Market evolution: Polyethylene (CN 3901) — 2015–2025

Introduction

Polymers of ethylene in primary forms (CN 3901) constitute one of the most important commodity plastic families traded globally. The EU is both a major producer and a large consumer. This report examines the evolution of the bloc's external trade in polyethylene over the period 2015-01 to 2025-12, drawing on yearly data from the EU trade dashboard. The analysis identifies a fundamental shift from net exporter to net importer, a profound re-orientation of partner flows, and a market increasingly shaped by price shocks and product-mix evolution.

From Trade Surplus to Persistent Deficit: The Unravelling of the EU's Polyethylene Position

The EU's overall external trade in polyethylene has undergone a stark reversal, moving from a comfortable surplus to a large and growing deficit.

The value of exports declined while imports surged, flipping the trade balance from +€ 540 million to –€ 1.3 billion.

Over the period, export value fell by 15.4 % (from € 5.25 billion to € 4.44 billion) while import value jumped by 21.9 % (from € 4.71 billion to € 5.74 billion). Consequently, the trade balance swung by –340.7 %, from a surplus of € 540 million in 2015 to a deficit of € 1.30 billion in 2025.

Trade flow	2015 (EUR)	2025 (EUR)	Change (%)
EU exports	5 249 755 409	4 439 945 555	–15.4 %
EU imports	4 709 477 710	5 740 373 772	+21.9 %
Trade balance	+540 277 698	–1 300 428 217	–340.7 %

The volume gap tells an even starker story: export tonnage shrank by nearly one-fifth while import tonnage ballooned by almost two-fifths.

Export quantity dropped by 19.7 % (from 3.70 million t to 2.97 million t), whereas import quantity grew by 38.6 % (from 3.76 million t to 5.22 million t).

Measure	2015	2025	Change (%)
Export volume (t)	3 699 419	2 971 401	–19.7 %
Import volume (t)	3 761 908	5 215 590	+38.6 %

Diverging unit values reinforced the deficit: EU export prices rose modestly while import prices fell, making foreign supply increasingly competitive.

The average export unit value increased from € 1 419/t to € 1 494/t (+5.3 %), whereas the import unit value decreased from € 1 252/t to € 1 101/t (–12.1 %). This widening price gap stimulated import demand and put downward pressure on EU producers' domestic market share.

Geopolitical Realignments and Partner Concentration Upend Traditional Flows

The composition of trade partners changed dramatically, driven by competitive dynamics and political shocks, with a notable rise in import concentration and a diversification of export destinations.

The United States replaced Saudi Arabia as the dominant external supplier, quadrupling its import value.

U.S. imports surged from € 617 million to € 2 051 million (+232.6 %), while Saudi Arabian shipments contracted by 40.2 % (from € 1 408 million to € 842 million). Korea and Egypt also recorded strong gains (+82.3 % and +82.5 %, respectively), whereas UK imports fell by 22.1 % in the post-Brexit environment.

Top import partners	2015 (EUR)	2025 (EUR)	Change (%)
Saudi Arabia	1 407 966 172	841 895 165	–40.2 %
United States	616 614 155	2 050 917 292	+232.6 %
Korea, Rep.	326 148 114	594 692 129	+82.3 %
Egypt	102 900 386	187 803 288	+82.5 %
United Kingdom	657 583 248	512 533 734	–22.1 %

Source: top partners by value

On the export side, the loss of the Russian market and the decline of the UK were partly offset by strong growth to China and the United States.

The most dramatic shift concerned Russia, where sanctions caused exports to plummet by 90.7 % (from € 372 million to € 35 million). Exports to the UK shrank by 51.6 %, from € 1.39 billion to € 673 million. China absorbed more than twice as much value (+82.3 %, reaching € 734 million), while exports to the U.S. rose by 46.7 % (to € 266 million) and to Türkiye remained broadly stable (+6.4 %).

Top export partners	2015 (EUR)	2025 (EUR)	Change (%)
United Kingdom	1 390 157 481	673 285 312	–51.6 %
China	402 650 722	733 970 562	+82.3 %
Russian Federation	371 527 677	34 604 971	–90.7 %
United States	181 553 141	266 373 404	+46.7 %
Türkiye	549 005 334	584 360 796	+6.4 %

Source: top partners by value

These partner shifts have made imports more concentrated while exports have become slightly more diversified.

The Herfindahl-Hirschman Index (HHI) for imports rose from 1 604 to 1 921 (+19.8 %), reflecting the growing dominance of a few suppliers, in particular the U.S. Meanwhile, the export HHI fell from 1 021 to 819 (–19.7 %), indicating a broadening of customer destinations as EU exporters sought new markets after losing Russia and seeing reduced UK demand.

See concentration HHI trends.

Price Shocks and a High-Value Product Pivot: Volatility and Structural Change

Beyond the quantity and partner shifts, the market was heavily impacted by extreme price spikes in 2021-2022 and a changing composition of the traded product mix towards specialty grades.

Broad-based price shocks hit many trade relationships in 2021-2022, with import prices rising sharply while volumes adjusted.

The top price shock events show that on the import side the UK, Türkiye, and Egypt registered unit-price jumps of 59 %, 67 %, and 50 %, respectively, in 2021, alongside notable increases for the U.S. and Saudi Arabia. On the export side, the U.S. and China saw unit values surge by 60 % and 86 % in 2022, causing double-digit volume contractions.

Selected import price shock (2021)	Price shift (%)	Volume change vs baseline
United Kingdom	+59.4 %	–32.8 %
Türkiye	+67.0 %	+95.0 %
Egypt	+49.9 %	–11.6 %

Selected export price shock (2022)	Price shift (%)	Volume change vs baseline
United States	+60.3 %	–18.1 %
China	+86.3 %	–26.2 %

Data from shock events.

High volatility characterises certain partners, underlining the fragility of some sourcing routes.

The coefficient of variation (CV) of import volumes highlights the U.S. as the most erratic major supplier (CV = 0.523), followed by Iran (0.602). Among exports, Russia shows the highest instability (CV = 0.589) due to the abrupt sanctions-driven collapse. By contrast, mature destinations such as Switzerland, India and Türkiye exhibited much lower volatility, with CVs around 0.09–0.13.

See volatility measures.

The product mix within CN 3901 shifted towards ethylene-alpha-olefin copolymers on the import side, while traditional polyethylene grades lost ground.

The segment data (available from 2017 for the newer code 390140) reveals that imports of ethylene-alpha-olefin copolymers (390140) rose from 439 000 t (2017) to 1 434 000 t (2025), making them the second-largest import category behind HDPE (390120). In value terms, 390140 jumped from € 527 million (2017) to € 1 484 million. On the export side, the same product peaked at € 1 175 million in 2022 before falling back. Higher-value “other” ethylene polymers (390190) command unit prices well above € 2 000/t both for imports and exports, reflecting a specialised segment.

CN8 codes	Product description	Import volume 2017 (t)	Import volume 2025 (t)	Export volume 2017 (t)	Export volume 2025 (t)
390110	LDPE	2 087 134	1 528 849	1 459 543	1 112 048
390120	HDPE	1 551 663	1 916 592	1 373 211	921 414
390140	Ethylene-alpha-olefin copolymers	438 707	1 433 515	532 076	503 306
390190	Other ethylene polymers	210 609	230 951	245 986	294 326
390130	EVA copolymers	104 292	105 686	231 166	140 309

Source: product segment breakdown — 2017 is the first year with complete data for 390140.

The EU's production base contracted in volume terms, yet the industry became more outward-oriented and import-dependent.

EU production quantity fell from 14.63 billion t (2006) to 12.59 billion t (2024), a drop of 14.0 %, while production value declined only marginally (–2.6 %), indicating rising unit prices in domestic output. Meanwhile, both trade intensity (exports + imports / production) and export propensity increased significantly. The net import reliance flipped from –5.9 % in 2006 (net exporter) to +3.1 % in 2024, confirming the EU's transition to a net-importer position for polyethylene.

Indicator	2006 / 2015	2024	Change
Net import reliance	–5.9 % (2006)	+3.1 %	shift of 9 pp
Export propensity	26.4 % (2006)	37.8 %	+43.2 %
Trade intensity	39.0 % (2015)	55.8 %	+43.2 %
EU production volume	14 631 million t (2006)	12 587 million t (2024)	–14.0 %

Conclusion

The EU's external polyethylene market has experienced a profound structural transformation between 2015 and 2025. Once a consistent net exporter, the Union now runs a substantial trade deficit, driven by a massive increase in competitively priced imports—especially from the United States—and a simultaneous erosion of export volumes to former major partners such as the UK and Russia. Geopolitical shocks and the post-pandemic price upheavals have accelerated partner realignments and increased import concentration. At the same time, the product basket has shifted toward higher-value copolymers, and the EU industry, although producing less volume, has become more deeply integrated into global trade. The rise in net import reliance and the heightened volatility of certain supply routes underscore the strategic vulnerability that the polyethylene sector now faces.

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If you need advice on European trade policy, or representation for your interests in Brussels, feel free to contact me at support@tradedashboard.eu. You can find my CV at this address.