

Environment and climate pressures from household consumption in Europe



Europe and the world face unprecedented sustainability challenges, including climate change, biodiversity loss, resource depletion and pollution. These challenges are largely caused by unsustainable consumption as countries strive for economic growth and people pursue well-being. Household consumption pressures and impacts the environment and drive climate change.

Key messages

Household consumption volumes in the EU increased by over one quarter (26%) between 2000 and 2019. Volumes grew by as much as 47% for the consumption area of household goods and services (household equipment, appliances, and information and communications technology (ICT)) and 43% for consumption of services (health, education, finance, recreation and other).

Three broad areas of consumption are responsible for about three-quarters of EU household consumption: food, housing and services. The remaining areas of consumption are clothing and footwear, mobility, and household goods and services.

Pressures from EU household consumption on the use of water, land and materials increased or remained relatively stable from 2000 to 2019. Pressures on greenhouse gas and other air emissions have decreased to a varying extent. As consumption levels continue to rise, it is questionable how long efficiency increases will be successful in compensating for

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consumption growth.

Environmental and climate pressures and impacts from consumption accumulate over the years, and many ecosystems are now under pressure beyond their regeneration capacity. Scientific evidence suggests that the pressures associated with Europe's consumption are so high that the planet's ability to recover from them is seriously compromised.

In this briefing, we show trends in household consumption in Europe from 2000 to 2019 and the resulting environmental and climate pressures from every stage of a product's life cycle (value chain) related to household consumption. This includes resource extraction, production and processing, transportation, consumption and waste management. The briefing is underpinned by a report on consumption and the environment in Europe's circular economy from the EEA's European Topic Centre on Circular Economy and Resource Use (ETC/CE). Conditions and pathways for sustainable and circular consumption in Europe are discussed in a separate briefing.

Household consumption trends in Europe

The economic value of household consumption in the EU — measured by total EU household expenditure — increased by 69% between 2000 and 2019 from EUR 4.3 trillion to EUR 7.3 trillion. Consumption expenditure dropped by 8% between 2019 and 2020, mainly because of the COVID-19 pandemic-related economic downturn. Three areas of household consumption were responsible for about three-quarters of EU household consumption expenditure in 2019: food (26%), services (25%) and housing (24%). The remaining consumption expenditure was on clothing and footwear, mobility, and household goods and services.

Box 1. Distinguishing six household consumption domains

Using EU statistics, this briefing interprets household consumption in Europe more broadly than just looking at consumption expenditure carried out by households. It also includes consumption expenditure by non-profit institutions serving households and governments (e.g. sports clubs or

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churches) — to the extent that this is linked to consumption by households — as well as households' investments in dwellings.

We distinguish between six consumption domains (areas of consumption) when we analyse trends in and pressures from EU household consumption:

1. food (including food, drinks, and hotels and restaurants);
2. clothing and footwear;
3. housing (dwellings, heating, sanitary hot water and electricity, including households' investments in dwellings);
4. mobility;
5. household goods and services (household equipment, appliances, and information and communications technology); and
6. services (health, education, finance, recreation and other).

These consumption domains are aggregated from the 12 domains in the Eurostat COICOP (Classification of Individual Consumption by Purpose) system to enable comparison between a limited number of large consumption areas. More details on the scope and the aggregated consumption domains can be found in the underpinning report.

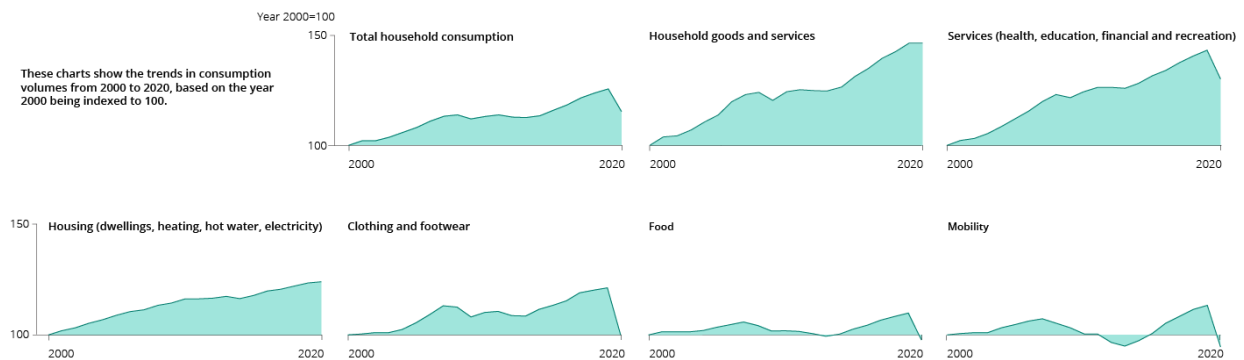
The observed increases in EU household consumption expenditure from 2000 to 2019, in current prices, can be explained by an increase in consumption volumes of 26%, prices/inflation of 34% and population growth of 4%. The consumption volumes are most relevant for analysing environmental and climate pressures from household consumption, as they are the root cause behind them.

Figure 1 shows consumption volume trends from 2000 to 2019 and 2020, with the year 2000 indexed to 100. It shows which areas of consumption have increased most in volume as a percentage of consumption levels in the year 2000. Volumes increased for all consumption areas between 2000 and 2019, after which they decreased slightly because of the COVID-19-related economic downturn. The volume increase from 2000 to 2019 was highest for the consumption areas household goods

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and services (household equipment, appliances, and information and communications technology) and services (health, education, finance, recreation and other), which both increased by over 40% (47% and 43%, respectively). The consumption areas housing, and clothing and footwear, increased in volume by over 20% (24% and 21%, respectively). Mobility and food consumption increased in volume the least (14% and 10%, respectively).

Figure 1. Consumption volumes by domain, EU-27, 2000-2020, indexed chain-linked volumes at constant prices (2000=100)



Note: The chain-linked volume series is a series of economic data from successive years. It is expressed in constant terms by computing the production volume for each year at the prices of the preceding year, and then chain linking the data to obtain a time series from which the effects of price changes have been removed.

Source: Eurostat — Final consumption expenditure of households by consumption purpose (COICOP 3-digit), EU-27.

Explore different chart formats and data here

European household consumption is dependent on trade with the rest of the world. Looking at the share of the value chain located outside Europe, 7% of activities for services, 9% for housing, 13% for food, 10% for mobility, 16% for household goods and services and for food, and 32% for clothing and footwear are located outside Europe (ETC/WMGE, 2019). Since 2000, the non-EU share in terms of value added has steadily increased for all consumption domains. This means that we are increasingly relying on production and other activities outside Europe to enable household consumption in Europe.

EU household consumption pressures the environment and climate through its value chain, both in the EU and in other regions of the world. These pressures, for which there are available data and for which the selected accounting method can be applied, are analysed and discussed in the next

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section.

Environmental and climate pressures from household consumption in Europe

European household consumption significantly pressures the environment and contributes to climate change due to production and consumption activities within Europe itself and abroad, in the context of increasingly globalised value chains (EEA, 2019). The overall (global) pressures are captured in this briefing in terms of consumption footprints and encompass pressures caused by all production and consumption activities occurring in the full value chain of goods and services consumed in Europe.

Box 2. The accounting method used

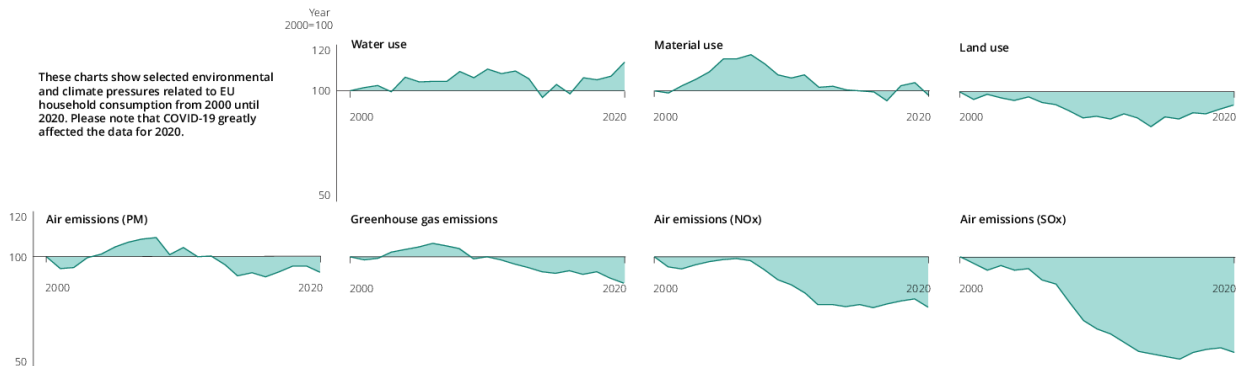
The accounting method used for this briefing and its underpinning report is 'consumption-based' (as opposed to 'production-based'). Consumption-based environmental accounting estimates environmental pressures from the production of goods and services, consumed in a specific territory, regardless of where in the world these goods and services are produced. There are many methods to estimate consumption-based environmental pressures, including the Consumption Footprint assessment framework of the European Commission (European Commission, 2022), the United Nations Environment Programme's Sustainable Consumption and Production Hotspot Analysis Tool (SCP-HAT) initiative and the EEA's consumption footprint indicator methodology (EEA, 2022).

For this briefing, the environmentally extended multi-regional input-output (EE-MRIO) model EXIOBASE v.3.8.2 (Stadler et al., 2021) was used to allocate emissions and resource use to consumption domains. EXIOBASE translates economic transactions happening within an economy and within 1 year into environmental pressures by adding environmental extensions to supply and demand tables. These environmental extensions are coefficients that estimate emissions to the environment, stemming from economic activities triggered by corresponding economic transactions. EXIOBASE offers a top-down approach to consumption-based environmental accounting and is well-suited to provide a macro-perspective of Europe in a global context. Thus, it is considered to give a comprehensive picture at an aggregated level. The full methodology is described in Annex 1 of the underpinning report.

Figure 2 shows selected environmental and climate pressures related to EU household consumption for 2000-2020. Since 2020 was an abnormal year due to COVID-19, the analysis focuses on the period 2000-2019.

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Figure 2. Environmental pressures from household consumption, EU-27, Norway, Switzerland and Türkiye, 2000-2020, indexed (2000=100)



Note: NO_x, nitrogen oxides; PM, particulate matter; SO_x, sulphur oxides. Greenhouse gas emissions in CO₂ equivalents.

Source: ETC CE's elaborations based on EXIOBASE v3.8.2.

Explore different chart formats and data here

For water use and material use, pressures from household consumption in 2019 were higher than in 2000, showing an increase of 4% for material use and 6% for water use. For land use, greenhouse gas emissions and particulate matter, pressures decreased slightly by 8% for land use, 9% for greenhouse gas emissions and 4% for particulate matter in the period. For the air emissions of NO_x and SO_x, pressures decreased more significantly (19% and 41%, respectively) in the period. Other pressures — toxicity, water pollution, etc. — are not covered by the accounting method used here and are therefore not discussed further.

Overall, it seems that most pressures from household consumption in Europe have not changed significantly from 2000 to 2019. Thus, efforts to significantly decouple and decrease environmental and climate pressures from consumption have not been successful, except for the emissions of NO_x and SO_x to air, for which ambitious EU policies and efficiency gains have contributed to reducing pressures. In addition, major structural changes to the European economy, some industries relocating outside of Europe, and other factors may have contributed to these reductions (EEA, 2020a).

As household consumption levels in Europe continue to rise, it is questionable how long increases in efficiency can compensate for growth in consumption. It seems unlikely that absolute decoupling of economic growth from resource use and environmental pressures can be achieved in the long run (EEA, 2021). The scale and rate of decoupling pressures from economic growth is currently too small to reach the level where we consume within the limits of our planet. Environmental and climate

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pressures and impacts from consumption accumulate over the years, and many ecosystems' are under pressure beyond their regeneration capacity (EEA, 2020b). Scientific evidence suggests that the levels of pressures associated with Europe's consumption are so high that the planet's ability to recover from them is seriously compromised.

The EU policy objective around consumption, as expressed in the Eighth Environmental Action Programme, calls for a significant reduction in the EU's consumption footprint to bring European consumption-related impacts within planetary boundaries (EU, 2022). To achieve more household sustainable consumption, the increase in some of the consumption-related pressures and impacts should be prevented and impacts be significantly reduced to a level that is sustainable in the long run. This will require substantially transforming consumption and production systems.

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Identifiers

Briefing no. 12/2023

Title: **Environment and climate pressures from household consumption in Europe**

EN HTML: TH-AM-23-014-EN-Q - ISBN: 978-92-9480-574-4 - ISSN: 2467-3196 - doi: 10.2800/93455

EN PDF: TH-AM-23-014-EN-N - ISBN: 978-92-9480-573-7 - ISSN: 2467-3196 - doi: 10.2800/08441