

International trade in products related to green energy

Statistics Explained

*Data extracted in September 2025
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Highlights

In 2024, China was the largest origin of extra-EU imports of solar panels and liquid biofuels and second largest for wind turbines.

In 2024, the United Kingdom was the largest destination for extra-EU exports of wind turbines and second largest for solar panels and liquid biofuels.

In the context of the European Green Deal, analyzing the EU trade in green energy products is crucial for understanding geopolitical dependencies, assessing energy security, and supporting domestic industries.

This article presents an overview of the EU's international trade in three key product groups: wind turbines, solar panels, and liquid biofuels. It compares these categories, traces their developments over time in both extra-EU imports and exports, and identifies the main partners involved in the EU's trade of each product.

Overall, the EU imports more green energy products than it exports

In 2024, the EU imported solar panels to the value of € 11.1 billion, liquid biofuels to the value of € 2.9 billion and wind turbines worth € 0.5 billion (see Figure 1). The EU import values of solar panels and liquid biofuels in 2024 were much higher than the corresponding EU export values which were € 0.7 billion for solar panels and € 1.8 billion for liquid biofuels. By contrast, the EU export value of wind turbines (€ 2.8 billion) was much higher than the corresponding value for imports.

Figure 1 The EU import value of solar panels decreased by 43% between 2023 and 2024 (see Figure 2), due to a drop in prices, even though the quantity imported slightly increased by +2%. During the same period the value of EU imports of liquid biofuels decreased by -25% while the quantity fell by 14%. EU imports of wind turbines increased significantly during this period, with a 102% increase in value and a 113% increase in quantity.

Figure 2 Between 2023 and 2024, the exports of wind turbines saw the largest increase in value (+41%) while their quantity increased by 28% (see Figure 3). Exports of solar panels fell by 22% in value while rising by 24% in quantity. Exports of liquid biofuels showed a higher decrease in value compared with quantity (-19% vs -7%).

Figure 3

Wind turbines: India largest import partner, United Kingdom largest export partner

India (48%) and China (43%) were the origin of most extra-EU imports of wind turbines in 2024 (Figure 4). The largest extra-EU export destination for wind turbines was the United Kingdom (22%) see Figure 5, followed by the United States (14%), Japan (12%) and Türkiye (11%); it should be noted that 27% of exports could not be attributed to a partner due to data confidentiality.

Figure 4Figure 5

Solar panels: China largest import partner, Switzerland largest export partner

China (98%) was by far the largest partner for extra-EU imports of solar panels in 2024 (Figure 6). The largest extra-EU export destinations for solar panels were Switzerland (26%) and the United Kingdom (22%) see Figure 7.

Figure 6Figure 7

Liquid biofuels: China largest import partner, United States largest export partner

Almost a quarter of the extra-EU imports of liquid biofuels in 2024 came from China (24%) as shown in Figure 8. Malaysia (15%), the United Kingdom (13%), Brazil (12%) and Argentina (11%) also had double digit shares. The United States (61%) and the United Kingdom (22%) were the largest destinations for extra-EU exports of liquid biofuels (Figure 9).

Figure 8Figure 9

Data sources

EU data is taken from [Eurostat's COMEXT](#) database. COMEXT is the reference database for international trade in goods. It provides access not only to both recent and historical data from the EU Member States but also to statistics of a significant number of non-EU member countries. International trade aggregated and detailed statistics disseminated via the Eurostat website are compiled from COMEXT data according to a monthly process.

Data are collected by the competent national authorities of the EU Member States and compiled according to a harmonised methodology established by EU regulations before transmission to Eurostat. For extra-EU trade, the statistical information is mainly provided by the traders on the basis of customs declarations.

EU data are compiled according to Community guidelines and may, therefore, differ from national data published by the Member States. Statistics on extra-EU trade are calculated as the sum of trade of each of the 27 EU Member States with countries outside the EU. In other words, the EU is considered as a single trading entity and trade flows are measured into and out of the area, but not within it.

Methodology

According to the EU concepts and definitions, extra-EU trade statistics (trade between EU Member States and non-EU countries) do not record exchanges involving goods in transit, placed in a customs warehouse or given temporary admission (for trade fairs, temporary exhibitions, tests, etc.). This is known as 'special trade'. The partner is the country of final destination of the goods for exports and the country of origin for imports.

Unit of measure

Trade values are expressed in millions or [billions](#) (109) of euros. They correspond to the statistical value, i.e. the amount which would be invoiced in the event of sale or purchase at the national border of the reporting country. It is called a [FOB](#) value (free on board) for exports and a [CIF](#) value (cost, insurance, freight) for imports.

Product codes

The product codes used for the three products shown in this article are:

- Wind turbines: CN code 850231
- Solar panels: CN code 85414300
- Liquid biofuels: CN codes 220720, 382600 and 29091910

Data for solar panels before 2022 is estimated.

Context

Trade is an important indicator of Europe's prosperity and place in the world. The bloc is deeply integrated into global markets both for the products it sources and the exports it sells. The EU trade policy is an important element of the external dimension of the 'Europe 2022 strategy for smart, sustainable and inclusive growth' and is one of the main pillars of the EU's relations with the rest of the world.

Because the 27 EU Member States share a single market and a single external border, they also have a single trade policy. EU Member States speak and negotiate collectively, both in the [World Trade Organisation](#), where the rules of international trade are agreed and enforced, and with individual trading partners. This common policy enables them to speak with one voice in trade negotiations, maximising their impact in such negotiations. This is even more important in a globalised world in which economies tend to cluster together in regional groups.

The openness of the EU's trade regime has meant that the EU is the biggest player on the global trading scene and remains a good region to do business with. Thanks to the ease of modern transport and communications, it is now easier to produce, buy and sell goods around the world which gives European companies of every size the potential to trade outside Europe.

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