Physical imports and exports

Statistics Explained

Data extracted in June 2025
Planned article update: July 2026

Highlights

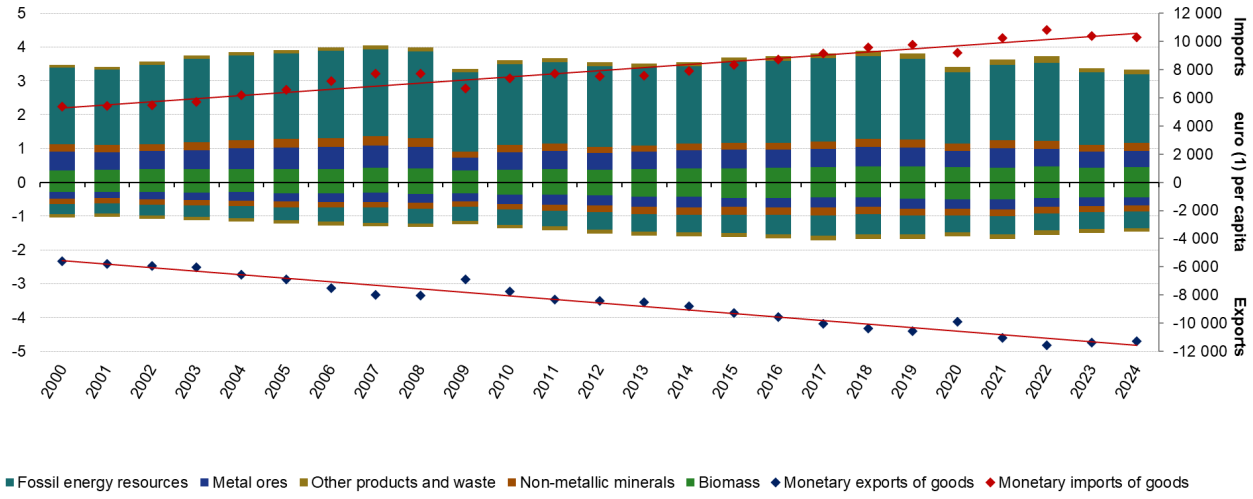
" In 2024, EU physical imports - dominated by raw products - were around 3.3 tonnes per capita, while physical exports - dominated by finished products - were around 1.5 tonnes per capita. "

" The EU economy is almost self-sufficient in the supply of non-metallic minerals (notably construction materials) and biomass, while it is highly dependent on imports of metal ores and fossil energy materials from the rest of the world. "

" Most EU countries are net importers, except for Estonia, Latvia and Sweden. "

While the European Union's (EU) trade balance in monetary value is more or less even, its physical trade balance is clearly asymmetric. The EU imports more than 2 times more goods by weight from the rest of the world than it exports. Quantitatively the physical imports into the EU are dominated by fossil fuels and other raw products which typically have low value per kilogram. On the other hand, the EU exports high-value goods such as machinery and transport equipment. Data on physical imports and exports are collected in the framework of material flow accounts which are presented in more detail in the article material flow accounts and resource productivity . Related articles discuss resource productivity statistics and material footprints . In monetary terms, the EU's trade in goods is balanced; imports and exports are more or less in the same order of magnitude and both have almost doubled since the year 2000 due to globalisation. From a physical perspective however — measured as the actual weight of traded goods — the EU's trade pattern with the rest of the world is quite different (see Figure 1). Physical imports are around 3.3 tonnes per capita while physical exports are around 1.5 tonnes per capita.

Physical trade of goods by main material category and monetary trade of goods;
EU, 2000-2024 (tonnes per capita, left Y-axis) (euro (1) per capita, right Y-axis)



(1) Note: monetary trade of goods in euro, chain linked volumes (2015)
Source: Eurostat (online data codes: env_ac_mfa, nama_10_gdp, demo_gind)

eurostat

Figure 1: Physical trade of goods by main material category and monetary trade of goods, EU, 2000-2024
Source: Eurostat (env_ac_mfa) (nama_10_gdp) (demo_gind)

Up until the start of the financial crisis in 2007-2008, both physical imports and exports increased, more or less, in parallel (see Figure 2). Since then, however, physical exports by and large continued their growth path while physical imports dropped and stagnated for some years. Physical imports' development is mainly determined by fossil materials. The COVID-19 recession caused a fall in both physical imports and exports, whereby the former was more pronounced than the latter because of a lower demand for imported fossil energy materials. The recovery from the COVID-19 recession resulted in a temporary increase in 2021 of both physical imports and exports that continued in 2022 for the imports. In 2024 physical imports and exports dropped again mostly due to shrinking volumes of fossil energy materials on the import side as a result of the energy crisis triggered by Russia's war of aggression against Ukraine. On the exports side all material categories more or less equally decreased up to 2024.

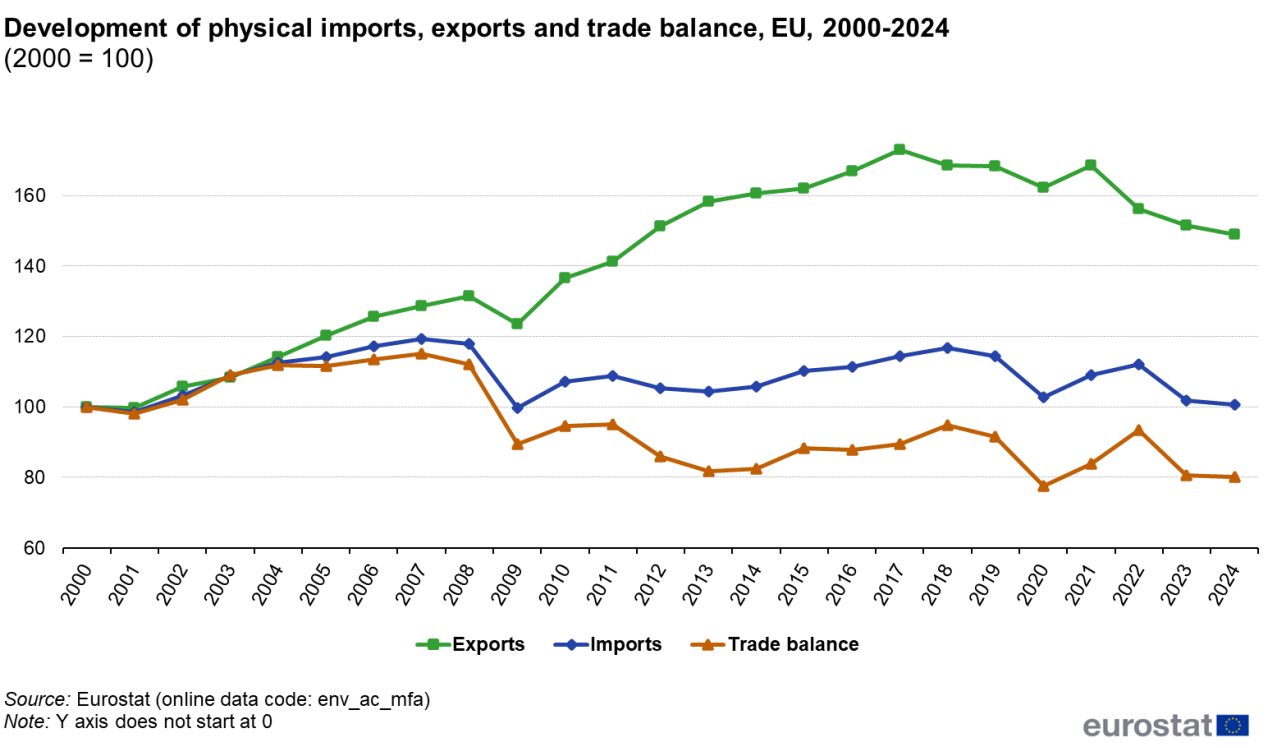


Figure 2: Development of physical imports, exports and trade balance, EU, 2000-2024 Source: Eurostat (env_ac_mfa)

A closer look at the traded goods in a breakdown by 4 main material categories (original data are available in a more detailed breakdown by around 50 material categories) reveals a clear asymmetry between physical imports and exports (see Figure 3). Imports of fossil energy materials are most significant with more than 2 tonnes per capita — for this material category physical imports are about 4 times bigger than exports. Imports assigned to the category of metal ores amount to around 0.5 tonnes per capita and are more than twice compared to exports. Physical trade is more balanced for the other
categories, namely biomass (around 0.4 tonnes per capita) and non-metallic minerals (around 0.2 tonnes per capita).

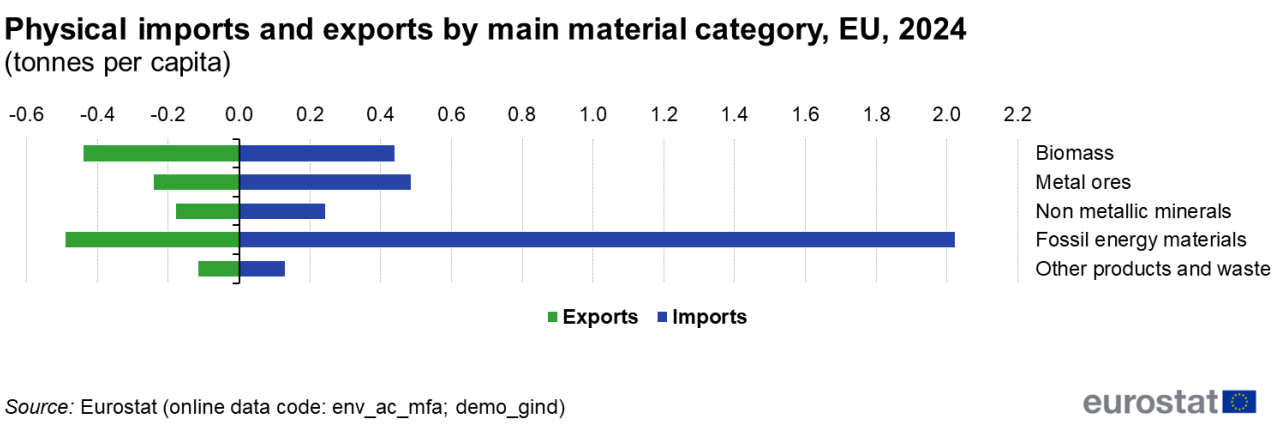


Figure 3: Physical imports and exports by main material category, EU, 2024 Source: Eurostat (env_ac_mfa) (demo_gind)

Figure 4 shows the physical trade balance (weight of imported goods minus exported goods) for all EU countries . In physical terms, most EU countries import more than they export (i.e. net importers). There are only a few net exporting countries, namely Estonia (wood, fossil energy materials), Latvia and Sweden (wood).

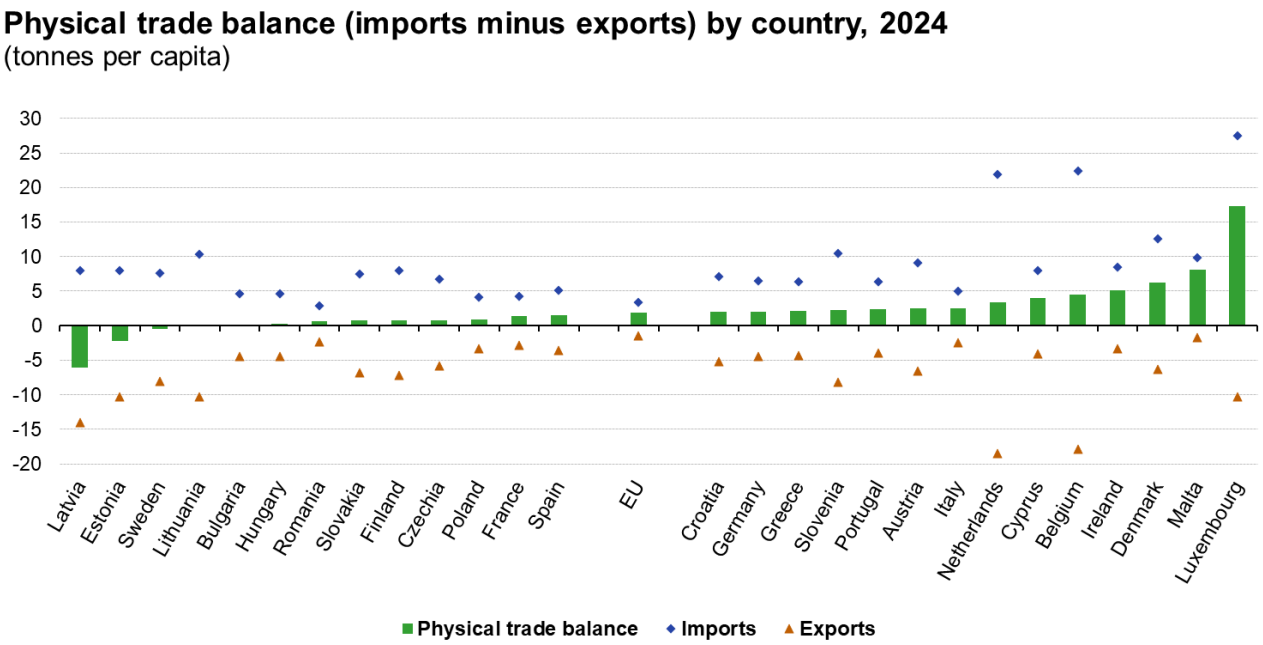


Figure 4: Physical trade balance (imports minus exports) by country, 2024 Source: Eurostat (env_ac_mfa) (demo_gind)

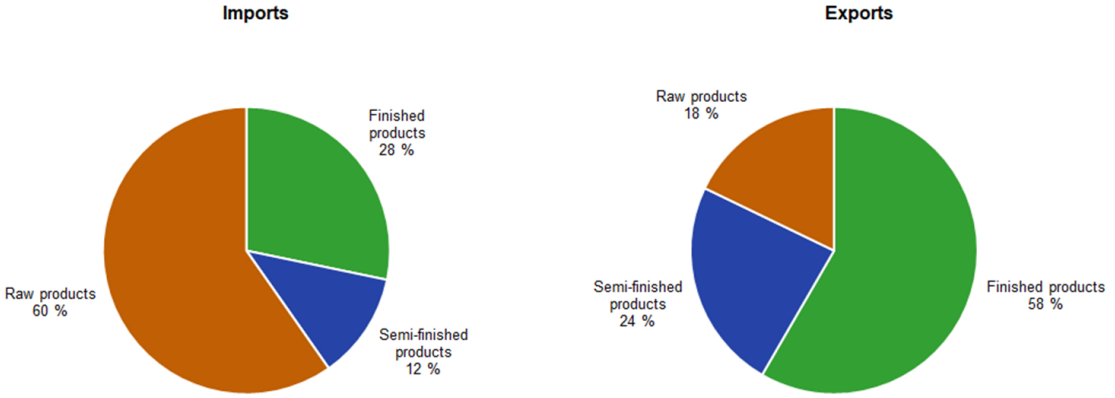
Physical trade by stage of manufacturing

Eurostat also provides data on physical imports and exports of goods in a breakdown by stage of manufacturing (see Figure 5). A distinction is made between 3 stages: finished products, semi-finished products and raw products.

The EU's physical exports are dominated by finished products whereas the physical imports are dominated by raw products. The EU economy is specialised in the transformation of low-value raw products into high-value finished and semi-finished products.

Some 60% of the EU's total physical imports and total physical exports are raw products and finished products respectively.

Physical imports and exports by stage of manufacturing, EU, 2024
(tonnes per capita)



Source: Eurostat (online data codes: env_ac_mfa, demo_gind)

eurostat

Figure 5: Physical imports and exports by stage of manufacturing, EU, 2024 Source: calculation based on Eurostat (env_ac_mfa) (demo_gind)

Import dependency

As shown above, the EU economy depends on raw materials from the rest of the world. This can be further analysed using economy-wide material flow accounts (EW-MFA). Import dependency, a metric derivable from EW-MFA, denotes the share of physical imports in the direct material input (DMI) of a given economy (the DMI comprises domestic extraction and physical imports).

The import dependency can be broken down by main material categories. Table 1 shows that the EU economy is almost self-sufficient in the supply of non-metallic minerals (construction materials) and biomass with import dependencies of 5% and 12%, respectively, on average in the last 5 years. For metal ores as well as for fossil energy materials, the EU is highly depen-
dent on imports from the rest of the world (around 50% and around 72%, respectively, on average in the last 5 years).

Import dependency by main material category, EU, 2000-2024
(% of EU imports in total materials made available to EU economy)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Biomass	9.3	9.7	10.2	10.9	9.9	10.2	10.8	11.2	10.7	9.3	9.9	10.0	10.3	10.2	10.4	11.0	11.1	11.1	12.2	12.1	11.6	11.0	12.3	11.4	11.9
Metal ores	61.2	60.9	61.8	63.9	65.7	66.6	66.5	67.5	66.7	55.1	58.1	58.3	53.7	53.6	55.3	56.4	53.7	53.7	54.2	52.5	48.1	52.6	50.2	47.9	49.0
Non metallic minerals	3.7	3.6	3.8	4.0	4.3	4.0	3.9	4.0	3.9	3.7	4.4	4.3	4.2	4.5	4.7	4.5	4.7	5.1	5.1	5.2	5.0	5.2	5.5	4.5	5.0
Fossil energy materials	55.5	54.8	55.9	57.3	57.6	58.6	59.6	60.1	60.7	59.7	60.4	59.8	59.8	60.0	61.1	63.2	65.1	65.3	66.3	69.2	71.0	70.6	70.9	73.7	74.6
Total	21.0	20.7	21.4	22.3	22.1	22.1	22.1	21.7	21.8	20.9	22.6	21.9	22.7	23.0	23.0	23.9	24.1	24.0	24.2	23.5	22.0	22.4	23.3	22.4	22.4

Source: Eurostat (online data code: env_ac_mid)

eurostat

Table 1: Import dependency by main material category, EU, 2000-2024 Source: Eurostat (env_ac_mid)

Raw material equivalents — towards a global perspective

Physical imports and exports are measured in mass weight of goods crossing the border, regardless of how much the traded goods have been processed. The total weight of raw material extractions needed to produce

manufactured goods is usually several times greater than the weight of the goods themselves.

Physical imports and exports can be complemented with supplementary estimates of the amounts of raw materials needed to produce traded goods. This can be done by converting the traded goods into their raw material equivalents (RME), i.e. the amount of raw materials that need to be extracted to produce the traded goods in question. More details on imports and exports in RME can be found in the article Material flow accounts statistics - material footprints .

Source data for tables and graphs

- Physical imports and exports: tables and figures

Data sources

This article uses data from economy-wide material flow accounts (EW-MFA), which are one of the European environmental economic accounts (see Regulation (EU) No 691/2011 on European environmental economic accounts).

Economy-wide material flow accounts (EW-MFA) provide an aggregate overview, in thousand tonnes per year, of the material flows into and out of an economy. EW-MFA cover solid, gaseous, and liquid materials, except for bulk flows of water and air. Material inputs into national economies include domestic extraction of material originating from the domestic environment and physical imports originating from other economies. Material outputs from national economies include materials released to the domestic environment (e.g. emissions to air, water and soil) and physical exports to other economies. Material flows within the economy are not represented in EW-MFA.

A variety of material flow-based indicators are derived from EW-MFA amongst which the following:

Domestic material consumption (DMC) measures the total amount, in tonnes, of material directly used in an economy, i.e. by resident businesses, governments and other institutions for economic production or by households. DMC equals the domestic extractions of materials plus imports minus exports. At the same time, DMC is the amount of materials that become part of the material stock within the economy or are released back into the environment, for example, in the form of air emissions.

Resource productivity is defined here as GDP divided by DMC. It is important to note that GDP is expressed in different measurement units, of which the following are used to calculate 3 different resource productivity ratios. The appropriate choice depends on the context of the analysis

- euro per kilogram using chain-linked volume data for GDP, to be used for analysing developments in real terms over time
- PPS per kilogram using current price data for GDP expressed in purchasing power standards (PPS); PPS are artificial currency units that remove differences in purchasing power between economies by taking account of price level differences; these can be used when comparing across different economies at one point in time (for one particular year)
- euro per kilogram using current price data for GDP, which could be used when analysing a single economy at one point in time (for one particular year)

See also MFA metadata .

Decoupling

The term decoupling refers to breaking the link between an environmental and an economic variable. As defined by the Organisation for Economic Co-operation and Development (OECD) , decoupling occurs when the growth rate of an environmental pressure (for example, DMC) is less than that of its economic driving force (for example, GDP) over a given period. Decoupling can be either absolute or relative. Absolute decoupling is said to occur when the environmental variable is stable or decreases while the economic driving force grows. Decoupling is said to be relative when the rate of change of the environmental variable is less than the rate of change of the economic variable.

Context

Eurostat's environmental accounts and statistics inform policy making under the European Commission's 2024-2029 priorities . In this context, the plan for Europe's sustainable prosperity and competitiveness works towards a more circular and resilient economy to shift to a more sustainable pattern of production and consumption, retaining the value of resources in our economy for longer.

Further reading:

Communication: A new Circular Economy Action Plan for a Cleaner and More Competitive Europe

Explore further

Other articles

- Material flow accounts and resource productivity
- Resource productivity statistics
- Material flow accounts - flows in raw material equivalents
- Environmental accounts - establishing the links between the environment and the economy

Database

- Environment (env)
- Material flows and resource productivity (env_mrp), see:

Material flow accounts (env_ac_mfa)

Resource productivity (env_ac_rp)

- Circular economy , see:

Circular economy indicators (cei)

Thematic section

- Environment
- Material flows and resource productivity
- Circular economy

Publications

Publications and EU policies' monitoring frameworks

- Sustainable Development Goals in the European Union

Methodology

- Economy-wide material flow accounts questionnaire and compilation guidelines

External links

- European Commission — Environment — Circular economy
- European Environment Agency: The European environment — state and outlook 2020: knowledge for transition to a sustainable Europe SOER 2020
- OECD — Resource efficiency