



Department for
Energy Security
& Net Zero



Background Quality Report

UK territorial greenhouse gas emissions
statistics

February 2025



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1. Introduction

1.1 Background

This report provides a summary of quality issues relating to statistics on UK territorial greenhouse gas (GHG) emissions published by the Department for Energy Security and Net Zero (DESNZ). The estimates present emissions on a “territorial” basis, so cover emissions which occur within the UK’s borders, including offshore areas over which the UK has jurisdiction. They are based on the UK GHG Inventory, which is compiled by a consortium led by Ricardo, on behalf of DESNZ.

The UK GHG Inventory contains the UK’s official reported GHG estimates. It is the key tool for understanding the origin and magnitude of emissions in the UK. It contains emissions of seven GHGs, reported in eight Territorial Emissions Statistics (TES) sectors in our statistics. Emissions are reported in line with Intergovernmental Panel on Climate Change (IPCC) reporting requirements and are used to measure the UK’s progress towards international and domestic emissions reduction targets.

1.2 Publications, methodology and documentation

Final UK GHG emissions statistics

An Accredited Official Statistics publication reporting on [UK territorial GHG emissions](#) by source from the latest GHG Inventory is published annually in February. Final emissions statistics for the same period with energy supply emissions presented on an end user basis are published the following month and statistics showing emissions by Standard Industrial Classification (SIC) category are published a few months later in June. These are both added as annexes to the February final UK GHG emissions statistics publication.

The source data and methods used to derive UK GHG emissions estimates have been developed to be consistent with methods defined within international guidance provided to all countries via the IPCC. The Inventory reports UK emissions dating back to 1990 in a methodologically comparable time series.

The basic approach to estimating most emissions in our inventory is to multiply some activity data by an emission factor. Examples of activity data include the quantity of a given fuel combusted at a power station, or the number of cows in the UK. An emission factor is the emissions per unit of activity, reflecting on the carbon content of the fuel for example. For some sources the calculation of emissions is more complicated and therefore a model is used to estimate emissions, for example modelling carbon emissions and removals from forests.

The publication comprises a statistical release, a one-page infographic, data tables and detailed datasets. A detailed summary of the methodology used to compile the inventory is available in the National Inventory Document (NID)¹.

¹ The latest UK National Inventory Document (NID) can be found on the UNFCCC website: <https://unfccc.int/reports>.

Provisional UK GHG emissions statistics

An Accredited Official Statistics publication reporting on provisional UK [territorial GHG emissions](#) is published annually approximately 3 months after the end of the calendar year they relate to. Provisional estimates are calculated based on the latest energy statistics to give an early indication of emissions estimates for the most recent year, almost a year ahead of the publication of final inventory data. This publication also includes estimates of emissions in each quarter of the year and temperature adjusted emissions, to consider the impact that external temperatures have on emissions, e.g. through the amount of fuel used for heating.

Provisional annual and quarterly estimates for emissions related to energy use are calculated based on the most recent inventory data, combined with provisional inland energy consumption statistics published by DESNZ in [Energy Trends](#). Data from Energy Trends are used to estimate the change in fuel use compared to the final year in the inventory to approximate the change in emissions. To produce quarterly emissions estimates from annual data the proportion of fuel used in each quarter is used. Because there is limited data available at that time for emissions not related to energy use, provisional estimates of other emissions are based on a simple approach, either assuming that emissions will change from the previous year's total in proportion to the estimates in the most recent DESNZ [Energy and emissions projections](#), or assuming that those emissions remain unchanged from the year before. More information on the methodology is given in the statistical release and accompanying methodology note.

UK local authority and regional GHG emissions statistics

The annual [local authority and regional GHG emissions](#) Accredited Official Statistics publication provides the latest estimates of GHG emissions for local authority areas, National Parks areas, and National Landscape and Area of Outstanding Natural Beauty areas using nationally available datasets going back to 2005.

This publication combines data from the UK GHG Inventory with data from several other sources, including local energy consumption statistics, to produce a nationally consistent set of GHG emissions estimates at local authority level.

The statistics show emissions from energy supply allocated on an end user basis where emissions are distributed to sectors and locations according to the point of energy consumption. For example, emissions from electricity generation are assigned to areas based on where the electricity is used. Except for the energy industry, emissions from the production of goods are assigned to where the production takes place. Therefore, emissions from the production of goods which are exported will be included, and emissions from the production of goods which are imported are excluded. Emissions from the waste sector have been spatially distributed using an approach analogous to the fuel end-user basis, distributing UK total emissions from waste proportionally to the waste arising in each local authority, rather than being based on the location of the waste management facilities where the emissions occur. For example, emissions from landfills are distributed based on estimates of biogenic waste arising in each local authority. Emissions that are not related to energy supply or waste are allocated to sectors and locations based on the point of emission. More information on the methodology is given in the statistical release and accompanying technical reports.

The statistics are largely consistent with the UK national GHG Inventory and with the devolved administration (DA) GHG inventories, but there are some minor methodological differences which are explained in the publication. For emissions figures at UK or DA level, the [UK](#) or [DA](#) inventories should be used rather than this publication.

Sub-national road transport fuel consumption and residual fuel consumption data

These Accredited Official Statistics cover fuel consumption rather than emissions, but the estimates are derived from data collected to produce the UK GHG Inventory.

The sub-national [residual fuels](#) dataset is a modelled dataset covering non-gas, non-electricity, and non-road transport fuels from 2005 to the most recent year, at a devolved administration, English region and local authority level. A methodology summary is published as part of the publication. Estimates for 2003 and 2004 are also available but these are not on a consistent basis with later publications.

The sub-national [road transport](#) dataset is a modelled dataset covering road transport fuel consumption in the UK, disaggregated to devolved administration, English regional and local authority levels. A methodology summary is published as part of the publication.

DESNZ separately publishes sub-national [gas](#) and [electricity](#) consumption estimates. These are not based on the GHG Inventory, though are used in the production of the local authority GHG emissions statistics.

1.3 Production and dissemination

The UK emissions estimates are prepared via a central database of activity data and emission factors, from which the UK emissions are extracted and reported in a variety of formats. For the final UK emissions and the sub-national publications, data are provided by Ricardo according to pre-determined timescales. For the provisional UK emissions publication, data from Energy Trends are provided to the UK GHG Inventory team on a restricted basis ahead of its publication.

The quality assurance process undertaken by Ricardo is detailed in Annex 4 of the National Inventory Document¹ (NID). Data are also quality assured by DESNZ, with any issues raised with Ricardo for resolution. Provisional and summary calculations are produced by DESNZ, with quality assurance measures built into the process. The statistical releases are reviewed by the Head of Energy Statistics and Statistics Head of Profession for final quality assurance and comments.

Pre-release access to the statistical release, briefing and data tables is granted 24 hours ahead in accordance with DESNZ' [statement of compliance with pre-release access](#).

2. Relevance

2.1 Content

The UK GHG inventory dataset contains emissions of the seven GHGs that the UK is required to report internationally (carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, sulphur hexafluoride and nitrogen trifluoride) on a by source basis, meaning emissions are attributed to the sector that emits them directly. Emissions are reported in line with [IPCC reporting requirements](#). This means they cover anthropogenic emissions and removals (i.e. those resulting from human activities) within the UK's territory, including offshore areas over which the UK has jurisdiction.

In the final UK GHG emission statistics, annual emissions are broken down by source, fuel type, by end user and by Standard Industrial Classification (SIC). An end user breakdown allows a more complete picture of emissions within a given sector, by allocating emissions associated with energy supply to end use sectors, and the SIC breakdown provides an understanding of emissions from different industries and allows for comparisons with a range of other statistics. A consistent time series is presented starting in 1990, with carbon dioxide emissions estimates for most sources available from 1970 although these are no longer updated when methodologies for 1990 onwards change.

In the provisional UK GHG statistics, high level sectoral and fuel breakdowns are given for GHG emissions, but more detailed breakdowns are not available as the breakdowns presented reflect the level of aggregation at which the provisional estimates for the latest year are produced. Estimates for each quarter of the year and temperature adjusted estimates are included, which are not included in other publications, as the quarterly energy data used to calculate the provisional estimates enable these to be produced.

The local authority GHG statistics are compiled with emissions related to energy supply on an end user basis, meaning they are allocated to the sector and location where the energy is used, and waste emissions allocated to locations based on where waste arises rather than the location of the waste management facilities where the emissions occur. A full dataset containing annual emissions within the bounds of each local authority is published, along with a second dataset containing a breakdown of carbon dioxide emissions thought to be within the scope of influence of local authorities. Sectoral breakdowns are also provided and estimates include emissions of carbon dioxide, methane and nitrous oxide, but we are not currently able to produce estimates for fluorinated gases at a local authority level. A time series is presented starting in 2005.

The residual fuel consumption and road transport statistics datasets provide annual residual fuel consumption and road transport fuel consumption in the UK at a local authority and regional level. Residual fuels are defined as non-gas, non-electric and non-road transport energy consumption, and cover consumption of coal, petroleum, manufactured solid fuels, bioenergy and wastes. A time series is presented in these datasets starting in 2005.

2.2 Completeness

In the final inventory, estimates are reported for all pollutants, all relevant source categories, and all years and for the entire territorial areas of Parties covered by the reporting requirements set forth in the provisions of the United Nations Framework Convention on Climate Change (UNFCCC). A detailed assessment of completeness of the UK GHG Inventory can be found in the latest NID.

The UK GHG Inventory additionally reports on indirect GHGs which do not form part of the required basket of GHGs. In the UK, these gases are nitrogen oxides, carbon monoxide, non-methane organic volatile compounds, and sulphur dioxide. More information about indirect GHGs can be found in the NID.

Emissions from international aviation and shipping are not included in the UK's emissions total in accordance with UNFCCC guidelines, but emissions from refuelling at UK-based international aviation and shipping bunkers are reported in the inventory as a memo item. Further information can be found in the [final UK GHG statistical release](#).

The local authority emissions statistics cover carbon dioxide, methane and nitrous oxide only, with no estimates made at local authority level for the fluorinated gases. It is also not possible to allocate some UK emissions to local authorities, for example for some electricity consumption where there is a lack of accurate address information. Further information can be found in the [local authority and regional GHG emissions](#) statistics.

The UK GHG Inventory does not measure emissions on a “consumption” basis, but emissions estimates are available on this basis in the [UK’s carbon footprint](#) published by the Department for Environment, Food and Rural Affairs (Defra). These statistics cover emissions associated with the consumption of goods and services by households in the UK. They include estimates of emissions associated with each stage of the supply chain for those goods and services, regardless of where they occur, while excluding emissions occurring in the UK that are associated with the consumption of goods and services by households outside the UK.

2.3 Geographical coverage

The statistics cover GHG emissions and removals taking place within the UK territory, including offshore areas over which the UK has jurisdiction. In addition, emissions from the UK’s Crown Dependencies (Jersey, Guernsey and the Isle of Man) and those Overseas Territories that are party to the UK ratification of the UNFCCC (Bermuda, Cayman Islands, Falkland Islands and Gibraltar) are presented in some tables in the final UK GHG statistics.

The sub-national emissions and fuel consumption statistics cover the UK only, broken down by devolved administration, English region, and local authority. The sub-national emissions statistics also cover emissions in Protected Landscape areas, i.e. National Parks, National Landscapes and Areas of Outstanding Natural Beauty.

2.4 User needs

The UK’s territorial GHG emission estimates are used by central government departments, devolved governments and local authorities to understand emissions in the areas they are responsible for, to develop policies to reduce emissions and to set targets and serve a variety of users including policymakers, academics, companies, and the public.

The UK final emissions statistics allow users to understand the UK’s GHG emissions and measure the UK’s progress against international and domestic targets, including commitments under the Paris Agreement and the UK Climate Change Act 2008, such as the UK’s 2050 Net Zero target. More detail on progress against targets can be found in the [final emissions statistics release and accompanying data tables](#).

The GHG Inventory is reported to the UNFCCC, the UK government and devolved administrations.

Provisional annual estimates provide users with an early indication of emissions estimates and are published nearly a year ahead of the publication of the final inventory statistics.

Local authority GHG emissions statistics are produced to allow local authorities to monitor their emissions. Local authorities are not mandated to have GHG emissions reductions targets, but some local authorities do have such targets. These statistics allow local authorities to track their GHG emissions trends over time, and measure progress against any targets they have.

Sub-national road transport and residual fuel data are also used by local authorities to understand and monitor local energy use as part of their energy strategies.

Users of emissions statistics include ministers, policy makers and analysts within DESNZ, policy makers within central government, devolved administrations and local authorities, energy and climate change consultancy companies, non-profit organisations/charities, international statistics organisations, academia, media and the public.

3. Accuracy and reliability

3.1 Methodology

All our GHG emissions statistics are designated as Accredited Official Statistics, meaning they are produced in line with the [Code of Practice for Statistics](#) published by the UK Statistics Authority. DESNZ publishes [standards for producing official statistics](#) describing the standards we follow to produce national and official statistics.

The methodology used to compile the UK GHG Inventory is detailed in the latest NID.

The methodology for the provisional emissions statistics is summarised in the statistical releases, and in a separate methodology note published alongside them.

The local authority GHG emissions methodology is reported in a detailed technical report alongside the statistics.

3.2 Uncertainty and bias

The GHG Inventory is compiled to be as accurate as possible, meaning that steps are taken to ensure emissions are neither systematically overestimated nor underestimated, as far as can be judged and with uncertainties reduced as far as practicable.

Detailed notes regarding the uncertainty analysis undertaken for the final inventory can be found in the NID and in the data tables accompanying the final GHG statistics.

Provisional estimates are compared to the final inventory figures and an analysis of this is detailed in the final inventory statistical release. Differences between the provisional and final estimates arise primarily due to revisions to other statistics on which these estimates were based, the availability of data for non-energy related emissions sources in the final estimates and methodological changes arising from developments to the Inventory. Overall, the year-on-year percentage change indicated by the provisional figures has usually been within a percentage point of the change shown by the final figures.

Uncertainties are calculated for local authority GHG emissions, based on uncertainty in national emissions, uncertainty in the spatial distribution, and the proportion that each sector contributes to local authority emissions. A summary of the uncertainty analysis, by sub-sector, is presented in the detailed technical report accompanying the publication.

Factors affecting uncertainty in the sub-national road transport and residual fuel consumption datasets are detailed in their technical reports.

4. Timeliness and punctuality

4.1 Timeliness

The final UK GHG statistics are published with a 13-month lag. This is because of the time taken to compile and publish the UK GHG Inventory. Emissions by end user, by Standard Industrial Classification (SIC) category, and local authority GHG emissions are based on inventory data and are published later in the year, due to the time taken to compile them.

The table below details the publication timetable of each release, with examples.

Statistical release	Timeliness	Example
Final UK GHG emissions	Published ~13 months after the end of the year covered. End user breakdown published two months later and estimates showing UK GHG emissions by Standard Industrial Classification (SIC) category are published 5 months later.	Final statistics for 1990-2023 published in February 2025
Provisional UK GHG emissions	Published ~3 months after the reported year	Provisional estimate of 2024 emissions published in March 2025
Local authority and regional GHG emissions	Published ~18 months after the end of the year reported	Emissions to 2023 published in June 2025
Sub-national road transport fuel consumption data	Published ~18 months after the end of the year reported	Data to 2023 published in June 2025
Sub-national residual fuel consumption	Published ~19 months after the end of the year reported	Data to 2023 published in July 2025

4.2 Punctuality

All releases are published in accordance with a pre-announced release timetable. In accordance with the Code of Practice for Statistics, releases are published at 9.30am.

5. Accessibility and clarity

5.1 Accessibility

All statistical releases and accompanying documents and data tables are published on the relevant area of the gov.uk website. Data tables are provided in Excel format and Open Document Spreadsheet format, although users may request other formats if they wish.

We want as many people as possible to be able to use those documents. All documents are produced in line with the DESNZ [accessible documents policy](#) and public sector accessibility regulations. For example, when we produce a document, we make sure to:

- tag headings and other parts of the document properly, so screen readers can understand the page structure
- include alternative text alongside non-decorative images, so people who cannot see them understand what they are there for
- ensure any tables used follow simple structures
- write in plain English.

Users of assistive technology can request a version of the publications or data tables in a more accessible format by contacting DESNZ at alt.formats@energysecurity.gov.uk.

5.2 Clarity

Each statistical publication comprises a written statistical release containing a summary of the data along with a one-page infographic presenting the headline findings, contextual information, and information about drivers of change in the data. For more expert users, data tables are provided, and for the final UK emissions statistics and local authority emissions statistics datasets are published to enable users to conduct their own analysis.

Some methodological information is summarised in the releases, but more technical methodology documents are provided for users who need this. A statistical summary using data visualisation is also published alongside the final and provisional UK emissions statistics publications and the local authority emissions statistics. These provide a one-page summary infographic highlighting the main trends in the latest data.

6. Coherence and comparability

6.1 Consistency across time

Final inventory data are reported in a methodologically comparable time series dating back to 1990 and for local authority estimates dating back to 2005. Estimates for different years, pollutants and source categories are made in such a way that differences in the results between years and source categories reflect real differences in emissions. Annual emissions, as far as possible, are calculated using the same method and data sources for all years, so the resultant trends should reflect real fluctuations in emissions and not changes resulting from methodological differences.

In all statistics publications, updates are made each year to the complete time series to take account of new methods and data (emission factors and activity data). This means that estimates for a specific year are not consistent between one inventory and the next but ensures that each year's inventory consists of a methodologically consistent time series.

The input data for the end user estimates are compiled as part of the national inventory as reported to the UNFCCC.

6.2 Consistency with related datasets

All the Official Statistics are broadly consistent with the UK GHG Inventory, with differences shown in the local authority publication.

The UK Digest of Energy Statistics (DUKES) is a key data source for the Inventory; however, inventory data are not always fully consistent with DUKES due to the use of different methodologies (due to the need to comply with international guidelines) or supplementary data sources.

The local authority GHG dataset is derived from the national inventory but there are some differences between the datasets. These are outlined in the local authority emissions statistical release and in the accompanying Excel files.

There are differences between the sub-national road transport statistics and DUKES because the sub-national statistics are based on fuel consumption, while DUKES is based on fuel sales. There are also differences between the sub-national residual fuel consumption statistics and DUKES due to differences in methodology.

The UK GHG emissions statistics published by DESNZ are based on territorial emissions. However, UK emissions estimates are also published on a [residence basis](#) by the Office for National Statistics (ONS) and on a [consumption emissions basis](#) by the Department for Environment, Food and Rural Affairs (Defra). A breakdown of UK territorial emissions is published by Standard Industrial Classification (SIC) category to enable comparisons with the residence-based estimates.

6.3 Differences in geographical coverages

The standard geographical coverage in the UK GHG emissions statistics is the UK, but the UK GHG Inventory also includes estimates of emissions in the UK's Crown Dependencies (Jersey, Guernsey and the Isle of Man), and those Overseas Territories that are included in its reporting to the UNFCCC (Bermuda, Cayman Islands, Falkland Islands and Gibraltar), and these are presented in some tables in the statistics. Different geographical coverages are used for reporting against specific GHG emissions reductions targets. Geographical coverages are clearly stated in each statistical release and accompanying data set.

6.4 Alternative measures to reporting GHG emissions

The UK, for specific reasons, uses three different approaches to report GHG emissions and the UK Government publishes figures based on each approach. These approaches are:

- [“Territorial” emissions](#) based on the UK GHG Inventory, published by the Department for Energy Security and Net Zero (DESNZ)
- [“Residence-based” emissions](#) as measured by the UK Environmental Accounts, published by the Office for National Statistics (ONS)
- [“Consumption-based” emissions](#), known as the UK's carbon footprint, published by the Department for Environment, Food and Rural Affairs (Defra).

These are each prepared in accordance with an established annual timetable and are published as Official Statistics. A comparison between the estimates for each approach is shown in the DESNZ final GHG emissions statistics release and ONS has published [an article](#) that compares these different measures of the UK's GHG emissions in more detail. At present there is no internationally agreed basis for reporting consumption emissions. Only emissions published on a territorial basis are required for reporting internationally to the UNFCCC.

UK GHG Inventory

DESNZ Official Statistics for UK GHG emissions come from the UK GHG Inventory. This measures emissions on a "territorial" basis, which effectively means that the figures represent emissions occurring within the UK's territorial boundaries.

The UK has measured and reported its emissions of GHGs since 1988. These processes were revised and improved to support the UK's obligations under the UNFCCC, which entered into force in 1994. It was within the framework of the UNFCCC that the Kyoto Protocol was negotiated in 1997. Most developed nations (including the UK as part of the EU) took on specific targets for limiting or reducing their GHG emissions. In ratifying the Kyoto Protocol, the UK committed itself to maintaining an inventory of GHG emissions, taking action to reduce them, and reporting regularly to the UNFCCC. Since 1990, both national and international reporting has been based on this Inventory. Final reporting of emissions under the Kyoto Protocol was completed in 2022, and from 2024 the UK has reported a GHG Inventory as part of its reporting under the Paris Agreement.

UK Environmental Accounts

Since 1998 ONS has also reported on UK GHG emissions as part of the Environmental Accounts. These are satellite accounts to the main UK National Accounts, and provide information on air pollution, energy consumption, oil and gas reserves, forestry, trade in basic materials, environmental taxation and spending on environmental protection by government, and commercial and domestic industries. The UK Environmental Accounts are based on a range of statistical information, covering natural resource use, financial expenditure on environmental protection, and revenues raised from environmental taxes. They use similar concepts and classifications of industries to those employed in the UK National Accounts and are governed by the recommended United Nations (UN) framework and standards for developing such accounts. They are used to inform sustainable development policy, to model impacts of fiscal or monetary measures and to evaluate the environmental performance of different industrial sectors.

ONS relies on the outputs of data from the UK GHG Inventory. However, with respect to the reporting of GHG emissions, there are a number of differences between the residence-based estimates in the Environmental Accounts and the territorial data compiled for UNFCCC purposes.

A significant difference in methodology exists in the reporting arrangements for emissions from international aviation and shipping. For UNFCCC purposes, in accordance with international guidelines, these are excluded from national totals on the grounds that there is currently no international agreement on the way to allocate them to national inventories. These emissions are estimated but are reported as “memorandum” items, based on fuel use from UK international aviation and shipping bunkers. By contrast, the Environmental Accounts include international emissions relating to UK operators in national totals using the best available data. In the case of aviation, ONS utilises flight kilometre data which provide relatively accurate information on which to calculate aviation emissions, whilst for shipping they have to rely on the consumption of bunker fuels.

Also, the ONS approach focuses attention on responsibility for emissions rather than the physical location of an emission. The statistics presented in the Environmental Accounts are measured on what is therefore referred to as a UK “residence” basis, as opposed to a “territorial” basis. This means that the Environmental Accounts includes emissions which UK residents and UK-registered businesses are directly responsible for in other countries (e.g., on holiday), and discount emissions caused by foreign visitors and businesses in the UK. This therefore includes emissions related to activity by UK residents’ transport and travel overseas, and excludes emissions generated by non-residents’ transport and travel in the UK. The principle is that this is the same basis on which the UK National Accounts are produced, so environmental impacts can be directly compared with economic indicators such as Gross Output and Gross Domestic Product.

This means that the Environmental Accounts include international emissions relating to UK airlines in national totals using the best available data. For example, they include all emissions by British Airways (a British registered company) anywhere, but not from Ryanair (a Rep. of Ireland registered company) flights into, and out of, the UK.

ONS prepares a [“bridging table”](#) to accompany the Environmental Accounts GHG emissions data. The purpose of this table is to clearly demonstrate the differences between the two time-series, by way of a breakdown which compares how each measure is compiled. The table shows in detail both the Environmental Accounts and UNFCCC GHG emissions time series from the base year of 1990 and works down through the differences between the two measures through a series of subtractions and additions. Apart from the addition of

international aviation and shipping, there is also a “Cross–Boundary adjustment”, which captures both the additional emissions in respect of UK residents as well as those to be deducted in respect of overseas visitors and businesses in the UK, and a further element relating to the treatment of biogenic carbon dioxide emissions. The Environmental Accounts estimates also exclude emissions from the Crown Dependencies and Overseas Territories, and the land use, land-use change and forestry (LULUCF) sector.

The Environmental Accounts break down emissions using the Standard Industrial Classification (SIC), which is based on the economic sector of the person or company responsible for the activity, rather than the activity itself. This is particularly relevant to transport emissions, which are attributed to the owner of the transport.

ONS publishes the Environmental Accounts as Accredited Official Statistics in June each year. Emissions are reported 18 months in arrears, i.e. emissions for calendar year t are reported in June of year $t+2$. Provisional estimates of residence-based emissions in the most recent calendar year are also published each autumn, around 9 months after the end of the year. The ONS also publish quarterly residence-base emissions estimates, around 4 months after the end of the quarter; they are based on a Chow-Lin regression-based temporal disaggregation method and use data from Energy Trends.

Consumption-based emissions

Neither of the two methods described above take account of the emissions “embedded” within the manufactured goods and services which the UK imports and exports. This method therefore captures what is sometimes referred to as the UK’s “carbon footprint”. The calculation of emissions on a consumption basis, reporting on emissions embedded in goods and services across international borders, is considerably more challenging.

The UK Government has undertaken research into embedded emissions and the Department of Environment, Food and Rural Affairs (Defra) provide the lead in this area. They publish annual statistics on the UK’s Carbon Footprint that investigates the impact the UK consumption has on GHG emissions. These are usually published in the spring each year just over two years after the end of the year they relate to, i.e. emissions for calendar year t are reported in the spring of year $t+3$.

7. Trade-offs

There is a trade-off between timeliness and accuracy in publishing annual GHG emissions statistics. Final inventory data are published approximately 13 months after the end of the reporting year as the methodology used is complex and time consuming. In order to bridge the gap before the publication of final inventory data, provisional emissions estimates are published 3 months after the end of the reporting year. The provisional estimates are based on the final inventory combined with UK energy consumption data for the intervening year and are therefore not compiled with the same level of detail as the final inventory.

8. Assessment of user needs and perceptions

8.1 Users

Users of emission statistics can be categorised as being from the following groups:

- Ministers, policy makers and analysts within DESNZ
- Policy makers within central government, devolved administrations and local authorities
- Energy and climate change consultancy companies
- Non-profit organisations/charities
- International statistics organisations
- Academia
- Media
- The public.

8.2 Use of Statistics

The UK final GHG emissions statistics provide the latest final inventory statistics estimates of territorial emissions and allow users to measure the UK's progress against international and domestic targets. More detail on progress against targets can be found in the final inventory statistical release and accompanying data tables.

The UK GHG Inventory is reported to the UNFCCC, the UK government, and devolved administrations.

Based on discussions with a variety of users we have identified the following uses of these statistics:

- Informing the general public on levels of UK GHG emissions, and trends over time in UK GHG emissions.
- Providing information on progress against various UK emissions reductions targets (both domestic and international).
- Providing information on devolved administration and sub-national emissions that can be used to monitor progress against devolved administration or local authority targets.
- Informing policy making on emissions reductions measures.
- Informing media reporting of UK GHG emissions and trends.
- Providing a historical baseline for UK emissions projections.
- Providing detailed emissions data on gases, sectors and sub-sectors that may be of interest to users (particularly academics) with a focus on a particular area of emissions.

8.3 User engagement

DESNZ recognises that users will have different needs. Users are encouraged to provide comments and feedback on how the GHG statistics are used and how well they meet user

needs. Comments and any issues relating to the GHG statistical releases are welcomed and should be sent to: GreenhouseGas.Statistics@energysecurity.gov.uk.

Further information about DESNZ' user engagement policies can be found in the [statistical public engagement and data standards](#) published on gov.uk. The statement sets out the department's commitments on public engagement and data standards as outlined by the Code of Practice for Statistics.

9. Performance, cost and respondent burden

The data used to produce the GHG emissions statistics largely comes from the UK GHG Inventory and from other Official Statistics. The UK is required by the UN to produce an annual GHG Inventory, so using the data to produce Official Statistics does not add an additional respondent burden. The work of producing the statistics themselves is done by a team of 11 individuals within DESNZ and our contractors Ricardo.

10. Confidentiality, transparency, and security

The transparency of emissions reporting is fundamental to the effective use, review and continuous improvement of the inventory. To this end, clear documentation is available, and reporting is at a level of disaggregation that sufficiently allows individuals or groups other than the designated emissions expert or the compiler of the inventory to understand how the inventory was compiled and assure it meets good practice requirements.

Much of the data used to compile the inventory are publicly available. Where organisations have provided information on the condition that the data remains confidential, these sources are reported in combination. Where detailed data are required, for example due to a freedom of information request, any elements of confidential data in the dataset are identified and suppressed.

For the local authority GHG emissions, some data from large gas consumers are suppressed in order to comply with non-disclosure agreements. Estimates of emissions from the excluded sites are calculated using other data, and this process is detailed in the technical report.

This publication is available from: www.gov.uk/government/publications/uk-greenhouse-gas-emissions-explanatory-notes

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