

Polypropylene Outlook



Welcome to the Argus Polypropylene Outlook – focusing on a 24-month spot market view.

This report will be updated monthly with a focus on the spot trading activity for PP in North America, Europe, and China.

The Outlook is based on inventories, trades, operating rates, price trends, supply/demand outlooks, etc.

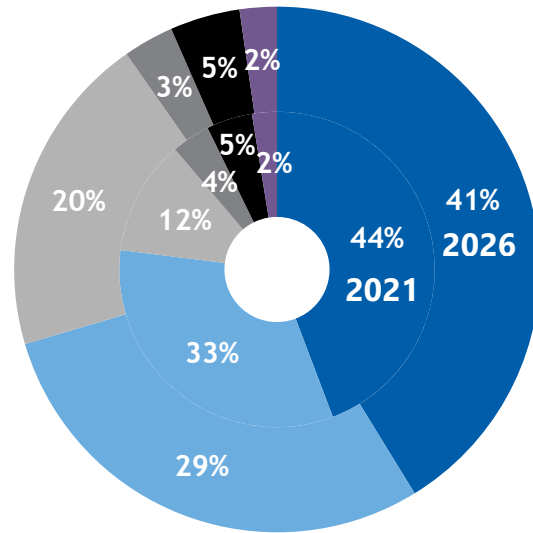
These slides are an example of the data that will be updated/reported on a monthly basis in a 25-slide format.

This is a sample of the Argus Polypropylene Outlook report.

The full report and associated datasets are only available to subscribers.

To request a free trial or more information visit view.argusmedia.com/polypropyleneoutlook.

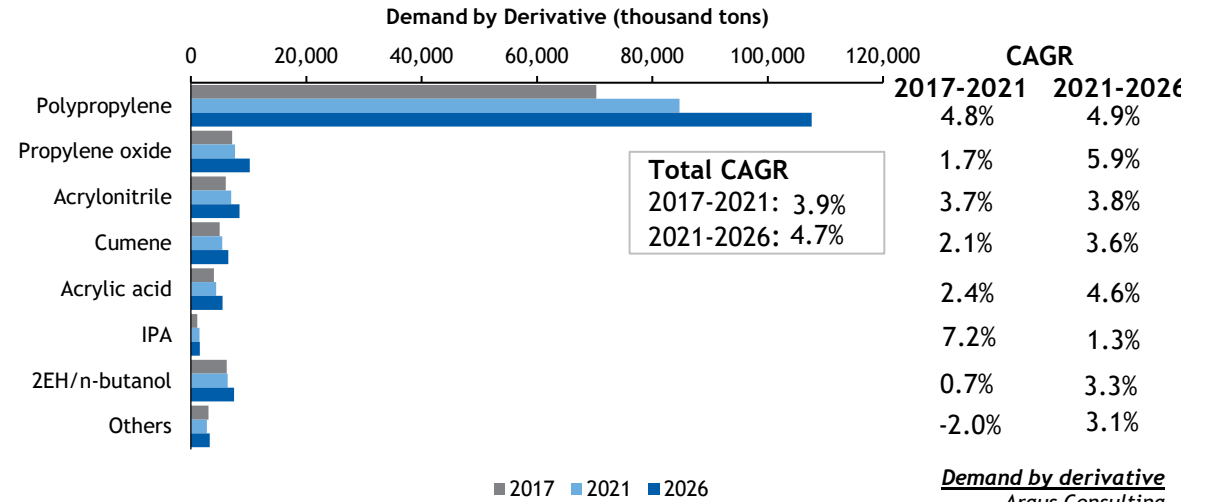
Global Polypropylene Demand



Total Capacity
 2021 148.5 mn t
 2026 191.6 mn t

- Steam cracker
- Refinery
- Propane dehydro
- Metathesis
- Coal
- Methanol

Capacity by source
 — Argus Consulting



Demand by derivative
 — Argus Consulting

Monthly Update

| | | |
|--------|----------------------|---|
| India | Indian Oil Co | The company's board granted 'Stage-1' approval to build the Paradip petrochemical complex. The complex will comprise a cracker unit as well as downstream process units to enable production of petrochemical products including polypropylene (PP) , high density polyethylene (HDPE), linear low-density polyethylene (LLDPE) and polyvinyl chloride (PVC), among others |
| Canada | Heartland Polymers | Successfully started-up its propane dehydrogenation (PDH) plant, which is now providing on-site propylene monomer feedstock for North America's <i>only</i> integrated, single-site commercial PP production |
| Brazil | Brazilian Government | Brazil is increasing the import tax for PP "copo" (propylene copolymer) resin, from 4.4% to 11.2%. |

— Chemicals

North America Outlook

FORECAST

Trading activity is expected to increase in the Asian markets with a focus on the LATAM markets. Imports from Asia to the US are not expected to exceed 10% of the US domestic demand as large converters are set up to handle rail cars of resin and not bags.

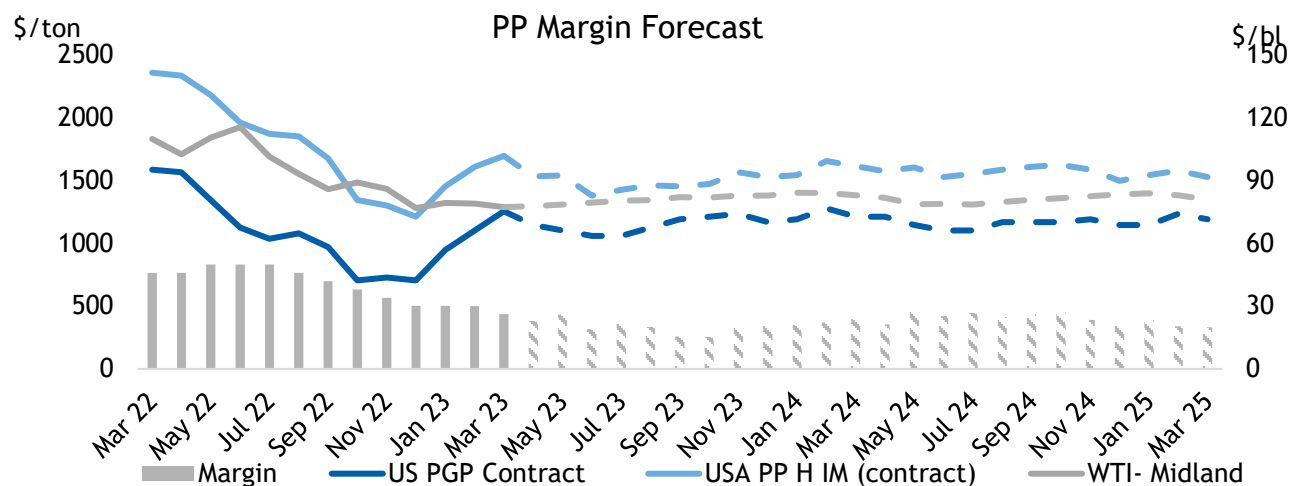
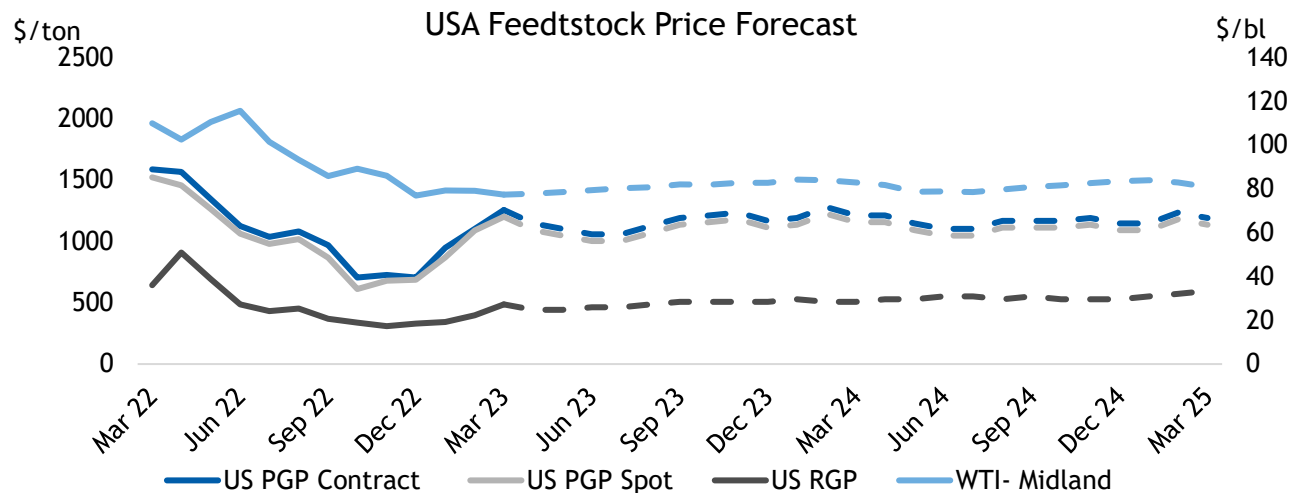
PRICE

Spot prices are expected to follow PGP price movements with little opportunity for margin increases. However, exports will be limited in volume at least through Q2 2023 as producers continue to focus on controlling inventory levels. Inventory levels in the US continue on the rise.

SENSITIVITY

Higher inventory levels may help with the recent plant shutdowns as DOI in Feb increased to 45 days.

Demand in Mexico may be on the increase but imports from Middle Eastern producers are expected to increase as China increases self sufficiency



North America Outlook

SUPPLY

US and Canada PP plants have been running at reduced rates in March (79%) as producers are avoiding building inventory with the high-priced propylene. No major maintenance issues were heard in the market, and a turnaround at Phillips 66's Bayway, New Jersey, plant is expected to be completed by the end of the month.

Spot prime availability remains very limited with producers not offering much volume and buyers not asking for product. Widespec and offgrade volumes were reported with limited activity

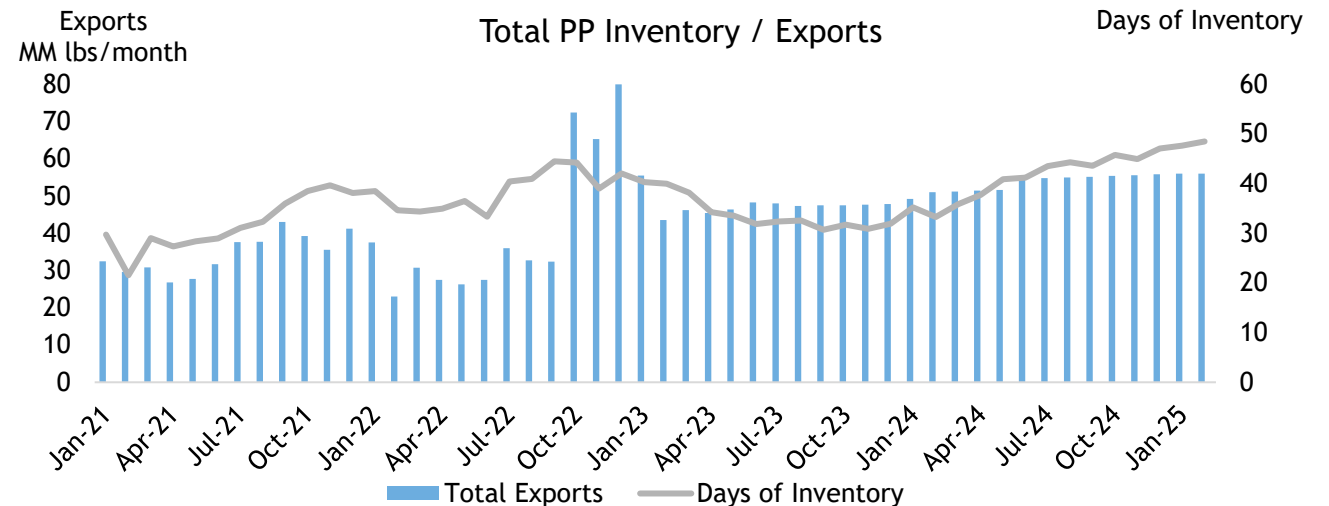
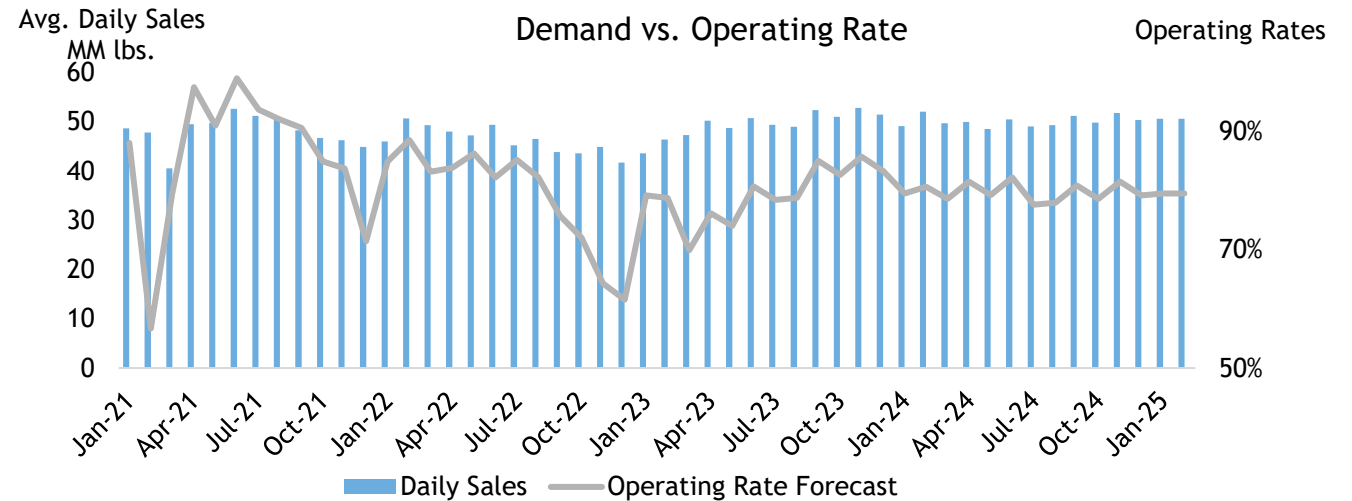
DEMAND

Demand in March remains very weak, with buyers unwilling to buy any more than needed when they anticipate that prices could come down as early as next month. While there remain some economic concerns, particularly with the recent bank failures, the main issue with demand for now appears to be the high prices. However, many buyers are coming to the end of their stocks and will need to replenish supplies soon.

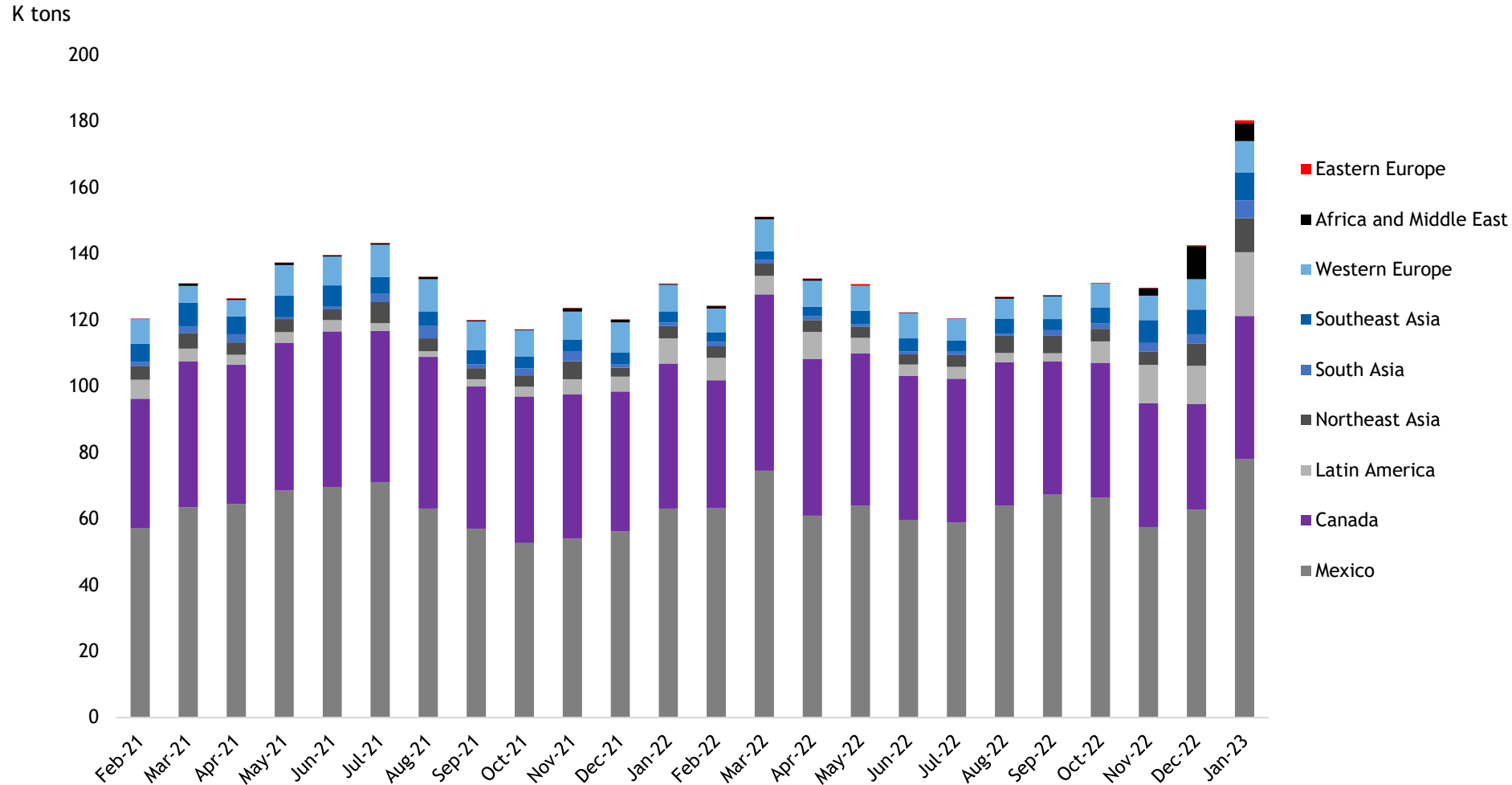
SENSITIVITY

Propylene supply disruptions will continue to drive US propylene prices.

French worker strikes could impact propylene supply as three refineries are shut down



US Monthly Exports



- Jan 2023 exports increased to 180 ktons, well above the 130 kton monthly avg. for 2022

- Jan exports to Mexico Increased 12% to 78 ktons

- Feb / March exports are expected to decline significantly due to elevated PP prices in the US

Western Europe Outlook

FORECAST

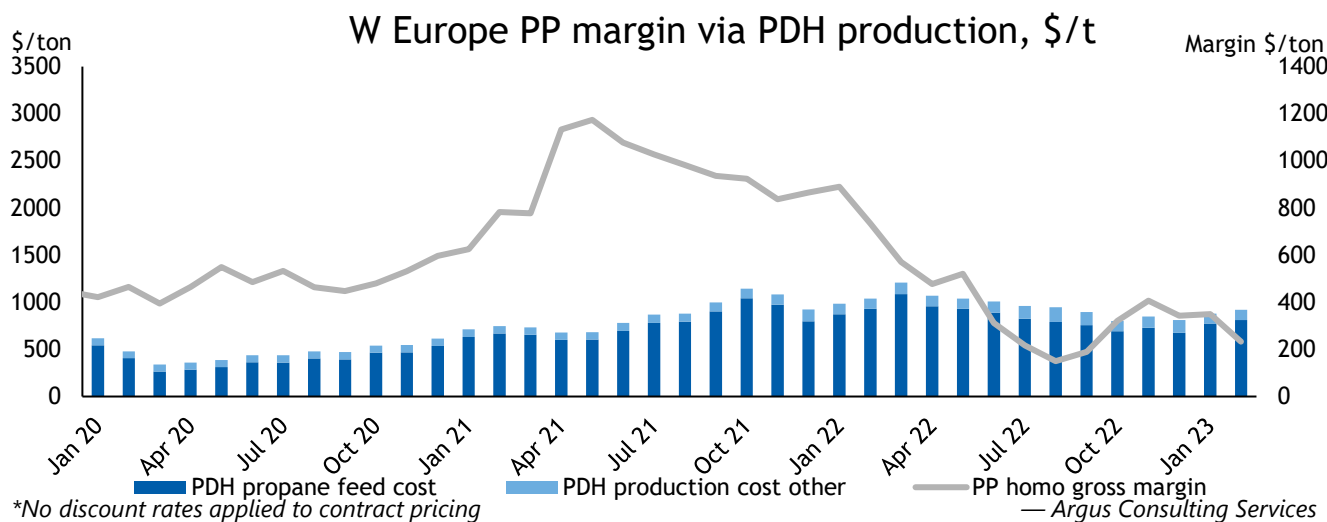
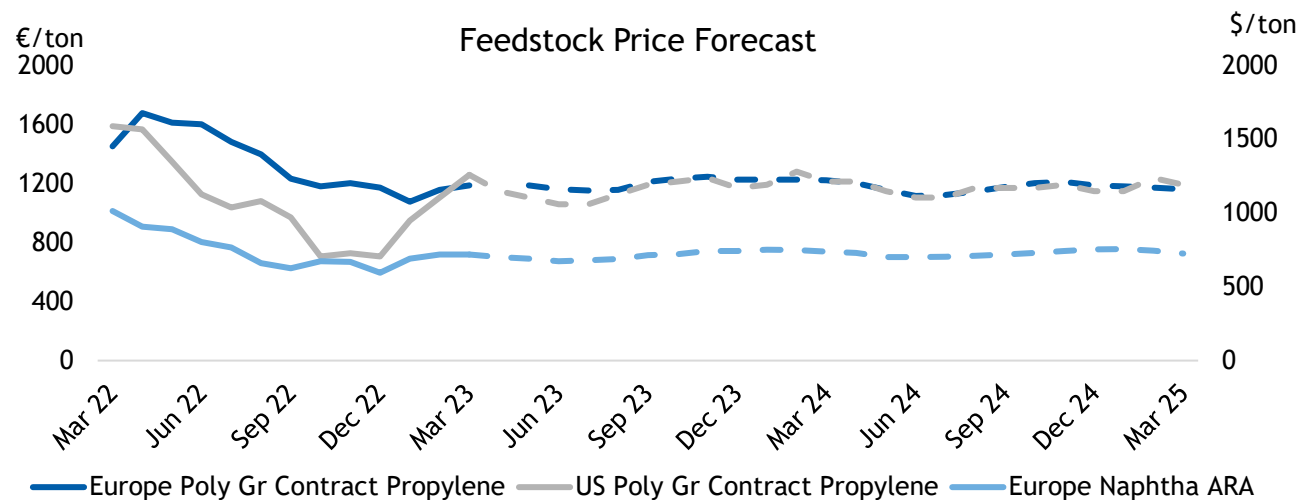
Consumers continue to face a cost-of-living crisis at above-average levels, if not accelerating in March in some countries. In many cases, inventories of finished products also remain elevated as consumer spending cuts impact retail sales, keeping converters cautious and impacting demand for polymers as downstream operating rates stay subdued. But despite the destocking efforts seen this year, some converters are still facing high polymer inventories, which could also explain weaker than expected demand in the coming months

PRICE

Basis cfr Europe main ports, offers for duty-free imports of PP copolymer for April shipment - and May-June arrival - were heard at €1,220-1,230/t for South Korean volumes, and at €1,195-1,225/t for Vietnamese volumes. But the pricing gap could narrow in the coming weeks if domestic spot prices for PP copolymer grades fall as this could limit traders' appetite for long-haul imports with shipping times of six weeks or more in a market that is already contending with heightened basis risk and demand uncertainty.

SENSITIVITY

Logistics around refinery, petrochemical, and polymer sites has been impacted by the strikes in France. Crackers were operating at reduced rates despite refinery closures, but one with 270 kt/yr. associated PP plant was reportedly shutting down. The impact for polymer production will widen if the strikes are sustained.



Northeast Asia Outlook

MARGIN

PDH and naphtha-based PP margins are moving in a positive direction
 The uncertainty of feedstock costs have PP producers remaining cautious any increase in operating rates

PRICES

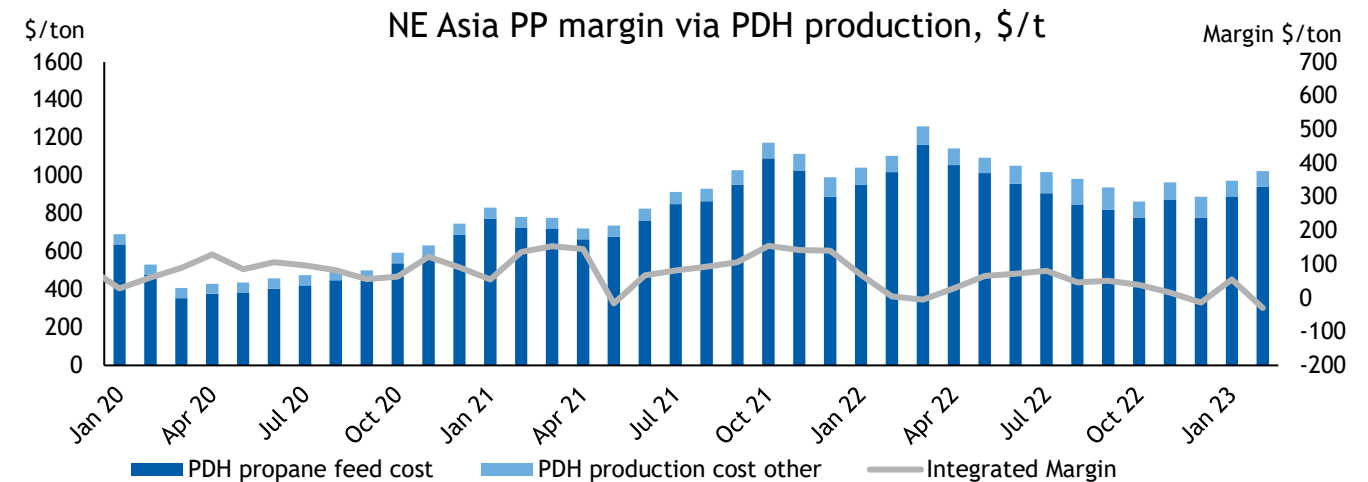
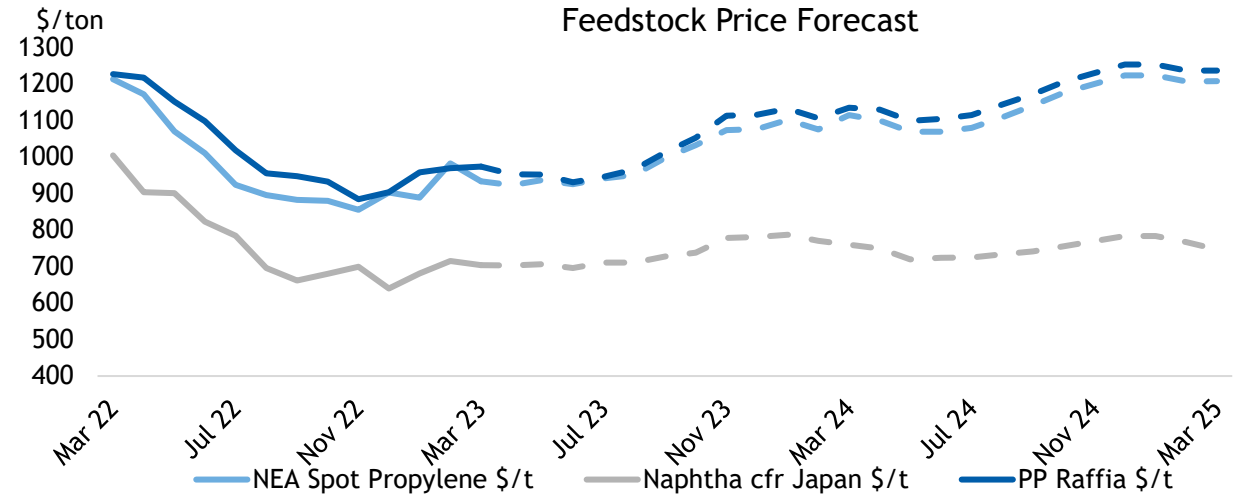
Imported PP raffia prices were assessed at \$920-950/t cfr China.

Export prices for PP raffia were assessed at \$1,000-1,030/t fob China, down by \$10/t from the last assessment.

FORECAST

Long term outlook is under pressure from expanding capacities.

Global inflation, weak currency, and cautious consumption behavior further dampen market sentiment.

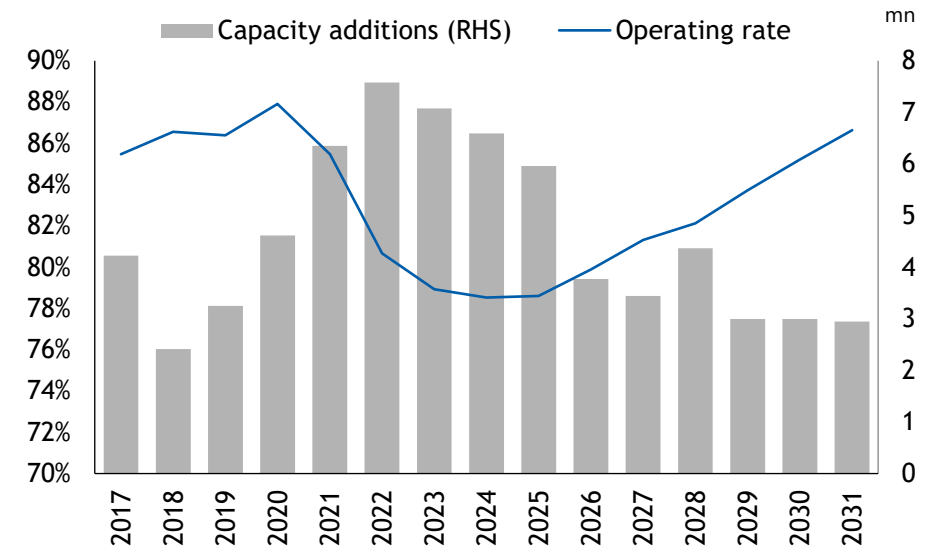


*No discount rates applied to contract pricing

— Argus Consulting Services

| Plant | Location | Capacity '000t/yr | Start-up |
|-------------------------------------|----------|-------------------|-------------|
| Grupa Azoty | Europe | 437 | 2023 |
| Kazakhstan Petrochemical Industries | CIS | 500 | 2H Sep 2022 |
| Sinopec Hainan | China | 200 | Feb |
| Sinopec Hainan | China | 300 | Feb |
| Petrochina Guangdong | China | 500 | Feb |
| Hongrun Petrochemical | China | 450 | Feb |
| Chambroad Petrochemical | China | 400 | 1Q |
| Chambroad Petrochemical | China | 200 | 2Q |
| Guangxi Hongyi New Material | China | 300 | Mid-Mar |
| Oriental Maoming Phase 1 | China | 450 | 2Q |
| Guangzhou Juzhengyuan Phase 2 | China | 300 | 2Q |
| Guangzhou Juzhengyuan Phase 2 | China | 300 | 2Q |
| Huizhou Lituo New Material | China | 300 | 2Q |
| Anhui Tianda | China | 300 | 3Q |
| Baofeng Energy Phase 3 | China | 500 | Jun |
| PetroChina Anqing | China | 300 | Jun |
| Sinopec Qilu | China | 250 | Jul |
| Jinneng Petrochemical Phase 2 | China | 450 | End 2023 |
| Shenhua Baotou Phase 2 | China | 350 | End 2023 |
| Ningbo Jinfa New Material | China | 800 | End 2023 |
| Zhejiang Yuanjin New Materials | China | 450 | 2024 |
| Petrochina Guangdong No.2 | China | 200 | 2024 |
| Oriental Maoming Phase 2 | China | 450 | 2024 |
| Nayara Energy | India | 450 | 4Q |
| PRefChem | Malaysia | 450 | Aug 2022 |
| PRefChem | Malaysia | 450 | Oct 2022 |
| HMC Polymers | Thailand | 220 | Dec 2022 |
| Long Son Petrochemical | Vietnam | 450 | Mid-2023 |
| Grupa Azoty | Europe | 437 | 2023 |

New Plant Startups 9



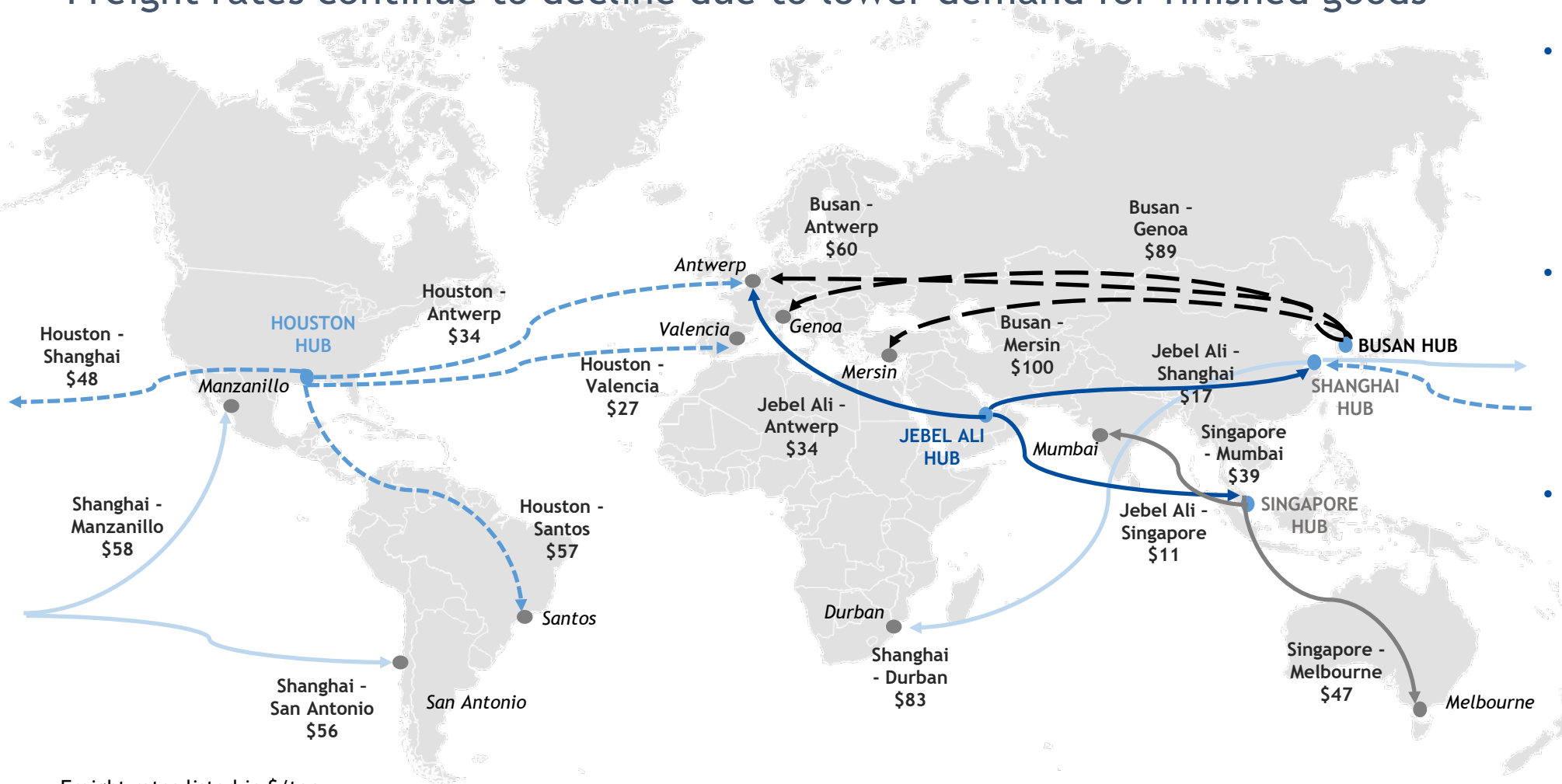
Global operating rate and year-on-year capacity additions
— Argus Consulting

Plant Startups in 2022 and 2023
11,125 Ktons
10pc Capacity Increase vs. 2019

2025 vs. 2019
32pc Capacity Increase

Spot container freight rates

Freight rates continue to decline due to lower demand for finished goods



Freight rates listed in \$/ton
Source: Freightos-derived

- US imports from Asia plunged 31pc year-over-year in February to 1.09 million TEU, the lowest level since March 2020
- February marked the sixth consecutive month of year-over-year declines in Asian imports that began in September
- Retailers say their main concern right now is to avoid over-ordering product from factories in Asia until they get a better handle on consumer demand later this summer