

# Market evolution: Polypropylene (CN 3902) — 2015–2025

## Introduction

The European Union's external trade in polymers of propylene and other olefins (CN 3902) underwent a profound transformation between 2015 and 2025. Once a solid net exporter, the EU saw its trade surplus virtually disappear, shaped by a combination of geopolitical shocks, post-pandemic price dynamics, and a steadily rising import dependence. This report analyses the main trends using the full set of annual trade, production, and volatility data, highlighting the collapse of the surplus, the drastic reordering of supplier and customer geographies, and the price rollercoaster that redefined the market.

## 1. A vanishing trade surplus: from comfortable net exporter to near-parity

### EU export volumes contracted much faster than import volumes grew, driving a structural rebalancing of the external account

Total EU exports of CN 3902 to non-EU countries fell from €3.25 billion in 2015 to €2.93 billion in 2025 (–10.0 %), while export quantity dropped even more sharply, from 2.23 million tonnes to 1.77 million tonnes (–20.6 %). Over the same period, imports rose from €2.00 billion to €2.88 billion (+43.7 %), with import volumes advancing from 1.53 million tonnes to 2.25 million tonnes (+46.7 %). Because the EU exported less in volume but managed higher unit values (+13.4 % for exports, against –2.0 % for imports), the value erosion was less dramatic than the volume collapse, yet the combined effect pushed the trade balance down from a surplus of €1.25 billion to just €48 million (–96.2 %).

| Indicator (EU-27 trade with non-EU countries) | 2015  | 2025  | Change  |
|-----------------------------------------------|-------|-------|---------|
| Exports (€ billion)                           | 3.25  | 2.93  | –10.0 % |
| Exports (million tonnes)                      | 2.23  | 1.77  | –20.6 % |
| Export unit value (€/tonne)                   | 1 459 | 1 655 | +13.4 % |
| Imports (€ billion)                           | 2.00  | 2.88  | +43.7 % |
| Imports (million tonnes)                      | 1.53  | 2.25  | +46.7 % |
| Import unit value (€/tonne)                   | 1 308 | 1 281 | –2.0 %  |
| Trade balance (€ billion)                     | 1.25  | 0.05  | –96.2 % |

*Source: General overview of trade*

## **The net-import-reliance ratio moved from a comfortable negative value to almost zero, signalling the EU's declining self-sufficiency**

The net-import-reliance ratio (import-export balance relative to apparent consumption) increased from –20.2 % in 2015 to just –3.1 % in 2025, and even turned slightly positive in 2022 (+0.13 %). This means the EU moved from a position where it exported a fifth more polypropylene-class products than it imported, to a situation where imports cover almost exactly the same amount as exports, with the domestic market absorbing virtually all of the EU's production. The production volume itself edged down from an estimated 11.73 million tonnes in 2015 to 11.03 million tonnes in 2024 (–4.7 %), while the production value increased slightly (+4.9 %), reflecting higher domestic prices.

- The erosion of the surplus reflects a simultaneous drop in export competitiveness and a strong domestic pull.
- In value terms, the EU still exhibits a small surplus in 2025, but the trend points toward a possible deficit in the near future.

*Data: Net-import reliance; Production volumes*

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## **2. A geopolitical remapping of suppliers and customers: Russia collapses, Asia and the Middle East take over**

### **Sanctions wiped out nearly all trade with Russia, removing a large volume partner from both import and export flows**

The most dramatic single shift in the partner landscape is the complete collapse of Russian trade. EU imports from Russia fell from €63 million (2015) to €0.15 million in 2025 (–99.8 %). Exports to Russia dropped from €139 million to €0.12 million (–99.9 %). The bulk of the import decline occurred in 2023, when the imported quantity plunged to just 2.7 tonnes, and the residual trade is negligible. This eliminated a partner that in 2021 supplied €467 million of imports, the highest point of a brief pre-sanctions peak.

### **Middle Eastern and Asian suppliers rapidly filled the import gap left by Russia and expanded their shares**

As Russian volumes were lost, other partners expanded strongly:

| Import partner     | 2015 (€ million) | 2025 (€ million) | Change   |
|--------------------|------------------|------------------|----------|
| Saudi Arabia       | 472              | 632              | +34.1 %  |
| Korea, Republic of | 243              | 637              | +161.9 % |
| United States      | 230              | 386              | +67.8 %  |
| Israel             | 82               | 161              | +95.7 %  |
| Egypt              | 23               | 60               | +160.7 % |

Source: *Top partners by value*

Korea and Saudi Arabia have become the two dominant import suppliers, together accounting for about 44 % of extra-EU imports in 2025. The United States and Israel also significantly expanded their footprint. Egypt, albeit from a low base, more than doubled its shipments. These increases more than compensated for the loss of Russian supplies, but they also reflect a more concentrated import structure: the Herfindahl-Hirschman Index (HHI) for import value remained essentially flat (1 304 in 2015 → 1 314 in 2025), meaning the top suppliers consolidated their positions without an overall concentration increase.

## Traditional export outlets weakened, while China and certain smaller markets provided some offset

On the export side, the two largest markets – the United Kingdom and Türkiye – shrank markedly:

| Export partner | 2015 (€ million) | 2025 (€ million) | Change  |
|----------------|------------------|------------------|---------|
| United Kingdom | 747              | 496              | –33.5 % |
| Türkiye        | 721              | 525              | –27.2 % |
| China          | 272              | 370              | +36.0 % |
| United States  | 238              | 264              | +10.9 % |
| Switzerland    | 197              | 181              | –8.0 %  |
| Serbia         | 53               | 101              | +90.3 % |

Source: *Top partners by value*

The drop in exports to the UK and Türkiye alone removed roughly €450 million of value. Chinese demand grew notably, becoming the third-largest destination. Serbia's rapid growth (+90.3 %) and stable flows to Switzerland partially cushioned the decline. Export concentration declined significantly (HHI –22.0 % by value), indicating a more diversified customer base compared to 2015, likely a consequence of the reduced reliance on the two top outlets.

- The import side became more anchored on Middle Eastern and Asian partners, while the export side broadened out.

- Russia's disappearance from both flows created a permanent structural break that will not reverse under current sanction regimes.

*Source for HHI: Concentration measures*

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### **3. Price turbulence and supply-shock waves: the post-pandemic rollercoaster**

#### **A synchronised price spike hit nearly all import and export partners in 2021–2022, followed by a correction**

The most prominent price shock event detected in the dataset is the import price spike from Russia in 2023 (abnormality score 27.4, shift +241 %), driven by an almost total volume collapse. However, large price shocks were not limited to Russia. Import prices from Saudi Arabia, Korea, the United Kingdom, Egypt, Israel, and South Africa all experienced pronounced jumps in 2021, with shifts ranging from +25 % to +52 % in the price level relative to the 2019-2020 baseline. On the export side, similar patterns were recorded for Israel, Serbia, Brazil, Morocco, Ukraine, Russia, Switzerland, the United Kingdom, and Türkiye, all with shifts between +20 % and +56 %.

The combined price-shock wave peaking in 2021–2022 reflects post-COVID supply chain bottlenecks, strong demand recovery, and, for some routes, speculative stockpiling ahead of sanctions and geopolitical disruptions.

#### **The Russian supply shock of 2023 represents an extreme outlier, underscoring the vulnerability of a single-source dependency**

The Russian case stands alone because of its abruptness and magnitude. After two years of elevated import volumes (2021–2022 averaging 263 thousand tonnes per year), imports crashed to 2.7 tonnes in 2023. The unit price of the residual trade soared to €4 749/tonne, compared with a 2021-2022 average of €1 392/tonne. This is not a market price but a statistical artefact of near-zero volumes. The event is classified as a price shock, but it is fundamentally a supply disruption that forced EU buyers to source elsewhere at short notice.

#### **Volatility was unevenly distributed, with emerging suppliers showing the highest instability**

Looking at the coefficients of variation (CV) of import quantities over the 2015-2025 period, the most volatile partners are Viet Nam (CV = 1.34), Russia (CV = 1.12), Brazil (CV = 0.80), and Egypt (CV = 0.58). Among the larger suppliers, Korea (0.28) and the United

Kingdom (0.30) exhibited moderate volatility, while Saudi Arabia (0.11) was remarkably stable. On the export side, the highest CVs belong to Russia (0.73), Morocco (0.30), and Mexico (0.29), while China (0.08) and Switzerland (0.08) were the most stable destinations.

- The high volatility of Vietnamese and Egyptian imports reflects rapidly ramped-up capacity and policy-driven trade flows.
- The stability of Saudi Arabian shipments helped anchor the EU's import bill even as other sources fluctuated wildly.

*Source: Volatility bars; Top shock events*

## Product-level dynamics reinforce the picture: polypropylene homopolymer lost export volumes, propylene copolymers gained import importance

The CN 3902 heading groups four key product segments. Polypropylene in primary forms (CN 390210) dominates both exports and imports, but its export volume contracted from 1.03 million tonnes in 2015 to 0.76 million tonnes in 2025 (–26.2 %), while imports of the same product rose from 1.09 million tonnes to 1.52 million tonnes (+38.6 %). Propylene copolymers (CN 390230) showed strong import growth (+92.9 % in volume) and a milder decline in exports (–21.9 %). Polyisobutylene (CN 390220) and other olefin polymers (CN 390290) represent smaller volumes but witnessed marked price increases, especially in imports where unit values for CN 390290 rose from €2 617/tonne to €3 142/tonne (+20.1 %).

| Segment               | Import volume 2015 (t) | Import volume 2025 (t) | Change  | Export volume 2015 (t) | Export volume 2025 (t) | Change  |
|-----------------------|------------------------|------------------------|---------|------------------------|------------------------|---------|
| Polypropylene         | 1 094 092              | 1 516 668              | +38.6 % | 1 026 553              | 757 356                | –26.2 % |
| Propylene copolymers  | 302 840                | 584 066                | +92.9 % | 1 005 062              | 784 670                | –21.9 % |
| Other olefin polymers | 73 293                 | 94 824                 | +29.4 % | 125 242                | 154 517                | +23.4 % |
| Polyisobutylene       | 61 337                 | 51 868                 | –15.4 % | 71 229                 | 72 282                 | +1.5 %  |

*Source: Product segment breakdown*

The data show a clear intra-EU shift: the EU exports propylene copolymers and other specialty olefin polymers in relatively higher value, while it increasingly imports polypropylene homopolymer, the workhorse plastic. The growing import volume of copolymers hints at capacity constraints or price-driven sourcing shifts.

## Conclusion

Over the 2015-2025 period, the EU's polypropylene sector lost its traditional export-led surplus and moved to a near-balanced external trade position. The drivers are manifold:

- A steady rise in import demand, fed by competitively priced Asian and Middle Eastern polypropylene,
- A simultaneous drop in export volumes, particularly to the UK and Türkiye, only partly offset by growth in China and Serbia,
- The effective removal of Russia from the trade map after 2022, which fundamentally restructured import sources and removed a large export market,
- A series of price shocks – notably the synchronised surge in 2021-2022 and the extreme Russian anomaly in 2023 – that amplified short-term movements but also revealed underlying vulnerabilities.

With net-import reliance approaching zero, production volume gently declining, and import concentration holding steady, the EU polypropylene market appears more integrated into global supply chains than a decade ago. Any further deterioration in export competitiveness or a new supply disruption among the key Middle Eastern and Asian suppliers could easily push the trade balance into a structural deficit.

*All data referenced in this report are drawn from the Eurostat-based trade dashboard. The complete interactive views are available via the overview page.*

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