EU TRADE EXPLORER

Market evolution: Electrical transformers and converters (CN 8504) — 2015–2025

Introduction

Electrical transformers, static converters and inductors (CN 8504) are a pivotal category within the EU's electrical machinery trade. Over the 2015–2025 period, the EU's external trade in these goods underwent a fundamental transformation. While exports grew robustly in value terms, imports more than doubled, causing a historic reversal of the trade balance. This report describes and interprets the principal dynamics – the shift to a structural deficit, the intensifying concentration of import supply, and the powerful price and volatility shocks that reshaped the market.

From surplus to deficit: the reversal of EU trade in electrical transformers and converters

The value of EU exports rose by more than two-thirds but volumes fell

Between 2015 and 2025, EU extra-EU exports of CN 8504 increased from EUR 10.66 billion to EUR 17.97 billion, a gain of 68.5 %. The quantity exported, however, contracted from around 638 000 tonnes to roughly 583 000 tonnes, while the average export price nearly doubled. This indicates that value growth was driven almost entirely by higher unit prices rather than by expanding physical shipments.

Year	Exports (EUR bn)	Imports (EUR bn)	Trade balance (EUR bn)
2015	10.66	8.37	+2.30
2020	12.03	11.48	+0.55
2022	14.54	22.09	–7.56
2025	17.97	21.10	–3.12

Source: EU trade overview

Import growth outpaced exports and turned the EU into a net importer

Imports climbed from EUR 8.37 billion in 2015 to a peak of EUR 23.82 billion in 2023, before settling at EUR 21.10 billion in 2025, yielding a total increase of 152.1 %. The trade balance, which stood at a surplus of EUR 2.30 billion in 2015, turned negative from 2022 onward, reaching a deficit of EUR 7.56 billion in 2022 and remaining in deficit through 2025. The corresponding net-import-reliance indicator moved from –24.7 % in 2015 to –10.4 % in 2024, confirming the EU's shrinking self-sufficiency in this category.

Net import reliance

Geographical concentration and the shifting geography of supply and demand

China consolidated its position as the overwhelmingly dominant extra-EU supplier

China's share of extra-EU imports rose sharply, from EUR 3.92 billion in 2015 to EUR 11.79 billion in 2025 (an increase of 200.9 %). It accounted for a high and growing proportion of total imports, contributing to a rise in the import Herfindahl-Hirschman Index (HHI) from 2 420 to 3 276 points over the period.

Top import partners

Concentration HHI

Other Asian suppliers and Türkiye gained ground, while Hong Kong faded

Several other partners recorded strong import gains:

- India: from EUR 0.24 billion to EUR 0.59 billion (+143.1 %)
- Republic of Korea: from EUR 0.15 billion to EUR 0.36 billion (+133.6 %)
- Türkiye: from EUR 0.11 billion to EUR 1.18 billion (+957.7 %)

In contrast, imports from Hong Kong collapsed from EUR 0.25 billion to EUR 0.07 billion (–69.9 %), reflecting supply-chain re-routing.

The United States and the United Kingdom remained the EU's top export markets

On the export side, the United States was the largest destination, with sales rising from EUR 1.86 billion in 2015 to EUR 5.15 billion in 2025 (+177.5 %). The United Kingdom followed, growing from EUR 1.27 billion to EUR 1.92 billion, though its share moderated. Export market concentration increased moderately, with the export HHI moving from 724 to 1 153; still far lower than the import side, indicating a more diversified export portfolio.

Top export partners (2025)	Value (EUR bn)	Change 2015-2025
United States	5.15	+177.5 %
United Kingdom	1.92	+51.5 %
China	1.74	+35.1 %
Switzerland	0.91	+50.5 %
Norway	0.58	+137.8 %

Top export partners

Member-state trade patterns reflected specialised production roles

Germany remained the largest exporting member state (EUR 5.58 billion in 2025), while the Netherlands dominated imports (EUR 4.90 billion), partly owing to its role as a logistics hub. Revealed symmetric comparative advantage (RSCA) values for 2025 show Croatia (0.70), Finland (0.50) and Hungary (0.49) as the most specialised EU exporters in this product group.

Reporter-level trade
Specialisation map

Price surges, supply shocks, and production shifts

A sharp price shock on Chinese imports in 2022 disrupted the cost structure

In 2022, the average import price of CN 8504 goods from China jumped to EUR 25 505 per tonne, compared with an average of EUR 8 032 in the 2020-2021 baseline – a 217.5 % increase. Quantities imported dropped, but the value of imports remained extremely high, driving the EU trade balance deep into deficit. This event was flagged as the most significant price shock in the period.

Shock events – China import price

Export markets also experienced abrupt price realignments

Notable export price shocks included Iceland (a 1 403.5 % shift in 2020, although on a very small volume) and Norway (a 142.6 % shift in 2019). The export flow to Russia collapsed after 2022 under sanctions, with quantities falling from about 6 900 tonnes in 2022 to just 28 tonnes in 2025, while the unit price of remaining shipments soared to EUR 97 867 per tonne – a supply-side exit shock.

Export supply shock – Russia

EU production value soared while quantities produced declined

Between 2015 and 2024, the production value of CN 8504 goods in the EU rose from EUR 6.09 billion to EUR 10.03 billion (+160.3 %), whereas production quantities fell from 166.7 million units to 111.2 million units (–56.4 %). The sharply rising unit value of EU-produced goods mirrors trade price trends and suggests a shift towards higher-complexity, higher-value items, possibly accelerated by the same global dynamics that lifted import prices.

EU production volumes

Conclusion

EU trade in electrical transformers and converters between 2015 and 2025 was defined by three major forces: a spectacular surge in import values that turned a long-standing surplus into a deficit, a deepening reliance on a small number of Asian suppliers – above all China – and a series of dramatic price shocks that redefined unit values on both sides of the trade account. While EU exporters succeeded in expanding value sales, particularly to the United States, the overall vulnerability of the sector increased as import concentration rose and as domestic production shifted towards higher-value but lower-volume output. The data indicate that the EU's external position in this critical category has become more exposed and is likely to remain sensitive to global supply chain and pricing dynamics.

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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.