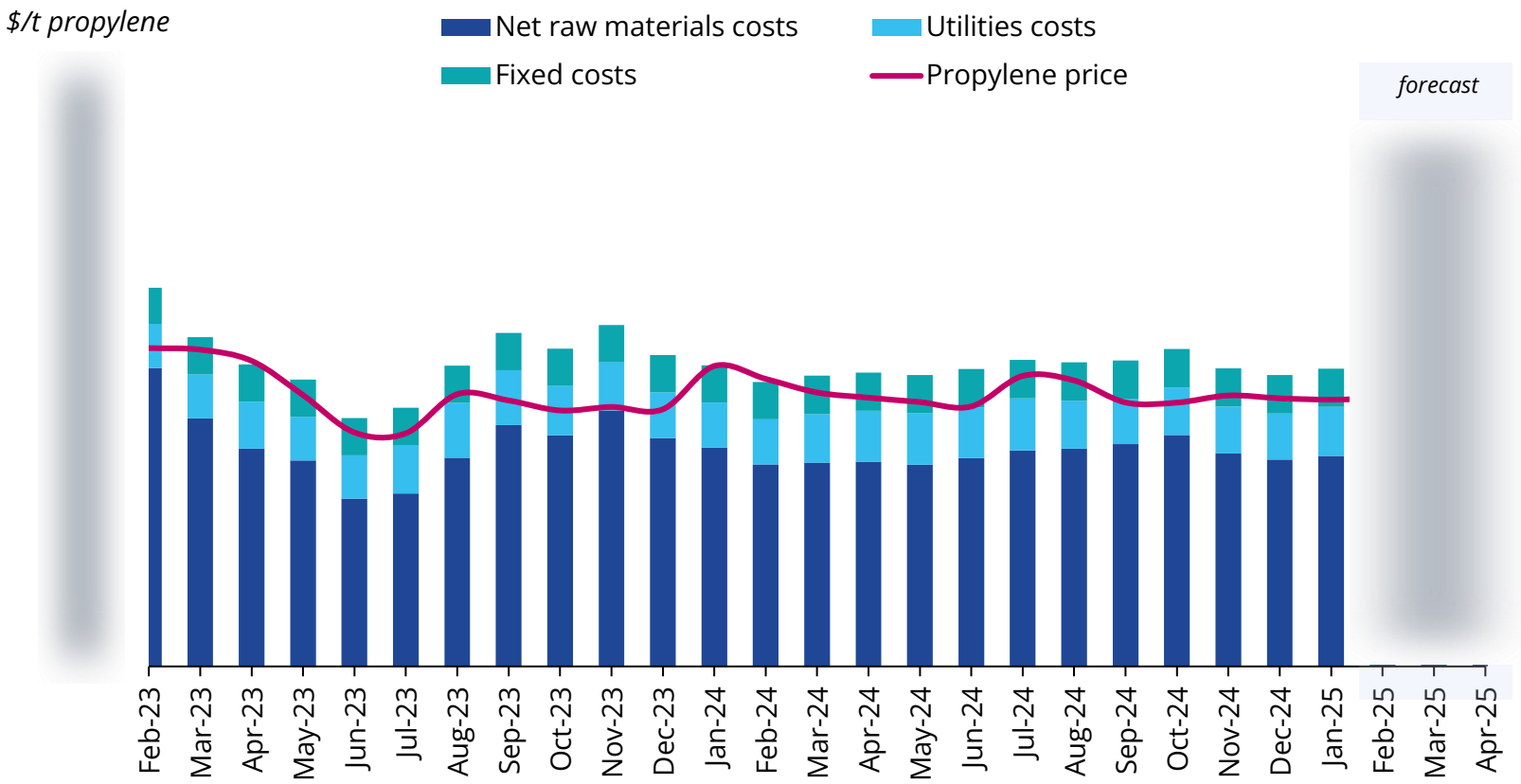
- Propylene supply in northeast Asia is expected to remain tight in the first quarter, but the market will weaken slightly when new PDH production capacity starts up and existing units restart following turnarounds.
- In China, Guoheng Chemical's [redacted] plant and Wanhua Chemical's [redacted] facility are due to start up soon. These additions, along with PDH restarts, will pressure propylene prices lower.
- Propylene prices are expected to see a longer downturn compared with ethylene because of greater oversupply. *Argus* forecasts lower operating rates and weak margins in 2025-26.

Based on *Argus'* models, see page 20 for assumptions

Southeast Asia: PDH

Margins remain negative owing to propylene oversupply

Southeast Asia PDH cash costs



- Southeast Asian propylene supply tightened in early 2025 owing to cracker shutdowns, but these are expected to ease by March.
- PDH capacity is not expected to increase in southeast Asia over 2025-34. Existing units are in Malaysia, Thailand and Vietnam.
- Local propylene prices are sensitive to imports from China and the region is vulnerable to propylene derivative imports from the Middle East and northeast Asia.

Based on *Argus'* models, see page 20 for assumptions

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Assumptions

Argus Western Europe Steam Cracker Model is based on a fully flexible mixed-feed cracker located on the ARG pipeline with a nameplate capacity of 500,000 t/yr and fully integrated downstream.

Net product prices are based on monthly contract prices; average discounts are based on market consultation. Pygas modelled as equivalent to 35pc benzene cif NWE contract/65pc naphtha 65 para NWE minus $84/t. Raffinate-1 is taken as 1.1*naphtha 65 para NWE.

Argus US Steam Cracker Model is based on a fully flexible mixed-feed cracker with capacity of 700,000 t/yr located on the Texas grid, fully integrated downstream.

Product prices are based on spot values. US Pygas = (0.35 x benzene US Gulf coast $/t) + (0.65 x gasoline 87 conv USGC waterborne fob lowest RVP not 7.8 or 7.0) - $84/t (the $84/t is a discount). Raffinate-1 is taken as 1.1*naphtha full-range USGC waterborne del.

Argus Northeast Asia Steam Cracker Model is based on a fully flexible mixed-feed coastal Chinese cracker with a nameplate capacity of 600,000 t/yr and fully integrated downstream.

Product prices are based on spot values. Pygas modelled as equivalent to 35pc benzene fob South Korea/65pc naphtha Japan c+f minus $70/t. Raffinate-1 is taken as 1.1*naphtha Japan c+f.

Argus Middle East Steam Cracker Model is based on a fully flexible mixed-feed cracker with capacity of 1,000,000 t/yr.

Product prices are assumptions calculated based on spot values for Europe and Asia. Pygas modelled as equivalent to 35pc benzene /65pc naphtha minus $70/t. Raffinate-1 is taken as 1.1*naphtha LR1 Mideast Gulf fob.

Argus Southeast Asia Steam Cracker Model is based on a fully flexible mixed-feed cracker with capacity of 800,000 t/yr.

Product prices are based on spot values. Pygas modelled as equivalent to 35pc benzene /65pc naphtha minus $70/t. Raffinate-1 is taken as 1.1*naphtha Singapore fob.

Argus Western Europe PDH Model is based on a 450,000 t/yr PDH unit.

Propane price assumption is ARA large cargo.

Propylene price assumption is PGP contract; average discount is based on market consultation.

Argus US PDH Model is based on a 750,000 t/yr PDH unit.

Propane price assumption is Mt Belvieu Enterprise.

Propylene price assumption is PGP contract; average discount is based on market consultation.

Argus Northeast Asia PDH Model is based on a 450,000 t/yr PDH unit.

Propane price assumption is AFEI price.

Propylene price assumption is PGP fob.

Argus Middle East PDH Model is based on a 450,000 t/yr PDH unit.

Propane price assumption is based on discounted AFEI.

Argus Southeast Asia PDH Model is based on a 600,000 t/yr PDH unit.

Propane price assumption is based on AFEI.

Propylene price assumption is PGP cfr.

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Craig leads the global ethylene team focused on integrated global forecasts. He has over 30 years experience in the olefins industry, including with Dow Chemical and ExxonMobil. Throughout his career Craig has worked across the world with major olefins and derivative producers. His experience also includes olefins feedstocks and refinery integration with the petrochemical industry. He holds a chemical engineering degree from The Ohio State University and an MBA from Rice University.

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Sarah Rae is *Argus*' propylene consultant, focusing primarily on Europe and the Middle East. For 17 years prior to joining *Argus*, Sarah held senior strategic purchasing management positions at Ineos, Tessenderlo Chemie and Rhodia, responsible for a wide range of materials including olefins, fertilizers and commodity raw materials. Before this, Sarah held various management and project roles covering most aspects of the chemical business, including business management, sales, planning and logistics. She graduated with a degree in geology from Leicester University.

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Craig is a member of the *Argus Media* olefins team, focusing on propylene and associated derivatives. He contributes to the monthly Olefins Outlook report, the biannual Propylene Analytics report and provides support to both internal stakeholders and external clients. Craig has nearly 25 years' experience in the petrochemical industry including roles with producers and consultants. The variety of products covered in his career include polymers, olefins, aromatics, asphalt, methanol, inorganics, oxo alcohols and electricity.

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