

Strong growth in EU clean tech trade

- **The energy transition has led to a thriving trade in both transition commodities and clean technologies**
- **Clean technologies, with China as the largest supplier, are over time more often imported by the EU than they are exported**
- **By early 2025, the EU became a net exporter of clean technology, mainly due to a strong increase in exports of electric vehicles**
- **Germany is the largest net exporter of clean technologies within the EU, while the Netherlands is the largest net importer**
- **EU trade in clean tech has grown by an average of 57% per year since 2017, when the Paris Agreement came into effect**



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Introduction

There is a strong likelihood that global demand for low-carbon technologies (also known as ‘clean tech’) will continue to grow in the coming years. In Europe, growth in demand for clean technologies will be driven mainly by the need to meet climate targets. It is therefore important not only to expand production capacity for clean technologies on the European continent, but above all to ensure that trade flows in clean technologies remain open and accessible.

Understanding global trade flows in clean technologies and market developments in this segment is important for both businesses and policymakers involved in the energy transition. It helps to identify potential risks and opportunities. In this publication, we examine the main trends in trade flows of clean technologies in the EU-27. We not only highlight the ratios of imports and exports of clean technologies in the EU-27, but also show which countries are the most important trading partners for the EU-27. We note that there are significant differences between EU Member States in terms of trade in clean technologies and that only a handful of countries make a difference in this regard. Finally, we discuss the growth of trade in clean technologies. The data show that since 2017, trade in clean technologies has grown much more strongly than total trade in goods in the EU-27. We end this note with a conclusion.

Trade in transition commodities and clean tech in the EU-27

The energy transition has led to a thriving trade in both transition materials (in this case copper, nickel, cobalt, graphite and lithium, of which both the raw minerals (the mined ores) and the refined materials) and clean technologies (such as electric vehicles (EV), batteries for energy storage, solar panels, wind energy, heat pumps and hydropower technologies).

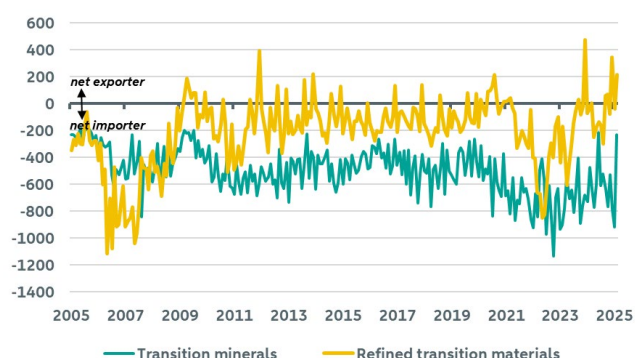
Europe is largely dependent on foreign supplies for its transition minerals. The EU's trade balance in transition minerals has shown a structural deficit since 2005. This exposes the EU to an increased risk of supply chain disruptions due to potentially protectionist or trade-restrictive measures by key suppliers. The transition minerals imported by the EU are used, among other things, to produce refined materials. This segment also has a lively trade, with the EU being a net importer more often than a net exporter. In the first two months of 2025, exports of refined materials increased by 18% year-on-year, while imports rose by 8%.

The figure on the right below shows that the EU imports more than it exports (in terms of value) in the field of clean technologies. Only in 2017 and early 2025 the export value was briefly higher than the import value. However, the EU's trade balance in clean technologies is generally negative. At the beginning of 2025, the trade balance is roughly in balance, with imports and exports representing a similar value. This equilibrium is due to strong growth in EU exports of electric

vehicles and a decline in imports of electric cars from China. Batteries and solar panels also have a significant impact on the trend in imports.

Trade balance extra-EU-27 in transition commodities

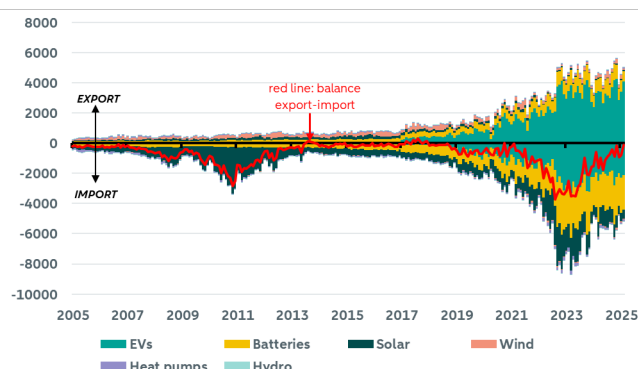
X 1.000.000 EUR



Source: Eurostat, Bloomberg NEF, ABN AMRO Group Economics

Import and export of clean technologies extra-EU-27

X 1.000.000 EUR



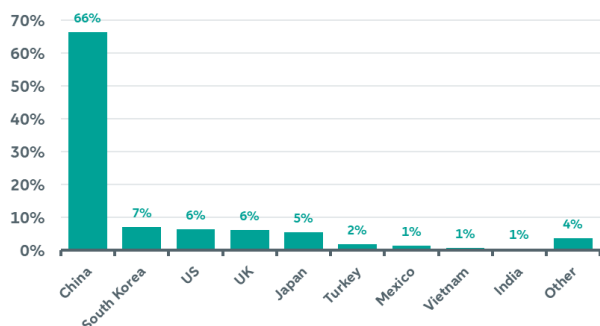
Source: Eurostat, Bloomberg NEF, ABN AMRO Group Economics

The first electric cars have been commercially available on a larger scale since 2010, but a real breakthrough has been a long time coming. In 2015, electric vehicles reached a market share of approximately 1% worldwide. Trade in electric vehicles and their market share began to accelerate after 2017. This partly coincides with the Paris Agreement on climate change coming into effect in November 2016. Partly as a result of this, the market share of electric vehicles rose to around 4-5% in 2020. In 2024, electric vehicles accounted for more than 20% of all new car sales worldwide. In Europe the market share of electric cars was around 15% in 2024. From 2017 onwards, trade in all kinds of other clean technologies, such as batteries and solar panels, also accelerated. China and the US became important trading partners in the total trade in many clean technologies.

Approximately two-thirds of total imports of clean technologies into the EU comes from China. These include a wide variety of clean technologies, mainly electric vehicles, but also batteries and solar panels. In second place, some way behind, is South Korea with a 7% share of EU imports of clean technologies, followed by the US and the UK, both with a 6% share. In the EU – but also in the US – China's relatively cheap exports are closely monitored to prevent dumping of cheaper goods. Chinese goods are often relatively cheap because labour, energy and carbon costs are lower. In addition, certain favourable subsidy schemes sometimes contribute to the uneven playing field. This also applies to the market for clean technologies. Chinese clean technologies can be produced at much lower costs, which then undermine their manufacturing of clean tech on the European continent. To prevent this from escalating, the EU is able to use trade measures and/or regulations to ensure that the EU clean tech industry is not driven out of business by unfair competition.

Import share clean technologies extra-EU-27 (2024)

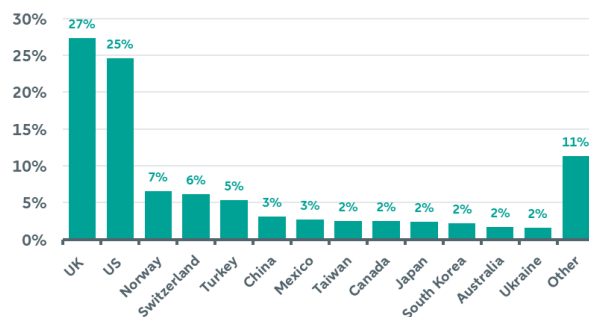
% share



Source: Eurostat, ABN AMRO Group Economics

Export share clean technologies extra-EU-27 (2024)

% share



Source: Eurostat, ABN AMRO Group Economics

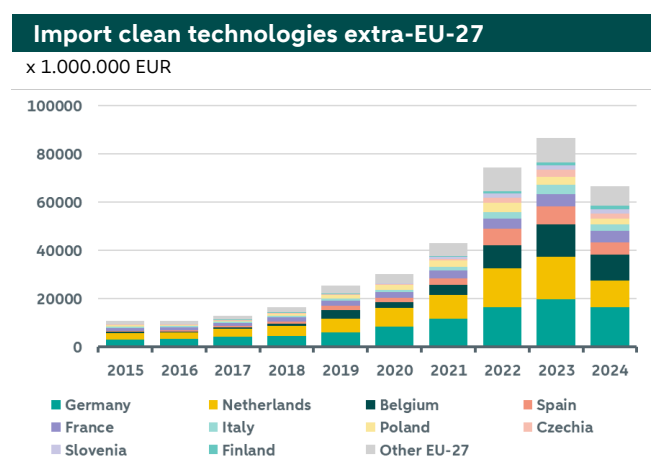
The EU exports more than it imports with the US and the UK. This mainly concerns trade in electric vehicles, with Germany being a major exporter to these countries. The EU exports most of its clean technologies to the UK. This country accounts for 27% of total EU exports of clean technologies. The US follows with a share of 25%, and Norway completes the top three with a share of 7%.

EU exports of clean technologies have grown strongly since 2017, mainly due to sales of electric vehicles. These EU exports are expected to increase further in the coming years, but not only in electric vehicles. This is because the EU has expressed its ambition to significantly expand the manufacture of all kinds of other clean technologies by 2040. The EU has set itself the goal of further reducing its heavy dependence on foreign clean technologies more quickly. It wants to achieve this by investing in the manufacture of clean technologies on the European continent and increasing self-sufficiency. This means that by 2030, 40% of the EU's demand for clean, low-carbon technologies must be met within the EU. This target applies specifically to a number of “strategic net-zero technologies”, including solar and wind energy, batteries, heat pumps, electrolysis equipment and fuel cells, biogas/biomethane and carbon capture, utilisation and storage (CCS). EU policies aimed at stimulating innovation in clean technologies will help to achieve this. The first steps in this direction have already been taken. For example, the *Clean Industrial Deal* will mobilise more than EUR 100 billion to provide long-term support for the production of and innovation in clean technologies in the EU. Without such public support for the further development of clean technologies – for example through temporary tax measures or subsidies – the transition to a carbon-neutral economy could be delayed, as the financing risks would be higher.

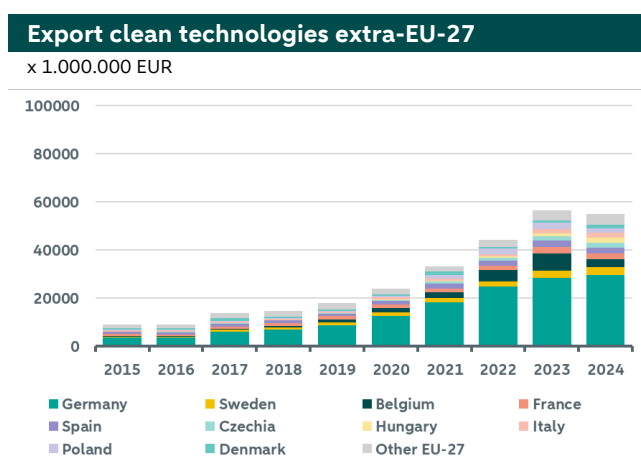
Extra-trade in clean tech by EU Member States

Four large countries account for a combined share of approximately 67% of total imports of goods from outside the EU. In 2024, Germany accounted for 27% of imports, followed by the Netherlands (18%), France (11%) and Italy (11%). The same four countries were also the largest exporters to countries outside the EU in 2024, with a combined share of 70%. Germany accounted for 34% of exports, followed by Italy (13%), the Netherlands (12%) and France (11%). However, the ratios in trade in clean technologies specifically to and from countries outside the EU are somewhat different. Germany remains the country with the largest share in both imports and exports of clean technologies. This mainly concerns imports of electric vehicles and batteries. The Netherlands, Belgium and Spain complete the top four in terms of imports of clean technologies. The top four have a combined share of 65% of total imports of clean technologies. The Netherlands imports mainly batteries and solar panels, while Belgium imports mainly electric vehicles. Spain imports large quantities of solar panels.

In 2024, imports of clean technologies fell by 23%. This was mainly due to a 24% decline in imports of electric vehicles. This was the result of additional import tariffs imposed by the EU in 2024 on electric vehicles manufactured in China, in response to the Chinese government's subsidy policy for the manufacture of electric vehicles. Import duties of up to 35% were imposed on Chinese electric vehicles, on top of the existing 10% import duty. The additional tariffs subsequently made Chinese electric vehicles in the EU considerably more expensive, which led to a decline in demand and therefore in imports.



Source: Eurostat, ABN AMRO Group Economics



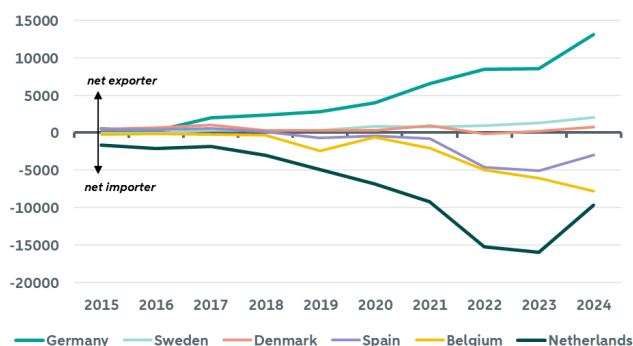
Source: Eurostat, ABN AMRO Group Economics

Germany dominates the export of clean technologies to countries outside the EU. The country accounts for 54% of total EU exports of clean technologies. Here too, the focus is mainly on electric vehicles. Sweden, Belgium and France complete the top four, with each of these three countries accounting for around 5-6% of total EU exports of clean technologies.

On balance, only six EU Member States are net exporters of clean technologies, with Germany by far the largest. Sweden and Denmark follow at a considerable distance. The other three countries follow Denmark in terms of value. This means that 21 EU Member States are net importers of clean technologies. The Netherlands is the largest, followed by Belgium and Spain. Since both the Netherlands and Belgium have strategic ports that serve a large part of Europe's hinterland, the transit of clean technologies to the rest of Europe accounts for a large share of the trade figures.

Top 3 net importers and exporters EU-27 clean tech

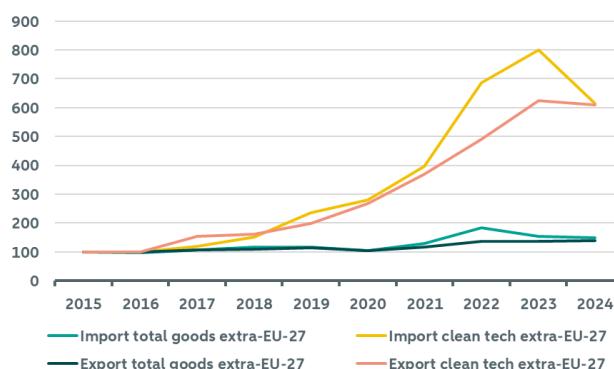
x 1.000.000 EUR



Source: Eurostat, ABN AMRO Group Economics

Trade clean tech vs. total goods extra-EU-27

index (2015=100)



Source: Eurostat, ABN AMRO Group Economics

Trade in clean technologies is booming. Both imports and exports of clean technologies have risen sharply over the past nine years, averaging around 57% per year. The strong growth has accelerated since 2017, when the Paris Agreement came into force and demand for clean technologies gained momentum. The annual growth in trade in clean technologies is approximately 12 times higher than total EU trade in goods. On average, total EU trade in goods with other countries has increased by around 4-5% per year since 2015.

Conclusion

The energy transition has led to a lively trade in both transition raw materials and clean technologies, with the EU heavily dependent on foreign supplies, especially from China. Since 2017, partly due to the Paris Agreement on climate change, trade in clean technologies such as electric vehicles, batteries and solar panels has increased significantly. This increase is reflected in annual growth of 57%, much higher than the growth in total EU trade in goods. Germany leads both imports and exports of clean technologies, while the Netherlands, thanks to its strategic port position, plays an important role in transit. Despite a structural shortage of transition minerals, the EU aims to be self-sufficient in 40% of its low-carbon technologies by 2040. Trade measures and incentive policies, such as the *Clean Industrial Deal*, remain crucial to combat unfair competition and support the EU's clean tech industry. This lays the foundation for further growth in trade and manufacturing of clean technologies in the coming years.

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