

Annex 2: 2023 UK Greenhouse Gas Emissions, Final Figures by Standard Industrial Classification

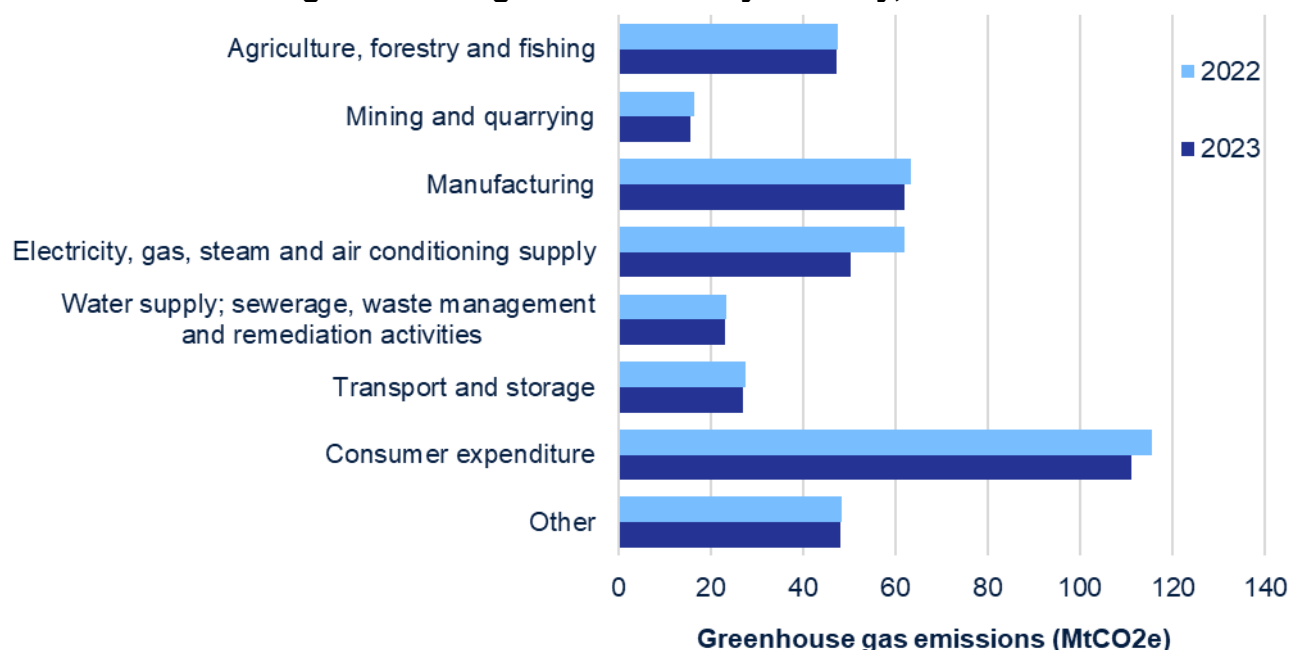
26 June 2025

Accredited Official Statistics

This publication is an extension of the UK territorial greenhouse gas emission estimates by source for 1990-2023 published in February 2025. It provides the latest estimates of 1990-2023 emissions by Standard Industrial Classification (SIC).

- The manufacturing industry was the largest emitting industry at an estimated 62 million tonnes of carbon dioxide equivalent (MtCO₂e) in 2023, followed by the electricity, gas, steam and air conditioning supply industry at 50 MtCO₂e, equating to 16% and 13% of all emissions respectively.
- Despite rises in some industries, 2023 saw a decrease in emissions from most industries. The industry with the largest absolute decrease in emissions was the electricity, gas, steam and air conditioning supply industry. It fell by 19% (12 MtCO₂e), reflecting higher electricity imports from France (unlike in 2022 when the UK had higher than usual exports), a continued decrease in electricity demand, and an increased share of renewables to meet remaining demand.
- Consumer expenditure, a category covering emissions associated with households and private travel, contributed 29% (111 MtCO₂e) of emissions in 2023. Emissions from consumer expenditure decreased by 4% (5 MtCO₂e) in 2023. High energy and other costs are likely to have been a factor in reduced consumer expenditure on fuels.

Figure 1: Territorial UK greenhouse gas emissions by industry, 2022-2023



Source: Table 8.1, Final UK greenhouse gas emissions statistics 1990-2023 Excel data tables

Introduction

The Standard Industrial Classification (SIC) is used to classify businesses and activities to the relevant industries and includes a hierarchy of codes to represent subsections of various industries. Using this system allows for reporting of emissions against their relevant industry rather than their source sector, as is seen in the [estimates by Territorial Emissions Statistics \(TES\) sector](#) that were published in February 2025. Emissions from a particular industry can vary over time due to several factors, including expansions and contractions in that industry as well as changes in practices.

In the data tables accompanying this report, tables 8.1 to 8.8 present emissions by SIC, for all gases combined and individually, whilst Table 8.9 shows total emissions by SIC and TES sector. Not all emissions in the UK are related to SIC identifiable industries. Therefore, two other categories of emissions are shown alongside the SIC breakdown, one for consumer expenditure which covers emissions associated with households and private travel, and one for emissions and sinks from land use, land use change and forestry (LULUCF). This ensures that total emissions are consistent with the data published in February 2025 by source sector.

Million tonnes of carbon dioxide equivalent (MtCO₂e) are used within this report to provide consistency and comparability with the main report that this annex accompanies. However, emissions are presented in thousand tonnes of carbon dioxide equivalent (ktCO₂e) in the accompanying data tables so that smaller totals can more easily be distinguished from zeros.

Note that as part of this release, 1990-2022 emissions estimates have been revised since the previous publication of emissions by SIC in June 2024 to incorporate methodological improvements and new data. Therefore, the estimates presented here supersede the previous ones.

2023 greenhouse gas emissions by SIC

In 2023, total UK net territorial emissions were estimated to be 385 MtCO₂e. Of these emissions, 16% (62 MtCO₂e) were from the manufacturing industry. This was the largest of any industry and has been since 2019. The electricity, gas, steam and air conditioning supply industry contributed 13% (50 MtCO₂e) and the agriculture, forestry and fishing industry 12% (47 MtCO₂e).

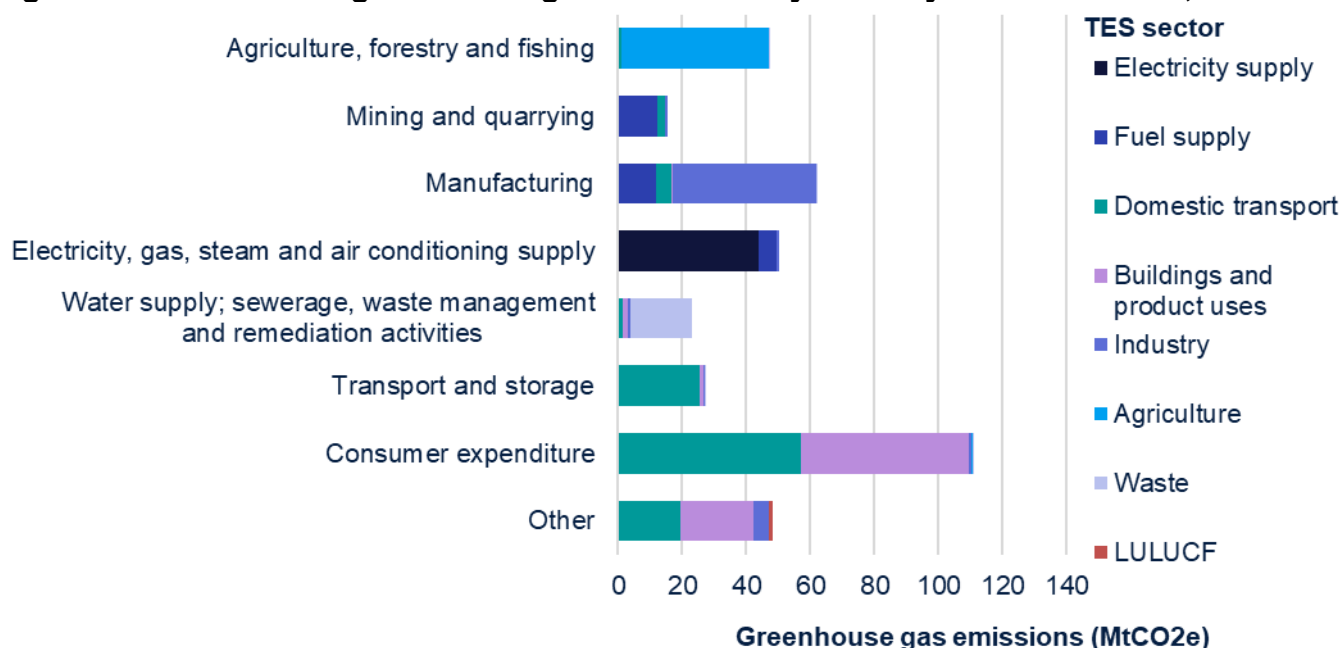
Between 2022 and 2023, total emissions fell by 5%. Most of this decrease is the result of reduced emissions from the electricity, gas, steam and air conditioning supply industry, which fell by 19% (12 MtCO₂e). This decrease is reflective of higher electricity imports from France (unlike 2022 when the UK had higher than usual exports), a continued decrease in electricity demand, and an increased share of renewables to meet remaining demand. Within the electricity, gas, steam and air conditioning supply industry, emissions from gas-fired electricity production fell by 22% (10 MtCO₂e).

Consumer expenditure, a category covering emissions associated with households and private travel, contributed 29% (111 MtCO₂e) of emissions in 2023. Overall, 51% (57 MtCO₂e) of consumer expenditure emissions were related to private travel. Between 2022 and 2023,

emissions from consumer expenditure decreased by 4% (5 MtCO₂e) in 2023. High energy and other costs are likely to have been a factor in reduced consumer expenditure on fuel.

Three of the twenty industries saw an increase in emissions between 2022 and 2023. These are the construction industry, which increased by 1% (0.1 MtCO₂e), the human health and social work activities industry, which increased by 1% (0.05 MtCO₂e), and the activities of households as employers; undifferentiated goods and services-producing activities of households for own use industry, which increased by 9% (0.01 MtCO₂e).

Figure 2: Territorial UK greenhouse gas emissions by industry and TES sector, 2023



Source: Table 8.9, Final UK greenhouse gas emissions statistics 1990-2023 Excel data tables

Figure 2 shows which TES sectors the emissions in each industry fall into. The emissions from some TES sectors, such as agriculture, electricity supply, and waste, fall entirely or almost entirely within one industry, whilst emissions from others, such as domestic transport and buildings and product uses, are spread across a large range of industries.

When emissions are considered on a TES sector basis, the largest sector is domestic transport, which was responsible for 29% of emissions in 2023. Around half (51%) of domestic transport emissions were from households, predominantly from private use of cars. The largest industry for domestic transport emissions is the transport and storage industry, which was responsible for 22% of domestic transport emissions. The remaining 26% of domestic transport emissions are split across other industries.

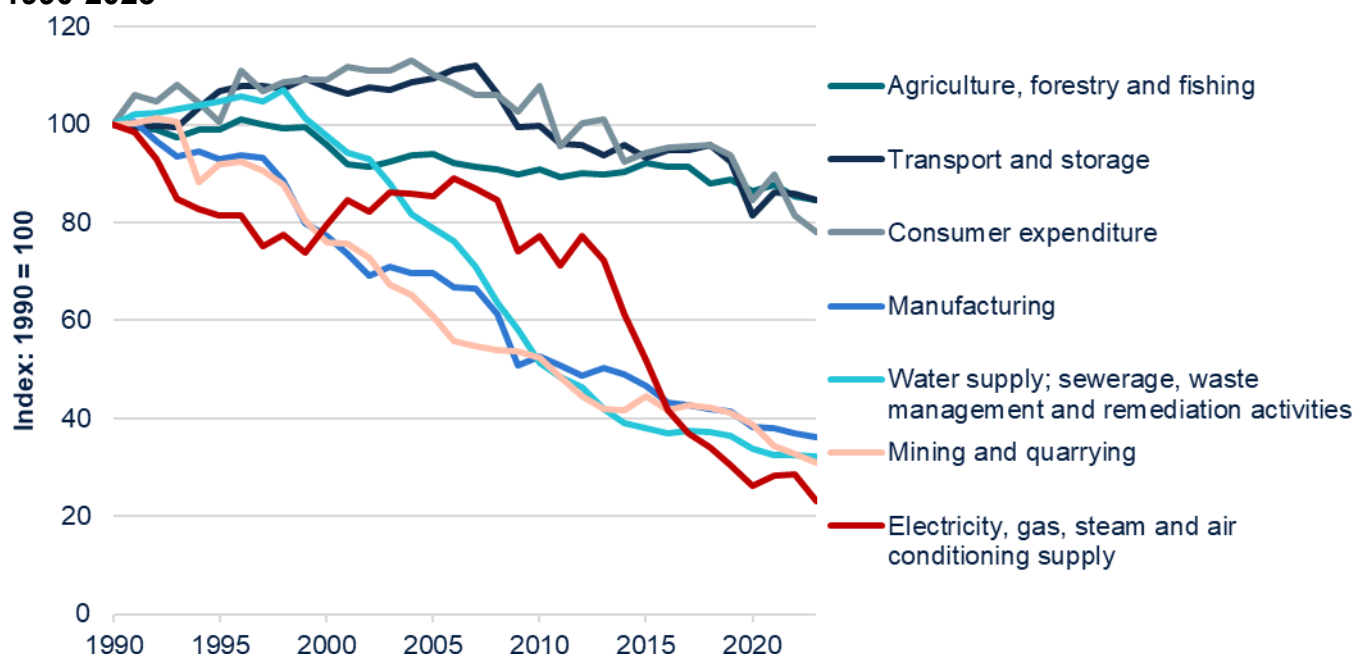
1990-2023 greenhouse gas emissions by SIC

Between 1990 and 2023, total emissions fell by 53% (426 MtCO₂e). The largest contributors to this reduction have been from the electricity, gas, steam and air conditioning supply industry and the manufacturing industry.

Emissions from the electricity, gas, steam and air conditioning supply industry fell by 77% (167 MtCO₂e), mainly due to the switch from the use of coal in electricity production to other lower emitting fuels such as natural gas and more recently renewable sources. Meanwhile, emissions from the manufacturing industry fell by 64% (110 MtCO₂e). Within the manufacturing industry, the most significant reductions in emissions are from the manufacture of petrochemicals, which fell by 92% (39 MtCO₂e), and the manufacture of basic iron and steel, which fell by 56% (14 MtCO₂e).

In addition, there was a 68% (49 MtCO₂e) fall in emissions from the water supply; sewerage, waste management and remediation activities industry. This was due to a combination of factors, including improvements in the standards of landfilling, changes to the types of waste going to landfill (such as reducing the amount of biodegradable waste), and an increase in the amount of landfill gas being used for energy. Emissions from the mining and quarrying industry fell by 69% (35 MtCO₂e), largely due to reductions from mining of coal and lignite.

Figure 3: Index of territorial UK greenhouse gas emissions for the largest industries, 1990-2023



Source: Table 8.1, Final UK greenhouse gas emissions statistics 1990-2023 Excel data tables

Note: This figure illustrates historic emissions trends for six highest emitting industries and the consumer expenditure category. Together, these categories accounted for 87% of total UK emissions in 2023.

Six of the twenty industries saw an increase in emissions between 1990 and 2023. The real estate activities industry saw the largest percentage growth in emissions over this period,

increasing by 43% (0.3 MtCO₂e). The accommodation and food services industry increased by 34% (1 MtCO₂e), whereas the construction industry increased by 24% (2 MtCO₂e). Meanwhile, the administrative and support service activities industry increased by 10% (0.2 MtCO₂e), the human health and social work activities industry by 5% (0.3 MtCO₂e), and the wholesale and retail trade; repair of motor vehicles and motorcycles industry by 4% (0.4 MtCO₂e).

Between 1990 and 2023, emissions directly related to consumer expenditure fell by 22% (31 MtCO₂e). Consumer expenditure emissions related to private travel increased by 8% (5 MtCO₂e) between 1990 and 2019 but saw a significant reduction in 2020 due to COVID-19 pandemic restrictions. They have since risen but remain below pre-pandemic levels, with emissions in 2023 13% lower than in 2019 and 6% lower than in 1990. Note that private travel primarily covers private road transport and does not include international aviation or other international travel since they are not within scope of UK territorial emissions estimates.

Non-travel consumer expenditure emissions fluctuate year to year as this primarily covers the use of fuels for heating homes so can vary depending on the weather. Nonetheless, non-travel consumer expenditure emissions have seen a gradual fall over time. Between 1990 and 2023, non-travel consumer expenditure emissions fell by 33% (27 MtCO₂e). In recent years, warm weather as well as high energy and other costs are likely to be key drivers of reduced consumer energy use.

Accompanying tables

The following tables are available in Excel and ODS format on the [UK territorial greenhouse gas emissions statistics](#) collection page on GOV.UK:

Table 8.1	Territorial greenhouse gas emissions by SIC section and group, UK 1990-2023
Table 8.2	Territorial emissions of carbon dioxide (CO ₂) by SIC section and group, UK 1990-2023
Table 8.3	Territorial emissions of methane (CH ₄) by SIC section and group, UK 1990-2023
Table 8.4	Territorial emissions of nitrous oxide (N ₂ O) by SIC section and group, UK 1990-2023
Table 8.5	Territorial emissions of hydrofluorocarbons (HFCs) by SIC section and group, UK 1990-2023
Table 8.6	Territorial emissions of perfluorocarbons (PFCs) by SIC section and group, UK 1990-2023
Table 8.7	Territorial emissions of sulphur hexafluoride (SF ₆) by SIC section and group, UK 1990-2023
Table 8.8	Territorial emissions of nitrogen trifluoride (NF ₃) by SIC section and group, UK 1990-2023
Table 8.9	Territorial greenhouse gas emissions by SIC section, group, and TES sector, UK 1990-2023

Technical information

Emission estimates are based on the National Atmospheric Emissions Inventory (NAEI) and are primarily calculated from a combination of activity data and emission factors. The methodology is outlined and explained in the statistical release that this annex accompanies.

Allocations to industries are based on the [UK Standard Industrial Classification of Economic Activities 2007 \(SIC 2007\)](#). A mapping procedure is required to make a link between the source categories in the NAEI and the SIC industries. The definitions are such that many of the NAEI sources can be mapped directly to an industry through many-to-one relationships, where one or more NAEI sources are judged as being contained within a single industry. In other cases NAEI sources can be linked to several industries through one-to-many relationships, and here the “activity” and consequent emissions from that source must be split between each of the relevant industries either directly according to their proportionate level of activity, or indirectly.

These statistics are consistent with the estimates of emissions by SIC published by the Office for National Statistics (ONS) in the UK Environmental Accounts, except the ONS estimates are presented on a “residence” basis whereas these statistics are on a “territorial” basis. The “territorial” basis presents emissions within UK borders, whilst the “residence” basis includes direct emissions by UK residents and UK-registered business, whether they happen in the UK or overseas.

An explanation of the different measures of greenhouse gas emissions in the UK can be found in an article about [‘Measuring UK greenhouse gas emissions’](#) published by ONS. [Bridging tables](#) are available from the ONS that clearly explain the differences between the UK Environmental Accounts, used to fulfil UK United Nations System of Environmental-Economic Accounting (SEEA) reporting requirements for Eurostat, and the estimates that are published by DESNZ and used to fulfil UK international United Nations Framework Convention on Climate Change (UNFCCC) reporting requirements.

Estimates of emissions have an inherent uncertainty due to uncertainty in the underlying data used for the inventory and due to uncertainty in the applicability, completeness, and application of that data. Estimates of the uncertainty in the emissions estimates by gas and by source sector are shown in tables 4.1 and 4.2 in the main set of Excel tables. There are further uncertainties in estimates by SIC due to the allocation of the emissions estimates to industries, which in some cases has needed to be modelled using other datasets.

Further technical information can be found in the ONS [Environmental Accounts quality and methodology report](#).

Further information

Future updates to these statistics

In February 2026, DESNZ will publish final 1990-2024 UK territorial greenhouse gas emissions estimates by source sector. A summary of any planned methodology changes will be published in advance of that in January 2026.

In March 2026, DESNZ will publish a breakdown of 1990-2024 UK territorial greenhouse gas emissions with energy supply emissions on an end-user basis to supplement the source sector breakdown.

In March 2026, DESNZ will also publish provisional estimates of UK territorial greenhouse gas emissions for 2025. This will coincide with the publication of Energy Trends, which will include estimates of 2025 UK energy consumption.

In June 2026, DESNZ will publish estimates of 1990-2024 UK territorial greenhouse gas emissions by SIC to supplement the source sector breakdown.

In June 2026, DESNZ will also publish estimates of 2024 UK local authority and regional greenhouse gas emissions.

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