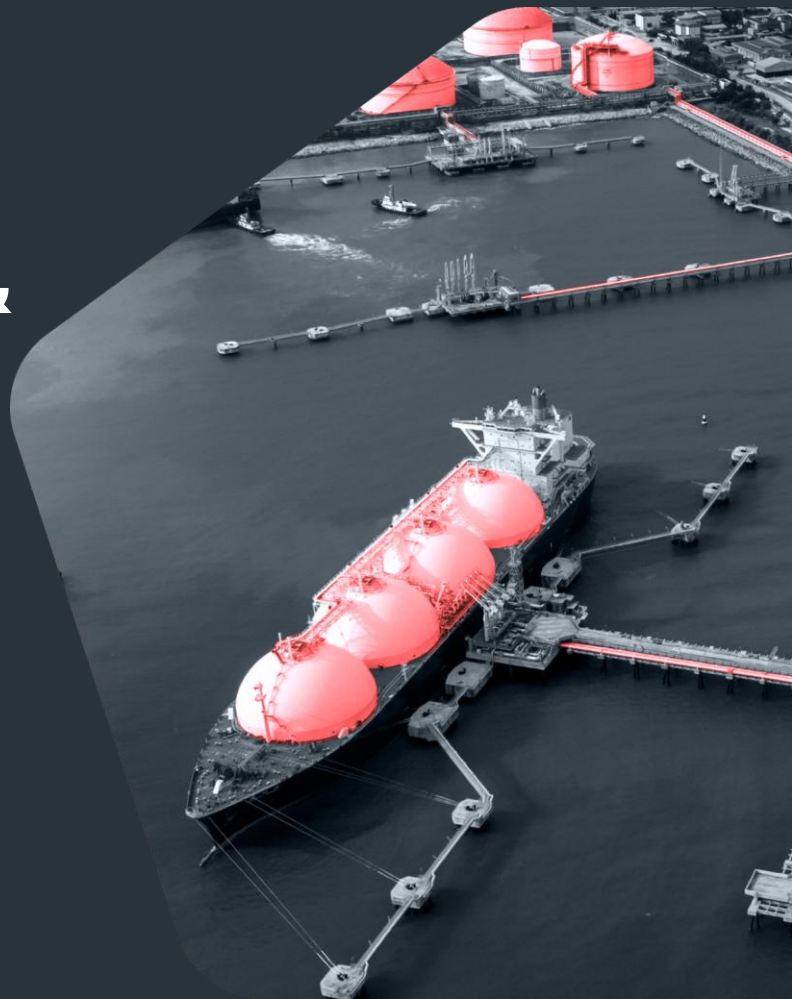


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Ethane Market Outlook: 2025 & Beyond

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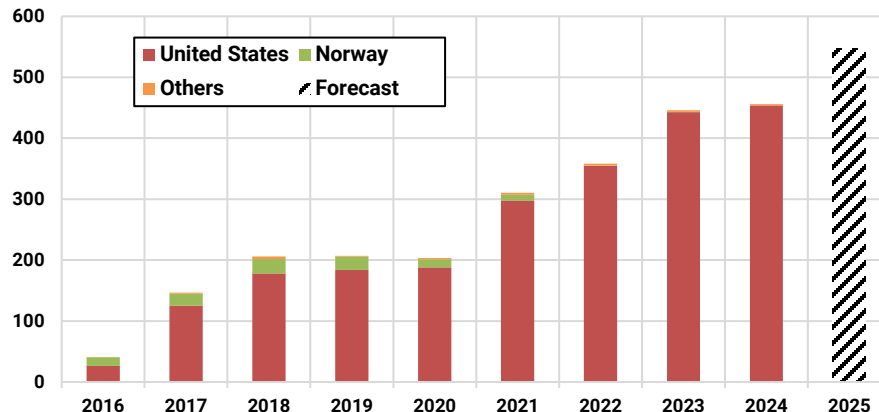
Ethane Supply & Exports

Global ethane exports

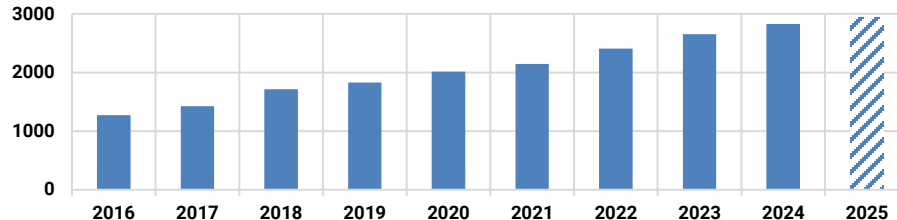
US-driven supply story

- As shale production lengthened the US market, ethane exports began via pipeline to Canada in 2014.
- Norway's exports dropped off as natural gas prices rose.
- Waterborne exports began in 2016 with Marcus Hook & Morgan's Point, then Energy Transfer Nederland in 2021.
- Export capacity comes in waves while production continues growing steadily.
- **2025 US ethane production: +115 kbd or +4.0% y/y to 2.94 Mb/d.**
- US production growth to continue – gassier trends in Permian production and increased gas processing.
- Growing Permian takeaway connecting production to expanding capacity at fractionators and export terminals.
- **2025 US waterborne ethane exports: +94 kbd or +21% y/y to 548 kbd.**

Waterborne ethane exports by origin country (kbd)



US ethane production (kbd)



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Expansions and new export projects set to come online in 2025

Significant ethane export capacity growth in the US, though product splits remain uncertain

Energy Transfer Nederland (+34 kbd exports y/y):

- +250 kbd NGL capacity mid-2025. Product splits not announced, but 65 kbd added ethane capacity is likely.
- ET announced ethane will begin in June, propane in July, and ethylene in Nov-Dec.
- Over the last two years, product splits have been roughly 50% propane, 25% butane, 25% ethane.
- We assume expansion will be roughly 50% propane, 25% ethane, 25% ethylene, pending further details.

Enterprise Neches River (+45 kbd exports y/y):

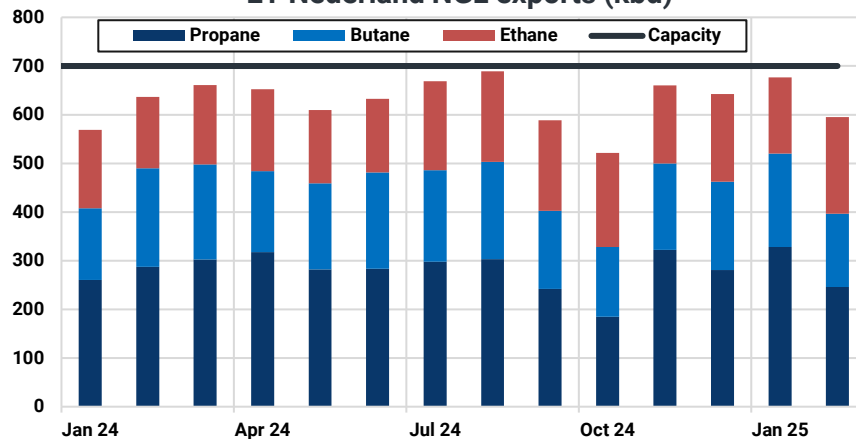
- Phase 1: 120 kbd ethane-only by Q3 2025.

Enterprise Morgan's Point (+15 kbd exports y/y):

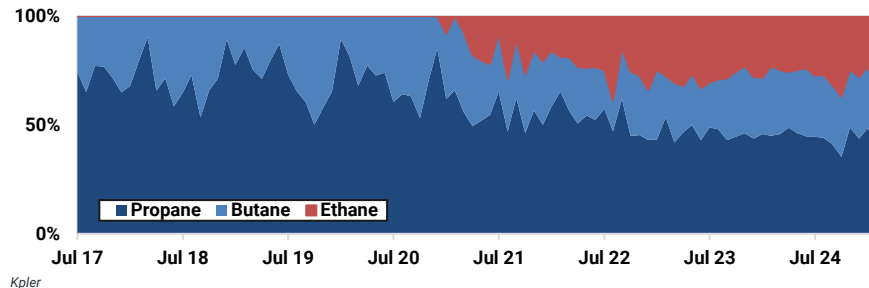
- Slightly higher utilization rate y/y, new refrigeration online Q4 2025 improves loading rates. (already +53 kbd y/y through March)

Total y/y exports: +94 kbd or +21% y/y to 548 kbd.

ET Nederland NGL exports (kbd)



ET Nederland historical product split



Growth in 2026 and beyond

Continued US growth and a new country eventually becomes an exporter

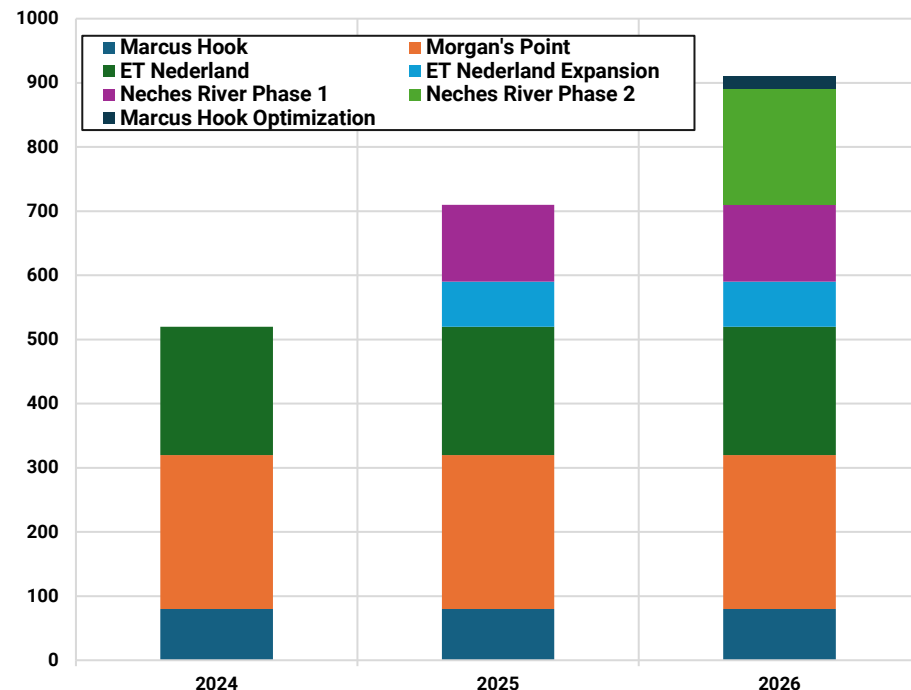
2026 US Additions:

- **Neches River Phase 2 (H1 2026): 180 kbd ethane, 360 kbd propane, or combination.** Will favor ethane at first given announced ethane contracts. Enterprise is also adding 300 kbd LPG capacity at their Houston facility (end 2026).
- **Marcus Hook Optimization (2026? 2027?):** 20 kbd ethane, date unknown, but mentioned as under construction in recent earnings call. Expanded ethane refrigerated storage. Mostly Permian driving growth, but Range Resources and other producers are growing in the Northeast as well.

Looking further ahead, UAE enters the export scene:

- Monetization push as they grow on the gas side as well.
- **Export project: LNG 2.0.** 70 kbd ethane exports due online 2028 (part of a broader project including LNG and heavier NGLs).

US ethane export capacity and upcoming additions



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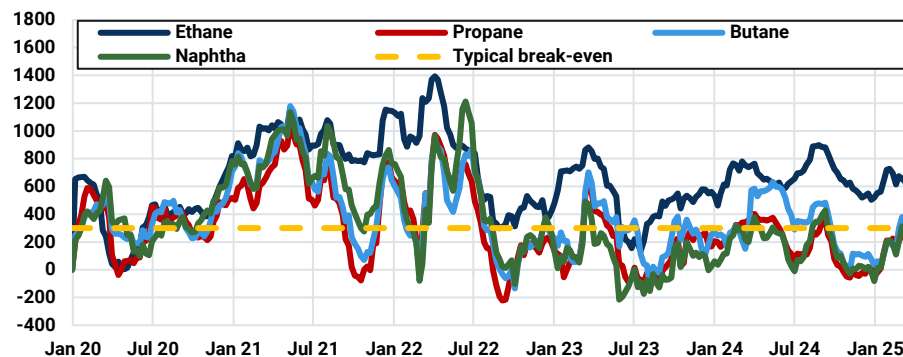
Ethane Demand & Imports

Demand: Ethane is the most advantaged feedstock in a challenging market

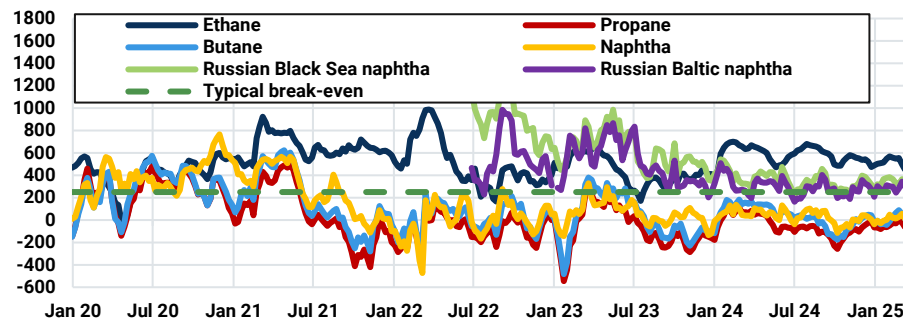
Ethylene market is oversupplied, but ethane offers superior margins

- Overcapacity and poor margins have driven global cracker utilization near 80% globally since the recovery from COVID, vs closer to 90% on average in the decade prior.
- While the outlook for steam crackers broadly is not overly constructive, the more recent shift towards ethane as a feedstock means that many crackers are poised to ride out the downturn.
- Older and smaller crackers in Northeast Asia and Europe will continue to rationalize, while newer units that can process ethane benefit from improved technology and economics.
- China's ethylene capacity is growing rapidly with producers increasingly favouring ethane; **new crackers are set to add 145 kbd demand between 2025-2027** (+45% vs 2024 demand).
- Cracking ethane is less energy intensive than liquid feeds; yields a higher purity ratio of hydrogen rich off-gases - an increasing valuable co-product

NWE gross complex steam cracking margins per ton of ethylene (\$/t)



Northeast Asian gross complex steam cracking margins per ton of ethylene (\$/t)



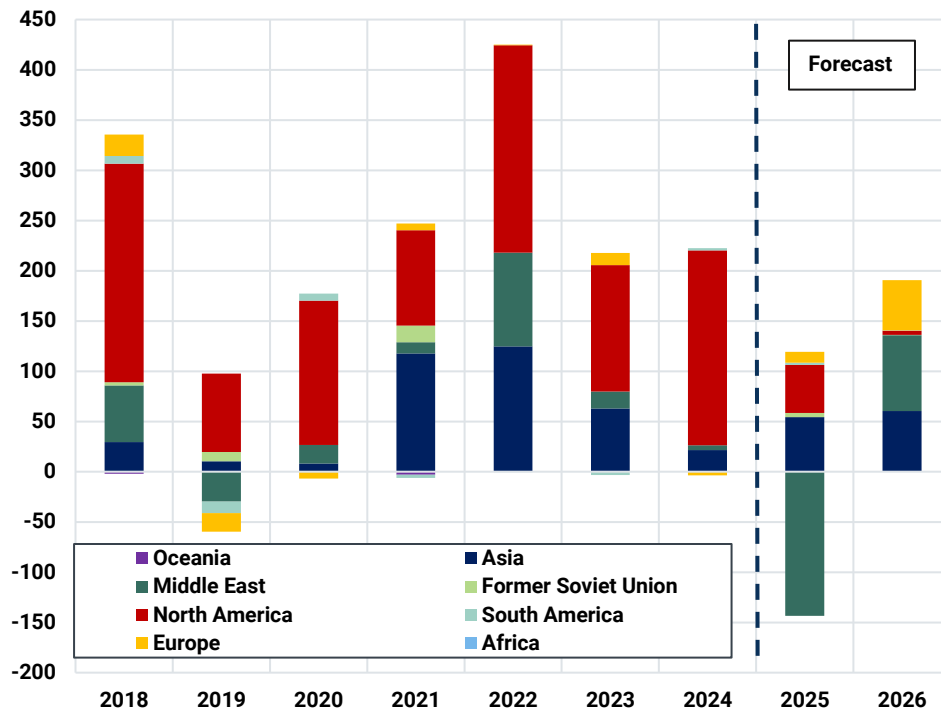
Kpler calculations based on Argus pricing.

Ethane demand growth trends

Europe and China will play an outsized role in buoying y/y demand growth in '25 & '26

- Drop in Iranian demand amid ongoing energy crisis curtailing cracker rates this year will offset rising Chinese, Mexican, UK demand
- **Fall in Iranian demand will not affect the globally traded ethane market** amid lack of import/export infrastructure in the country, but does affect global liquids balance
- Rising demand in North American in '25 dominated by Mexico as US, Canadian growth slows
- **Global ethane demand has grown on average by 5.8% y/y since 2018**, making '25 and '26' slower growth years
- Ex-Iran, global demand will rise by 120 kbd y/y (2.5%) – the lowest y/y growth since 2019
- **Demand will pick up in '26, increasing by 190 kbd y/y (3.8%) to 5.26 Mbd**

Ethane demand by region, y/y (kbd)



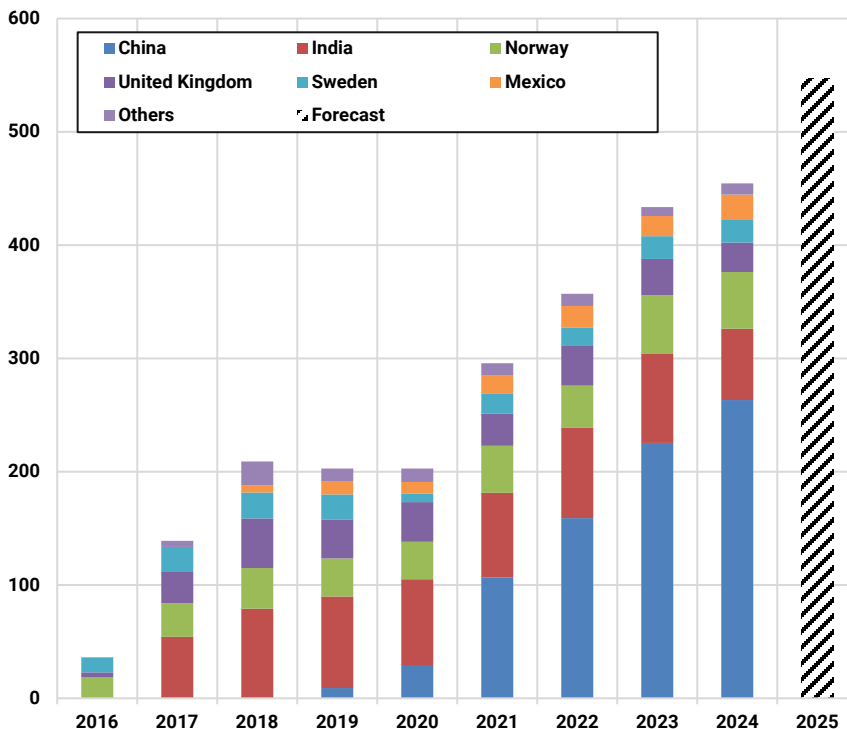
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Ethane demand growth in 2025

China's demand growth continues, but other countries also add to demand in 2025

- Global waterborne imports expected to rise 94 kbd y/y (+21%) to 548 kbd.
- In China, **Wanhua No 2. naphtha/ethane mixed-feed cracker** was due online in Q1, but they are awaiting delivery of VLECs and running more naphtha in the meantime. 27 kbd ethane demand assuming 40% ethane, but H2 start means **+16 kbd demand y/y**.
- **Also in China, two crackers that started up late last year will hit full rates (+32 kbd demand y/y)**. Ineos-Sinopec Tanjin and Huatai Shengfu Ningbo, 2 Mt/year total ethylene capacity.
- In the UK, **Sabir's Wilton Olefins No. 6 cracker** (Q3) is set to add **15 kbd ethane demand y/y at full rates**.
- **New Braskem ethane import terminal** in Mexico (Q2) will add **25 kbd ethane demand y/y**. This will replace a temporary terminal and waning Pemex supply with imports from the US, allowing Braskem's cracker to run closer to full-rates.
- Marginal increases from other importers: +6 kbd.

Waterborne ethane imports by destination country (kbd)



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Proposed US port fees loom large

Meanwhile, VLEC deliveries are catching up with demand growth

Proposed port fees

- Chinese-built VLECs are 31% of active fleet capacity.
- 37% of combined VLGC/VLECs capacity under construction is Chinese-built.
- VLEC \$/t impact for \$1.5 million to \$3.5 million flat fee: \$30-70

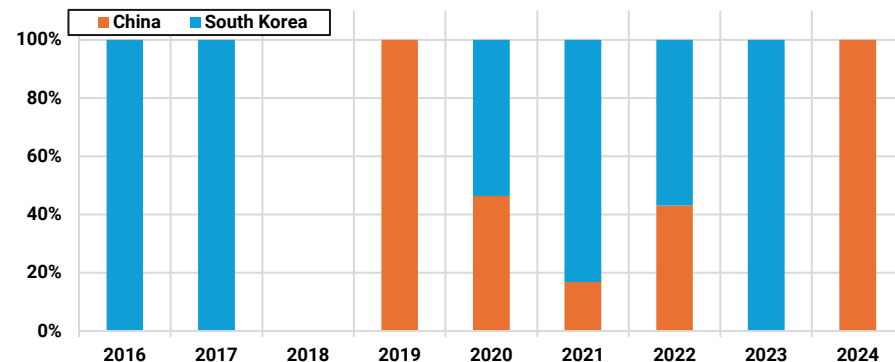
Wanhua No. 2 ethane startup timing

- We assume 40% ethane feed, 27 kbd demand. **Back of the envelope:** 90 day round trip from Houston, 900k bbl of ethane on a VLEC means 10 kbd per vessel, need 2-3 VLECs delivered, likely in H2.

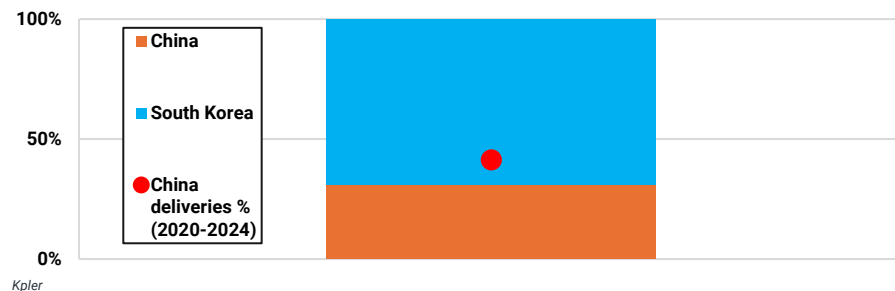
Delivery watch

- VLEC Gas Jessamine just delivered on 25 March to Tianjin Southwest Marine (Satellite).
- Brilliant Future (delivered Jan) and Brave Future (due April, originally June) set to support new Braskem terminal in May.

Share of VLEC delivery by build countries (% of capacity by delivery year)



Active VLEC Fleet



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Ethane Balance Implications

US balance implications: production and exports drive balances

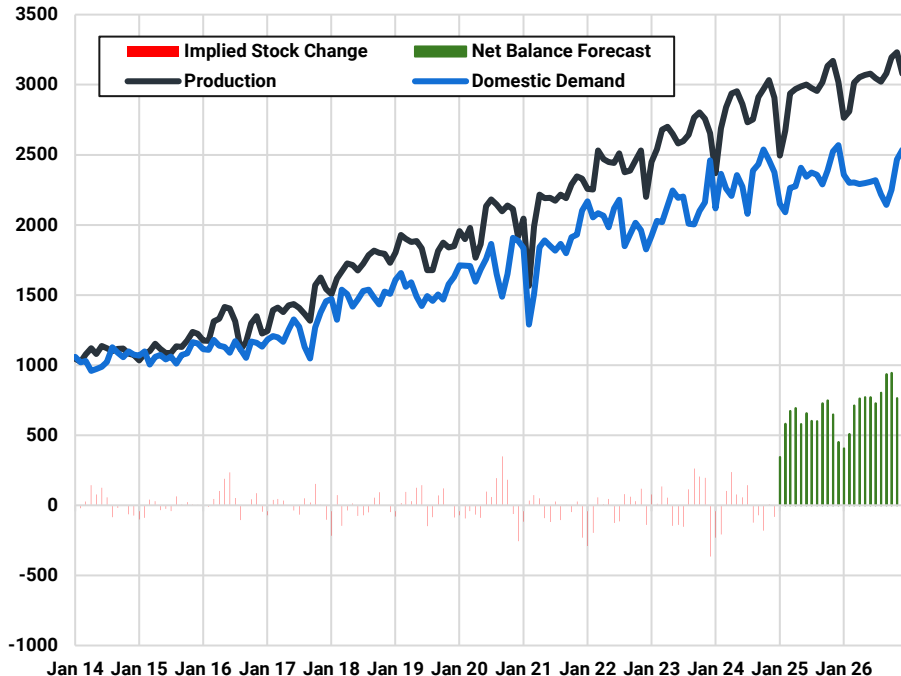
Export capacity additions outpace continued production growth amidst flat domestic demand

- 2025: Demand ticks up modestly, production and export growth continue, leading to small implied stock draws.
- **2026: Large implied stock draws if new facilities ramp up to 90% utilization on schedule.**
- Need a combination of increased production (and/or less rejection) and a slower ramp up of export capacity.
- Upward pressure on ethane price ratios to nat gas from this new demand pull and debottlenecking, particularly beginning Q2 2026 as **export capacity begins to significantly outpace production growth.**

| | Supply | Demand | Exports* | Stock Change |
|---------|--------|--------|----------|--------------|
| 2025 | 2,945 | 2,336 | 624 | -15 |
| y/y kbd | +115 | +15 | +94 | |
| 2026 | 3,037 | 2,316 | 730 | -85 |
| y/y kbd | +92 | -20 | +182 | |

*Exports assume 90% utilization and on-time projects, as well as flat y/y pipeline exports to Canada (76 kbd in 2025 and 2026)

US ethane balance (kbd)



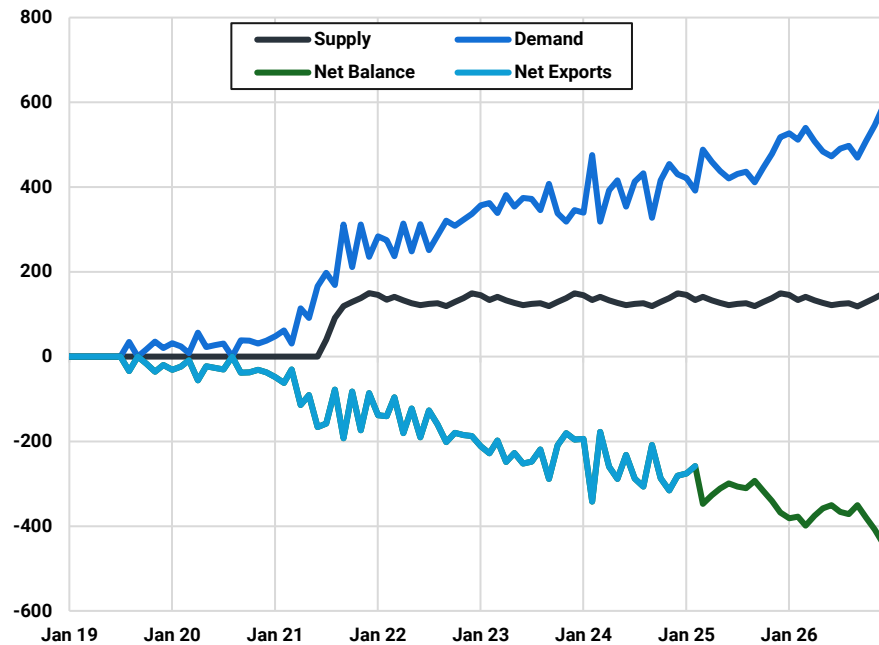
China balance implications: net short continues to grow

Cracker buildout continues

- 2025: Late 2024 startups continue ramping up and new **Wanhua cracker (No.2) will begin running ethane in H2**
- Huatai Shengfu's Ningbo propane to ethane cracker conversion project completed in end-Q4 (22 kbd at 50% rates)
- 2026: Large Wanhua propane to ethane conversion completed, another smaller cracker due online.
- Domestic production supplies three isolated crackers in China's interior – further imports needed to meet demand growth.

| | Supply | Demand | Net Balance |
|---------|--------|--------|-------------|
| 2025 | 132 | 445 | -313 |
| y/y kbd | 0 | +48 | -48 |
| 2026 | 132 | 512 | -380 |
| y/y kbd | 0 | +67 | -67 |

China ethane balance (kbd)



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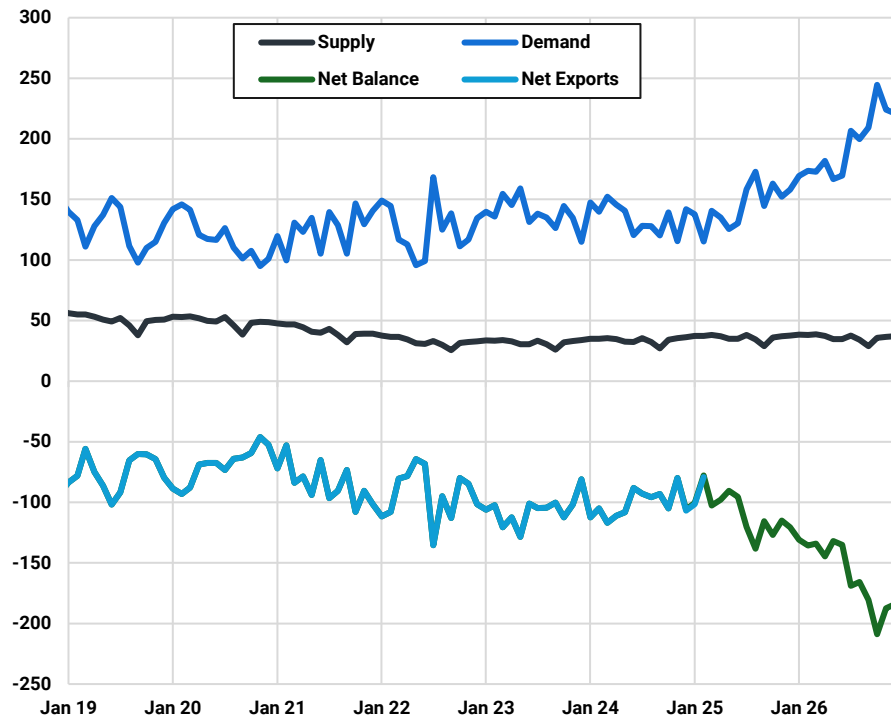
European balance implications: Sabic and Ineos demand change the game

Region's net short increases dramatically, particularly in 2026

- 2025: Sabic Wilton cracker begins to run ethane mid-year.
- 2026: Ineos Project 1 ramps up mid-year, 1.45 Mt/year capacity (90 kbd ethane demand at full rates)
- Pressure on naphtha/LPG crackers in NWE – Ineos is the largest merchant buyer of ethylene in NWE; will end its short position once the new cracker reaches full rates by end-2026
- More European crackers will be forced to close shop in 2026
- **As demand begins to outpace US supply, NWE and China will compete for incremental spot volumes**

| | Supply | Demand | Net Balance |
|---------|--------|--------|-------------|
| 2025 | 36 | 144 | -108 |
| y/y kbd | +2 | +9 | -7 |
| 2026 | 36 | 195 | -159 |
| y/y kbd | 0 | +51 | -50 |

● European ethane balance (kbd)



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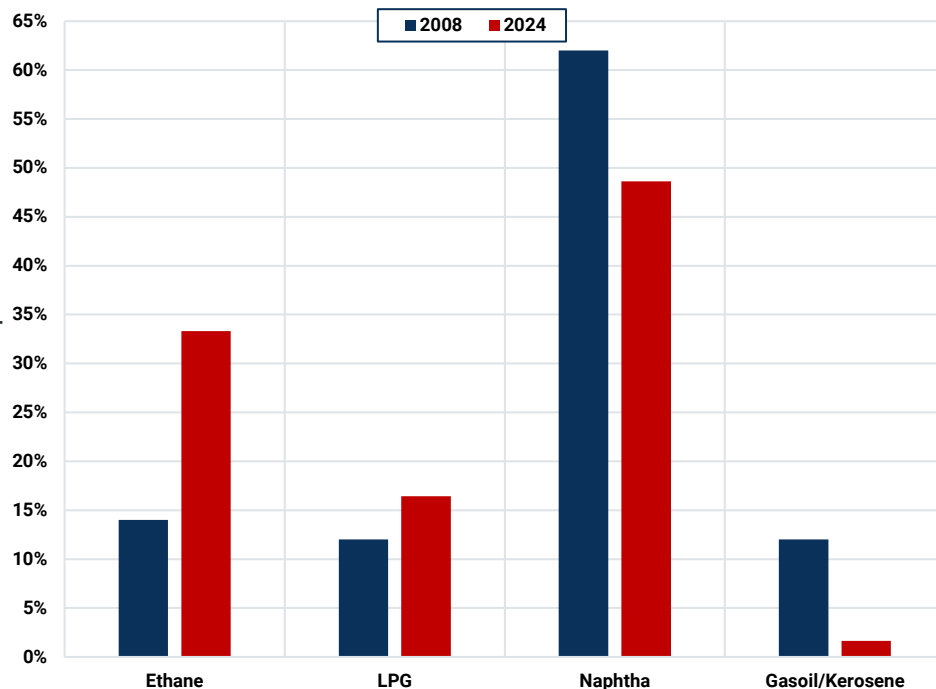
Conclusion

Global petchem feedstock market continues to transform

Ethane & naphtha will continue to dominate the steam cracking feedstock pool for base chemical production

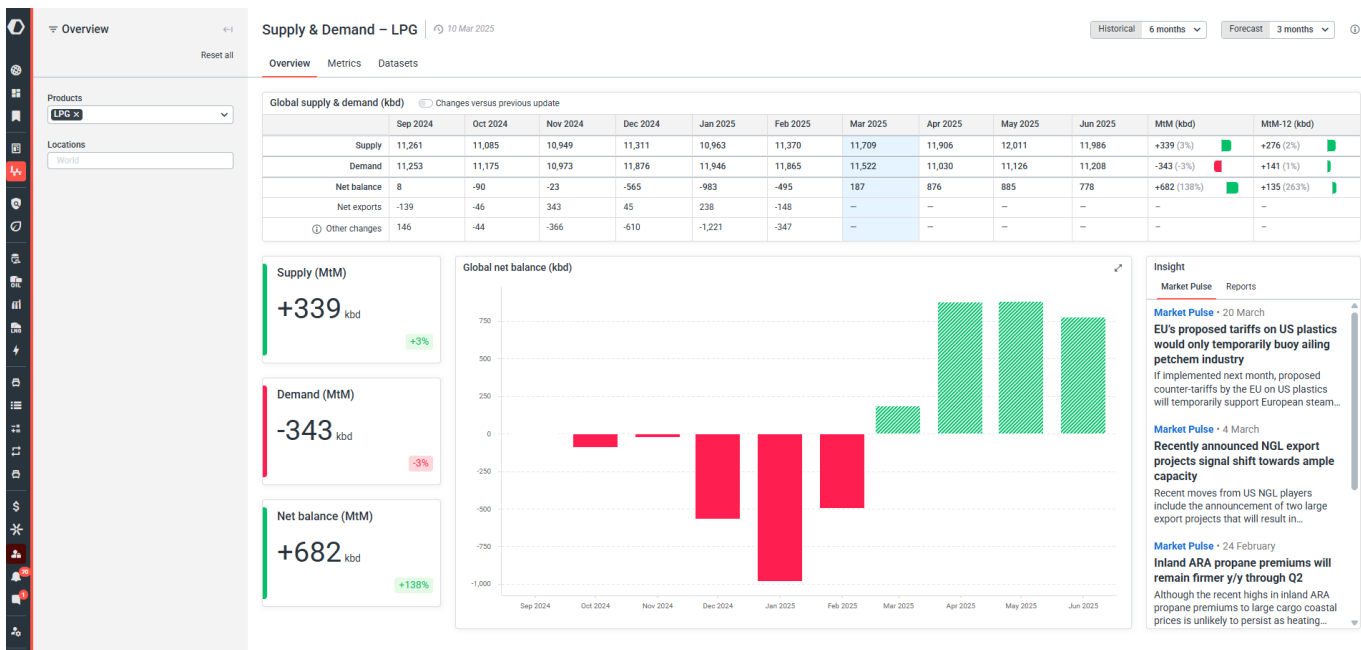
- Ethane's share of global cracker feedstock market hit 32% in 2024
- The buildout of naphtha cracking capacity in China as refiners look to maximise base chem output means naphtha will remain the most used feedstock in the world for the foreseeable future
- However, growing ethane-cracking capacity and conversions of naphtha/LPG crackers to ethane (China, Vietnam) will see ethane's share continue to edge higher
- Ethane offers an attractive option for carbon-conscious markets, and those aligned with rising hydrogen use
- Rising nat gas, crude production in 'wet' NGL-rich patches transformed the global petchem market
- US fracking the primary driver of growing ethane demand; this trend will continue over the medium term as fields get gassier, drilling for nat gas increases
- Middle East will drive ethane output higher y/y over the medium term (Qatar, Saudi, UAE) once US growth slows

Global steam cracker feedstock consumption ratios, 2024



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Ethane balance available on Kpler terminal in Q2



Please reach out about access or any other questions!
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Thank you for joining!

(Q&A)