



Annex 1: 2024 UK greenhouse gas emissions, final figures with energy supply on an end user basis

31 March 2026

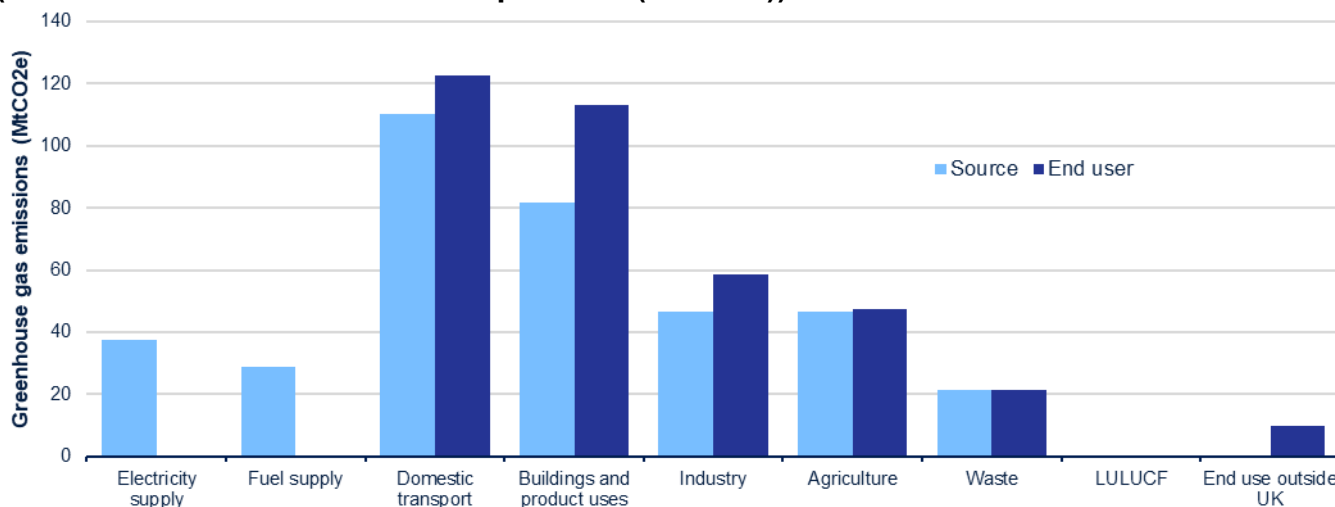
Accredited Official Statistics

This publication is an extension of the UK territorial greenhouse gas emission estimates by source for 1990-2024 published in February 2026. It provides the latest estimates of 1990-2024 territorial greenhouse gas emissions with energy supply emissions presented on an end user basis rather than a by source basis. This means that emissions from electricity and fuel supply in the UK, e.g. from power stations and refineries, have been reallocated to other sectors based on where the “end-use” of the energy occurred. The total emissions presented here are consistent with the data published in February by source sector and exclude energy supply emissions that occur outside the UK. Figures are presented in carbon dioxide equivalent units throughout this statistical release.

Main findings

- It is estimated that 33% of net greenhouse gas emissions in the UK in 2024 were from domestic transport and a further 30% from buildings and product uses, making them the largest sectors when energy supply is on an end user basis. 16% of emissions were from industry and 13% from agriculture. The rest were attributable to the waste and the land use, land use change and forestry (LULUCF) sectors, or had their end use outside the UK.
- Nearly half (46%) of energy supply emissions are reallocated to the buildings and product uses sector, and 21% to the industry sector. In both cases these are largely from electricity supply, while those reallocated to the domestic transport sector and to end uses outside the UK are mostly from fuel supply.

Figure 1: Greenhouse gas emissions by source sectors and end user sectors, UK 2024 (million tonnes carbon dioxide equivalent (MtCO₂e))



Source: Tables 1.2 and 7.1, Final UK greenhouse gas emissions statistics 1990-2024 Excel data tables

Contents

Introduction _____ 3

1990-2024 total greenhouse gas emissions with energy supply on an end user basis _____ 4

 Domestic transport _____ 7

 Buildings and product uses _____ 8

 Industry _____ 9

 Agriculture _____ 9

 Waste and Land Use, Land Use Change and Forestry (LULUCF) _____ 10

 Emissions from energy supply with end use outside the UK _____ 10

Technical information _____ 12

 Methodology _____ 12

 Revisions to the estimates of end user emissions _____ 13

 Embedded emissions _____ 13

Further information _____ 13

 Future updates to greenhouse gas emissions estimates _____ 13

 Contact _____ 14

Introduction

This Annex contains final estimates of 1990 to 2024 UK territorial greenhouse gas emissions with energy supply on an end user. These are a follow up to, and are consistent with, the final estimates of 1990 to 2024 emissions by source sector which were published on 5 February 2026.

Data tables showing emissions by end user have now been published alongside the [Final UK Greenhouse Gas Emissions Statistics](#). Tables 7.1 to 7.5 present emissions by end user category overall and for each gas, and are included in a separate file from the other tables published as part of this publication. A dataset of the end user estimates is also included in the publication. In previous years, uncertainty estimates were published at the same time as these end user statistics but are now published as part of the main publication in February.

The geographic coverage of emissions by end user in this report is UK only. In these statistics, emissions are allocated into Territorial Emissions Statistics (TES) sectors on an end user basis as follows:

- Domestic transport
- Buildings and product uses
- Industry
- Agriculture
- Waste
- Land use, land use change, and forestry (LULUCF)
- End use outside UK

When emissions are reported by source, emissions are attributed to the sector that emits them directly. In the end user breakdown, emissions related to energy supply are reallocated to the sectors where the “end-use” of the energy occurred. This means that emissions from the supply of electricity and fuels are reallocated to other sectors. For example, emissions occurring at power stations in generating electricity are reallocated to where the electricity is used. The reallocation process is explained in the Methodology section later in this report. It should be noted that the results shown by this breakdown are based on a number of assumptions and we would therefore expect them to be subject to greater uncertainty than the breakdown of emissions by source.

The emissions reallocated include the whole of the electricity supply and fuel supply source sectors, along with a small number of sources in the industry sector such as autogeneration (organisations generating their own electricity) exported to the grid and coke production. Some emissions are also allocated to an “end use outside UK” category. This is for emissions within the UK from the production of fuels (e.g. from a refinery or coal mine) or electricity generation, which are subsequently exported or sent to bunkers for use outside the UK.

These estimates make it possible to see the full emissions impact within the UK of a particular end-use sector or sub-sector, although it should be noted that emissions that occur outside the UK from the supply of energy used in the UK are excluded, such as where fuels or electricity have been imported. Devolved government and local authority emissions estimates, based on the end user breakdown, will be published in June 2026.

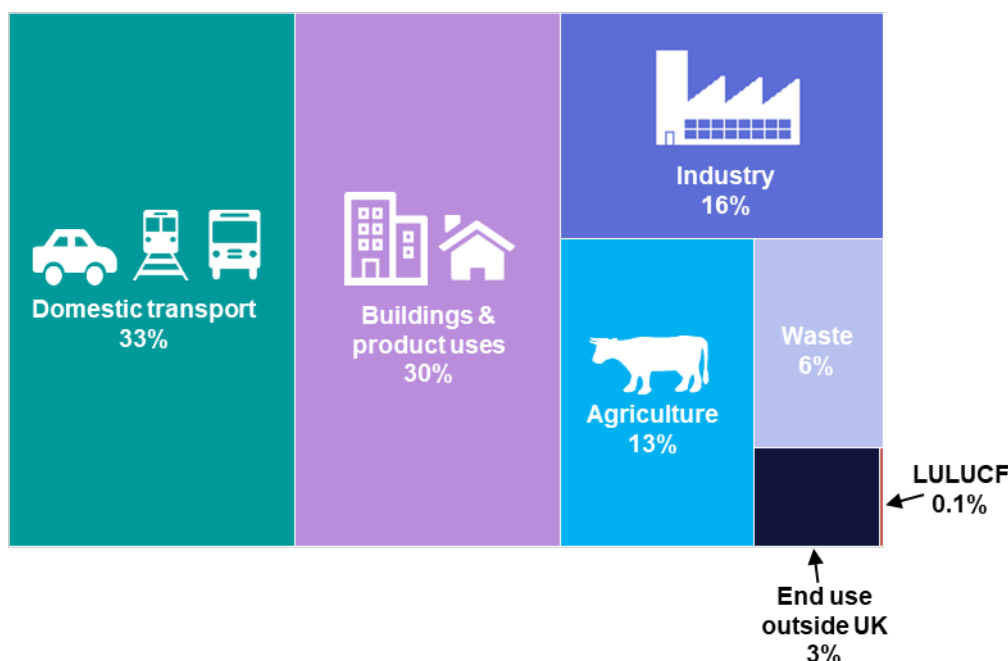
1990-2024 total greenhouse gas emissions with energy supply on an end user basis

In the [data tables](#) accompanying this publication, table 7.1 shows overall UK greenhouse gas emissions since 1990 by end user sector and source, while tables 7.2 to 7.5 show this breakdown for each individual gas.

These results are based on and consistent with the breakdown by gas and sector of 2024 emissions by source. Total greenhouse gas emissions in the UK in 2024 were 373 million tonnes carbon dioxide equivalent (MtCO₂e).

When looked at by end user sector, 33% of greenhouse gas emissions in the UK in 2024 were from domestic transport, 30% from buildings and product uses, 16% from industry and 13% from agriculture. The remainder were attributable to the waste and the land use, land use change and forestry (LULUCF) sectors, or had their end use outside the UK. No energy supply emissions are reallocated to the waste or LULUCF sectors and hence they are equal to the by source emissions.

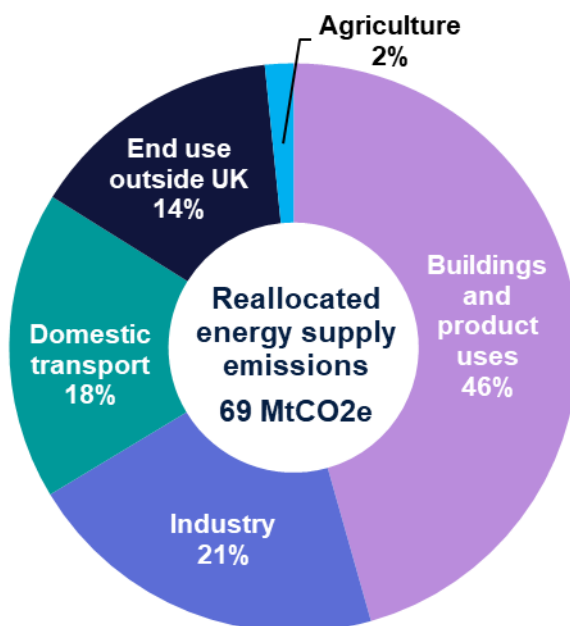
Figure 2: Proportion of net greenhouse gas emissions in each end user sector, UK 2024



Source: Table 7.1, Final UK greenhouse gas emissions statistics 1990-2024 Excel data tables
Note: The percentages may not sum to 100% due to rounding.

Nearly half (46%) of energy supply emissions are reallocated to the buildings and product uses sector, with the industry sector accounting for 21% of reallocated emissions and domestic transport 18%, as shown in figure 3 below. Note that 2 MtCO₂e of the reallocated emissions in 2024 came from sources in the industry sector related to energy supply, so unlike other sectors this sector both loses some emissions and gains some as part of the reallocation process.

Figure 3: Breakdown of greenhouse gas emissions reallocated from energy supply to the end user sectors, UK 2024



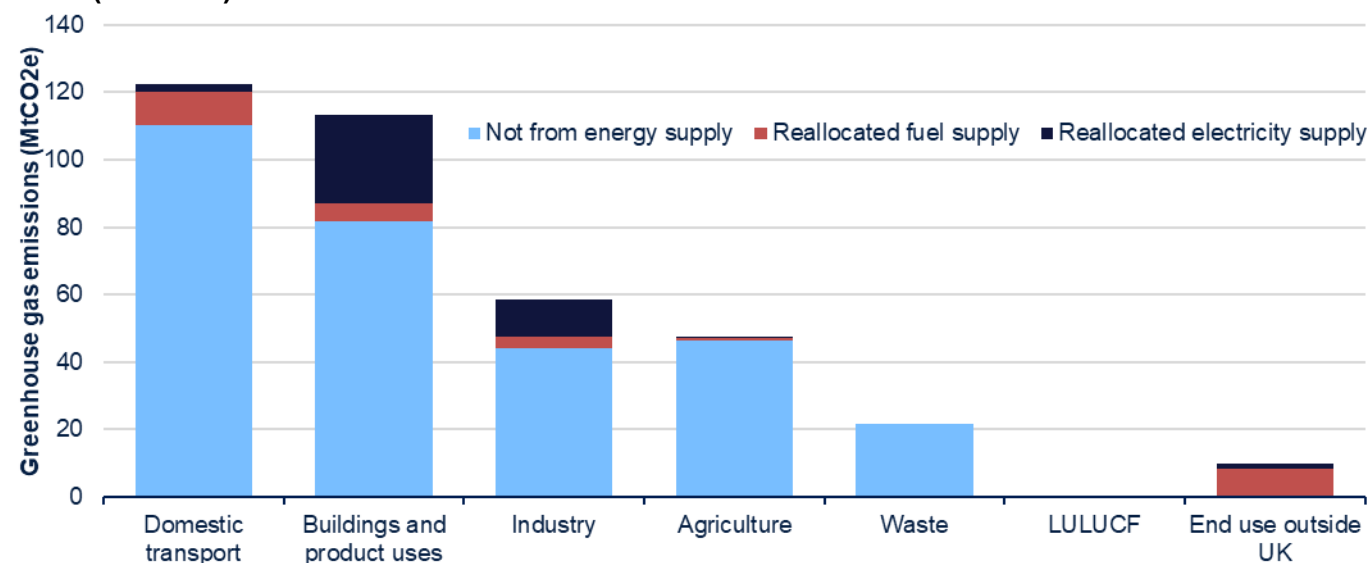
Source: UK datasets of emissions by source and by end-user, Final UK greenhouse gas emissions statistics 1990-2024

Note: The percentages may not sum to 100% due to rounding.

Figure 4 shows the amount of end user emissions in each sector that have been reallocated from electricity supply and from fuel supply, and the amount emitted directly in that sector (i.e. emissions that are not related to energy supply). Emissions from electricity supply and fuel supply that have been reallocated to end users are identified separately in the tables that we publish. The emissions that are reallocated to the buildings and product uses sector and the industry sector are largely from electricity supply, while those reallocated to the domestic transport sector and to end uses outside the UK are mostly from fuel supply.

It should be noted that the reallocated fuel supply and reallocated electricity supply totals shown here do not sum to the electricity supply and fuel supply TES sector totals. This is for two reasons. Firstly, some emissions in the industry sector that relate to energy supply are also reallocated in the end user estimates (meaning that the industry 'Not from energy supply' total in Figure 4 is also slightly lower than the industry total on a by source basis). Secondly, it is because fuel use in electricity generation and electricity use in the supply of fuels means that some emissions from the electricity supply sector are considered fuel supply emissions in the end user allocation and some emissions from the fuel supply sector are considered electricity supply emissions.

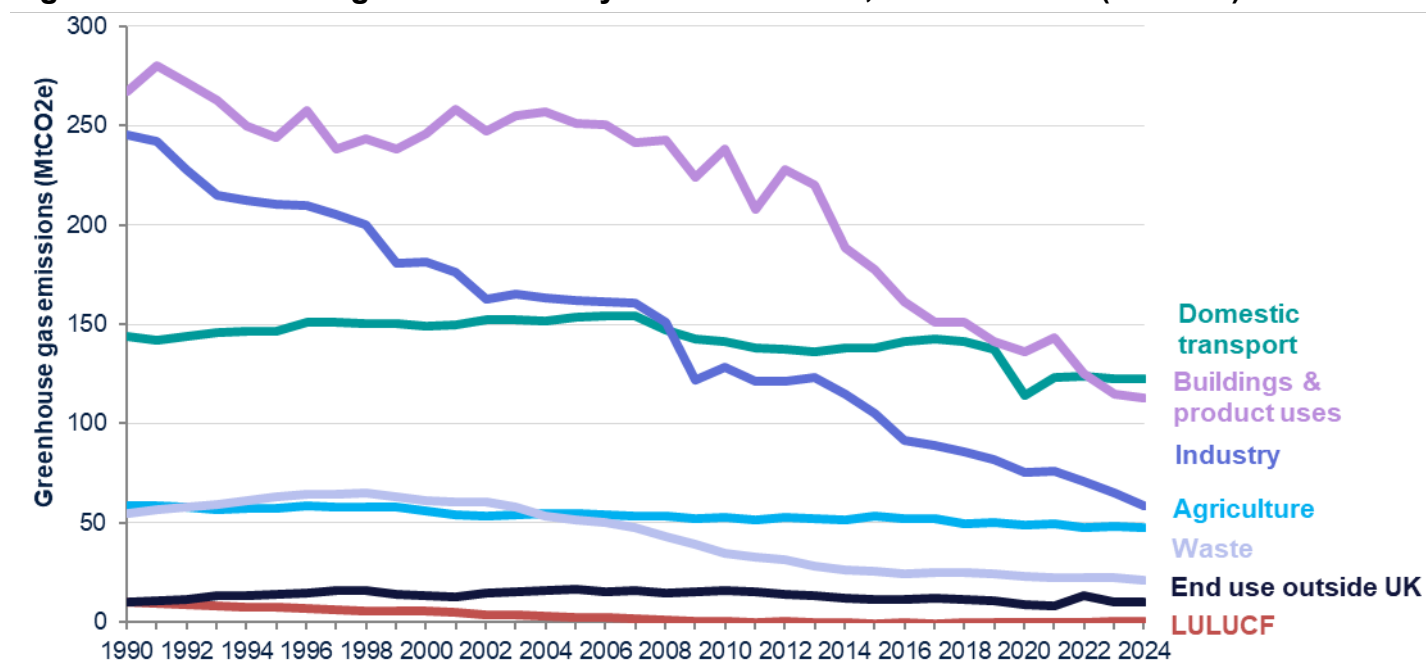
Figure 4: Greenhouse gas emissions by end user sector and whether reallocated, UK 2024 (MtCO₂e)



Source: Table 7.1, Final UK greenhouse gas emissions statistics 1990-2024 Excel data tables

The buildings and product uses sector was the sector with the highest emissions on an end user basis in all years throughout the time series between 1990 and 2022, since when the domestic transport sector has been higher.

Figure 5: Greenhouse gas emissions by end user sector, UK 1990-2024 (MtCO₂e)



Source: Table 7.1, Final UK greenhouse gas emissions statistics 1990-2024 Excel data tables

Details of changes over time for each sector are set out in the following sections of this statistical release. The commentary in these sections focuses on the differences between the end user and by source breakdowns. Further information on trends of emissions by source sector can be found in the statistics release of the [Final UK Greenhouse Gas Emissions Statistics](#).

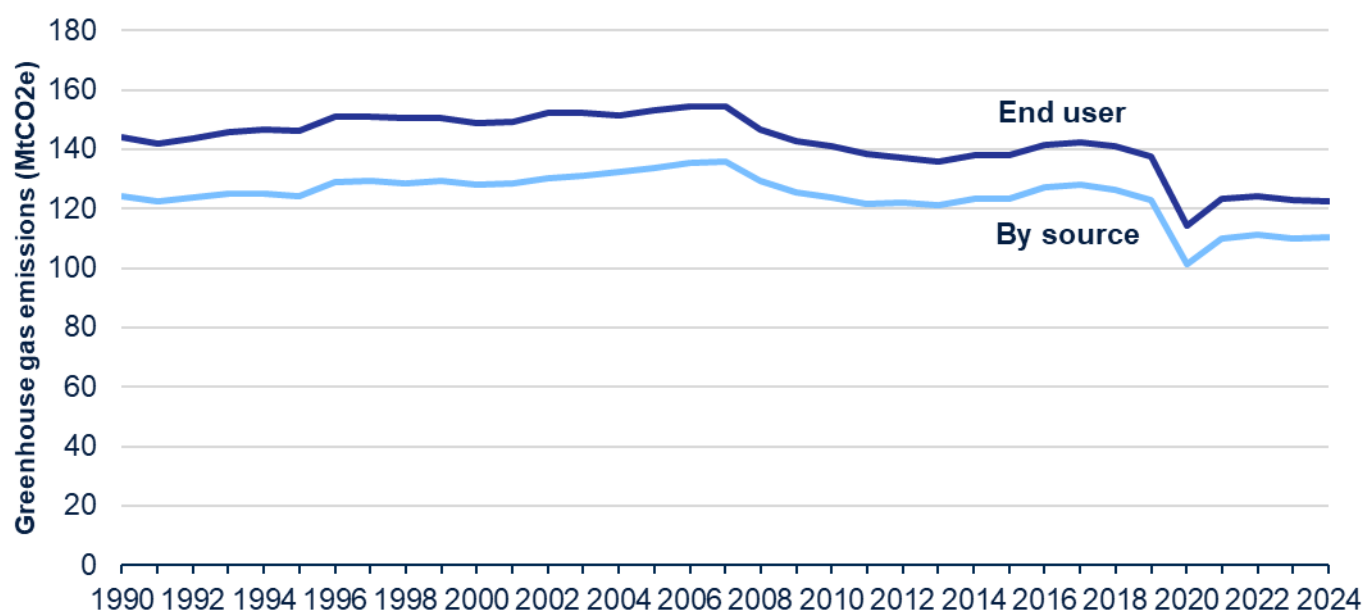
Domestic transport

The domestic transport sector was responsible for 33% of UK greenhouse gas end user emissions in 2024, almost entirely through carbon dioxide emissions. It was the highest emitting sector on an end user basis (122 MtCO₂e) for the second year running, with emissions remaining at around the same level as in 2023. Emissions of carbon dioxide are closely related to the amount of fuel used, whilst nitrous oxide and methane emissions are influenced more by the vehicle type and age. The main source of emissions from this sector is the use of petrol and diesel in road transport.

End user emissions from domestic transport follow a very similar trend to emissions by source across the time series, although the gap between them has decreased from around 20 MtCO₂e in 1990 to 12 MtCO₂e in 2024 largely due to reductions in UK fuel supply emissions. Between 1990 and 2019 there was relatively little overall change in the level of greenhouse gas emissions from the sector, with rising road traffic balancing out improvements in fuel efficiencies, but in 2020 there was a large fall of 17% in domestic transport emissions on an end user basis due to the reduction in travel throughout much of the year due to the COVID-19 pandemic. Emissions subsequently increased as COVID-19 restrictions were eased but did not return to their previous level, and in 2024 were 11% lower than they were in 2019, the last full year before the pandemic.

Emissions from the generation of electricity used by electric road vehicles are included in the domestic transport sector. In 2024 these accounted for 1 MtCO₂e of greenhouse gas emissions, around 1% of the road transport end user total. At the end of 2024 around 3% of licensed road using vehicles in the UK were zero emission vehicles and in total 5% were plug-in vehicles¹.

Figure 6: Greenhouse gas end user emissions from domestic transport, UK 1990-2024 (MtCO₂e)



Source: Tables 1.2 and 7.1, Final UK greenhouse gas emissions statistics 1990-2024 Excel data tables

¹ Table VEH1103: Licensed vehicles at the end of the quarter by body type and fuel type: Great Britain and United Kingdom: <https://www.gov.uk/government/statistical-data-sets/vehicle-licensing-statistics-data-tables>

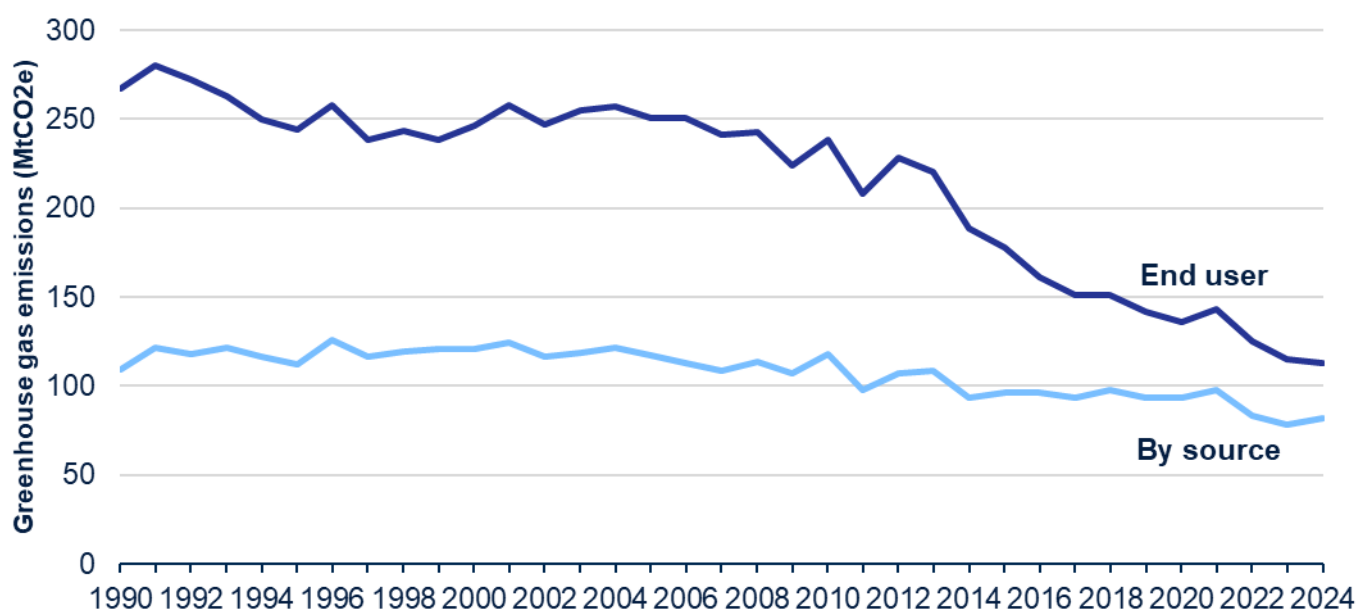
Buildings and product uses

The buildings and product uses sector was responsible for 30% of UK greenhouse gas end user emissions in 2024. From 1990 to 2022 it was the sector with the highest greenhouse gas emissions when energy supply is presented on an end user basis, but emissions from domestic transport have been higher in the last two years. Carbon dioxide was the most prominent gas. Emissions from this sector primarily come from fuel combustion and electricity use in buildings. Other sources include emissions that directly arise from the use of products such as refrigeration & air conditioning, garden machinery, anaesthetics, metered dose inhalers and aerosols. Residential buildings, including electricity use, were responsible for 64% of emissions in this sector in 2024, and 20% of all UK territorial emissions.

There was a 1% (2 MtCO₂e) decrease in end user emissions from the buildings and product uses sector between 2023 and 2024. This is in contrast to the increase of 4% (3 MtCO₂e) seen in emissions by source from this sector and is largely due to a fall in emissions from electricity supply that more than offset the rise in gas use in buildings.

Between 1990 and 2024, there has been considerable variation in greenhouse gas end user emissions from year to year in the buildings and product uses sector. Both the end user and by source emissions from this sector are heavily influenced by external temperatures. End user emissions from this sector have fallen by 58% since 1990 and have seen a bigger overall decrease than by source emissions, particularly since 2012. They were 50% lower in 2024 than in 2012, compared to a 24% fall in emissions by source over this period. This is due to the large reduction in emissions from electricity supply as a result of a shift away from the use of coal in electricity generation, resulting in a lower level of emissions being reallocated to this sector from the electricity supply sector.

Figure 7: Greenhouse gas end user emissions from buildings and product uses, UK 1990-2024 (MtCO₂e)



Source: Tables 1.2 and 7.1, Final UK greenhouse gas emissions statistics 1990-2024 Excel data tables

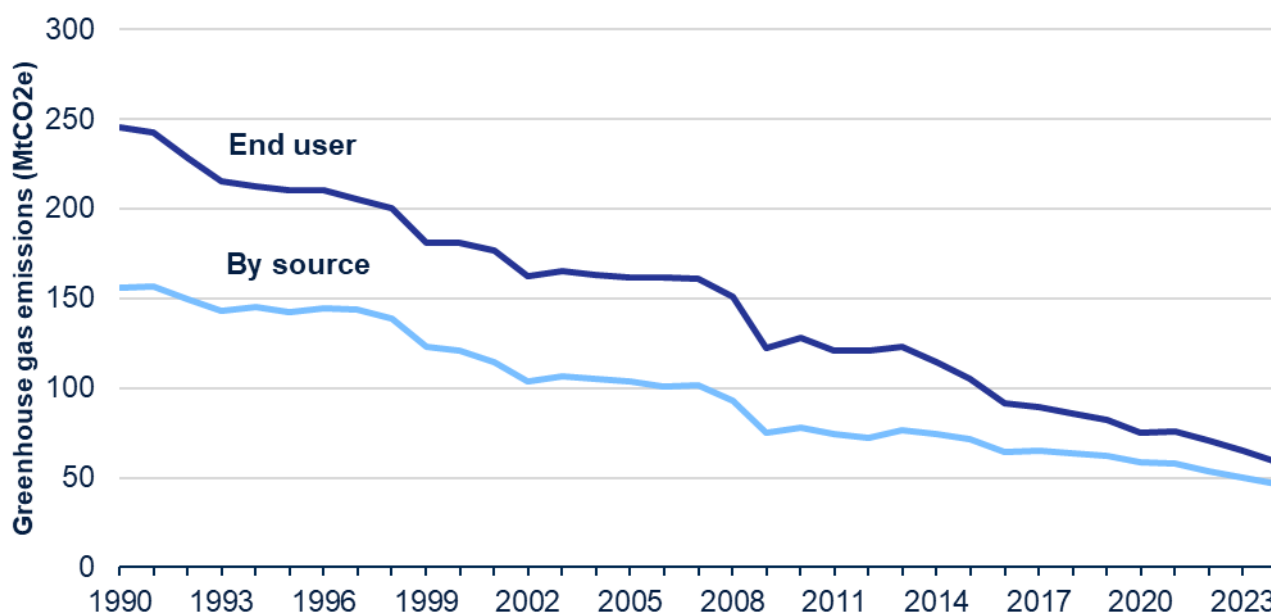
Industry

The industry sector was responsible for 16% of UK greenhouse gas end user emissions in 2024. This sector includes emissions from fuel combustion and electricity use at industrial sites and from industrial machinery, emissions resulting from industrial processes and emissions of fluorinated gases from industrial uses such as in refrigeration systems.

Between 1990 and 2024 there was a general downward trend in greenhouse gas end user emissions from industry, resulting in an overall decrease of 76%. Emissions decreased by 10% (6 MtCO₂e) between 2023 and 2024. This decrease is larger than the decrease of 7% (4 MtCO₂e) seen in emissions by source from this sector over this period, largely because of a reduction in emissions from electricity generation due to higher shares from imports and renewables.

Overall, end user emissions have fallen more quickly since 1990 than emissions by source, particularly since 2012. They were 52% lower in 2024 than in 1990, compared to a 36% fall in emissions by source over this period. This is due to the large reduction in emissions from electricity supply as a result of a shift away from the use of coal in electricity generation, resulting in a lower level of emissions being reallocated to this sector from the electricity supply sector.

Figure 8: Greenhouse gas end user emissions from industry, UK, 1990-2024 (MtCO₂e)



Source: Tables 1.2 and 7.1, Final UK greenhouse gas emissions statistics 1990-2024 Excel data tables

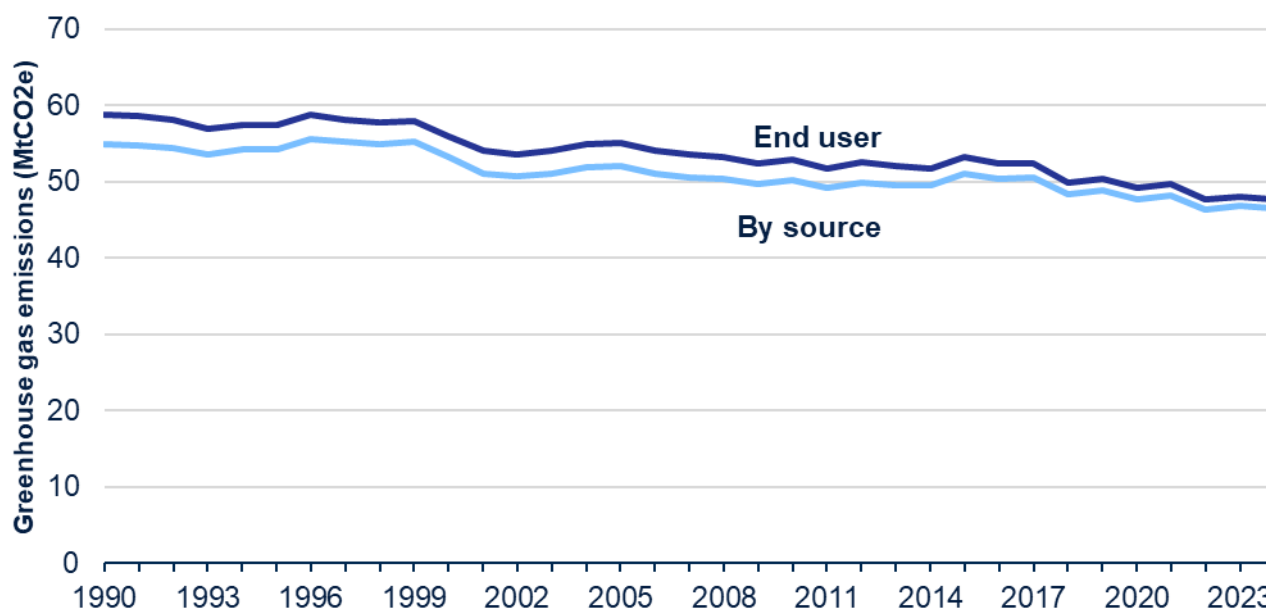
Agriculture

The agriculture sector was responsible for 13% of UK greenhouse gas end user emissions in 2024. Emissions of methane (57%) and nitrous oxide (26%) dominate this sector. End user and by source emissions are very similar for this sector as only a small proportion of emissions are from energy use. The most significant sources are emissions of methane due to enteric

fermentation from livestock, particularly cattle, and nitrous oxide emissions related to the use of fertilisers on agricultural soils.

End user emissions follow a similar trend to by source emissions. Emissions have decreased by 19% since 1990 largely due to a fall in animal numbers over the period, together with a decrease in synthetic fertiliser use. Between 2023 and 2024 there was a 1% decrease in emissions from the agriculture sector largely due to a reduction in emissions from livestock and agricultural soils.

Figure 9: Greenhouse gas end user emissions from agriculture, UK 1990-2024 (MtCO₂e)



Source: Tables 1.2 and 7.1, Final UK greenhouse gas emissions statistics 1990-2024 Excel data tables

Waste and Land Use, Land Use Change and Forestry (LULUCF)

For the waste and LULUCF sectors, emissions measured by end user are the same as those measured by source, since no emissions from energy supply are reallocated to these sectors.

Emissions from energy supply with end use outside the UK

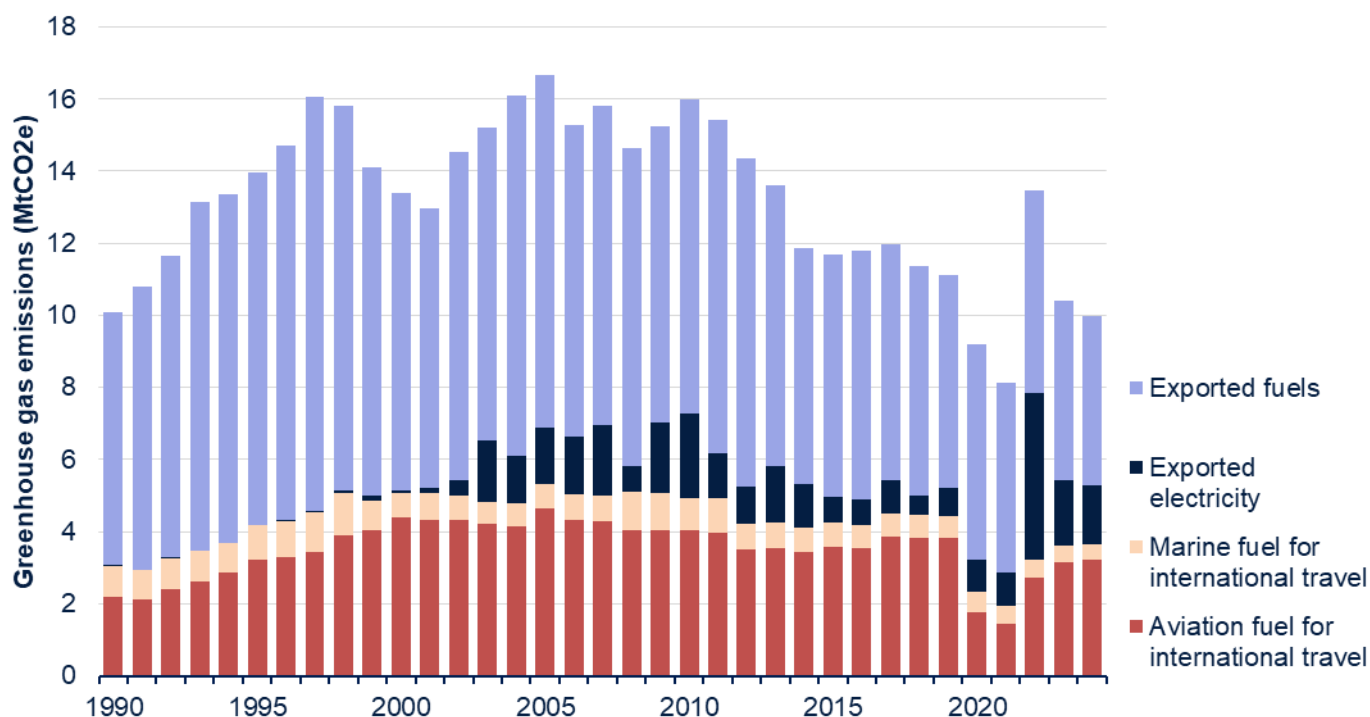
The end use outside the UK sector represents emissions within the UK associated with the production of fuels (for example, from a refinery or a coal mine) which are subsequently exported or sent to aviation or shipping bunkers for use outside the UK. It also includes emissions from generating electricity in the UK that is exported. Since this energy is ultimately used for activities which occur outside the UK it would not be appropriate to allocate the emissions from their production to any of the other end user sectors, so they are reported under a separate, additional sector.

Around 3% of UK territorial greenhouse gas emissions in 2024 were from energy supply that had its end user outside the UK, with carbon dioxide representing the majority of these emissions.

Emissions from the end use outside the UK sector increased during most of the 1990s, largely driven by changes in throughput² at refineries, which fed through to increased exports rather than increased deliveries to the domestic market. Since then, the overall trend has varied, with emissions having fallen in recent years compared to the peaks in the mid to late 2000s.

After falls in 2020 and 2021 largely due to reduced use of aviation fuel during the COVID-19 pandemic, emissions from energy supply with its end use outside the UK saw a large increase in 2022 due to a large rise in electricity exported to a higher than usual level, before a large fall in 2023 as electricity exports reduced back down and a further 4% reduction in 2024. Although the UK is generally a net importer of electricity most years, electricity is both imported and exported through interconnectors.

Figure 10: UK greenhouse gas emissions from energy supply with end use outside the UK, 1990-2024 (MtCO₂e)



Source: Table 7.1 Final UK greenhouse gas emissions statistics 1990-2024 Excel data tables

² The capacity for refining crude oil over a given period of time

Technical information

Methodology

The approach we use to estimate end user emissions is summarised in the three steps below:

1. Emissions are calculated for each sector for each fuel.
2. Emissions from fuel and electricity producers are then distributed to those sectors that use the fuel according to the energy content of the fuel they use (these sectors can include other fuel and electricity producers). This distribution is based on inventory fuel consumption data and DUKES electricity consumption data.
3. This distribution will have allocated most emissions to end users but some to fuel and electricity producers. Therefore, an iterative approach is used, meaning the process is repeated a number of times until only a negligible amount of emissions are still allocated to fuel and electricity producers, and the rest to end users.

The methodology divides fuel user emissions into 7 fuel categories, with each energy supply emissions source allocated to one of these categories based on the type of fuel/energy being supplied:

1. Coke
2. Coal
3. Natural gas
4. Electricity
5. Petroleum
6. Solid Smokeless Fuels
7. Charcoal.

For each of these groups, energy supply source categories are distributed to energy users in proportion to the total energy consumption of the group of fuels being supplied. For example, for the coal group, the emissions of each source category associated with coal supply are distributed to end users according to the energy use of anthracite and coal combined.

The emissions included in the end user categories can be illustrated with an example of two end users - residential buildings and road transport:

- Emissions in the residential buildings end user TES subsector include:
 1. All direct emissions from domestic premises, for example, from burning gas, coal or oil for space heating.
 2. A portion of indirect emissions used by domestic consumers from: power stations generating electricity; emissions from refineries including refining, storage, flaring and extraction; emissions from coal mines (including emissions due to fuel use in the mining industry itself and fugitive emissions of methane from the mines); and emissions from the extraction, storage and distribution of mains gas.
- Emissions in the road transport end user TES subsector include:

1. Direct emissions from motor vehicle exhausts.
2. A portion of indirect emissions from: refineries producing motor fuels, including refining, storage, flaring and extraction of oil; the distribution and supply of motor fuels; and power stations generating the electricity used by electric vehicles.

Revisions to the estimates of end user emissions

It should be noted that the historical time series of emissions by end user is revised each year to reflect any revisions made to either the estimates of emissions by source or the other energy consumption data used in the end user emissions calculation. In this publication, this has resulted in revisions to end user emissions figures for all years up to and including 2023. Further details of these revisions can be found in the main [Final UK Greenhouse Gas Emissions Statistics report](#), which covered 2024 UK greenhouse gas emissions by source.

Embedded emissions

These territorial end user emissions estimates do not take account of the emissions “embedded” within the manufactured goods and services which the UK imports, only energy supply emissions that occur within the UK get reallocated to end users. Embedded emissions are instead captured in what is referred to as the UK’s “carbon footprint”. This calculation of emissions on a “consumption” basis, reporting on emissions embedded in goods and services across international borders, is considerably more challenging. Statistics on [the UK’s carbon footprint](#) are available from the Department for Environment, Food and Rural Affairs (Defra).

Further information

Future updates to greenhouse gas emissions estimates

On Thursday 25 June 2026 the Department for Energy Security and Net Zero will publish estimates of 1990-2024 UK territorial emissions by Standard Industrial Classification (SIC), to supplement the sector breakdown included in this publication.

On Thursday 25 June 2026 the Department for Energy Security and Net Zero will also publish estimates of greenhouse gas emissions by local authority for 2024.

In February 2027 final 1990-2025 UK greenhouse gas emissions estimates will be published by source sector.

In March 2027 the 1990-2025 UK emissions estimates will be updated to include estimates with energy supply on an end user basis, and provisional 2026 greenhouse gas emissions estimates will be published.

Contact

- Responsible statistician: Christopher Waite
- Email: GreenhouseGas.Statistics@energysecurity.gov.uk
- Media enquiries: 020 7215 1000
- Public enquiries: 020 7215 8285



© Crown copyright 2026

This publication is licensed under the terms of the Open Government Licence v3.0 except where otherwise stated. To view this licence, visit nationalarchives.gov.uk/doc/open-government-licence/version/3 or write to the Information Policy Team, The National Archives, Kew, London TW9 4DU, or email: psi@nationalarchives.gsi.gov.uk.

Where we have identified any third-party copyright information you will need to obtain permission from the copyright holders concerned.

This publication is available from: <https://www.gov.uk/government/collections/uk-territorial-greenhouse-gas-emissions-statistics>

If you need a version of this document in a more accessible format, please email alt.formats@energysecurity.gov.uk. Please tell us what format you need. It will help us if you say what assistive technology you use.