Local Authority Contributions to Net Zero

Researched and produced by Edinburgh Climate Change Institute for UK100

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Executive Summary

Overview

While it has legislated for Net Zero nationally, the UK Government's approach to working in partnership with local authorities to enable programmes and projects that will achieve Net Zero hasn't delivered to date. Local authorities' efforts are being hampered by a lack of a UK Government local delivery policy framework, a lack of clarity over local authorities' overall roles, piecemeal funding, and diffuse powers and responsibilities. The Net Zero Strategy's[1] inclusion of plans for a Local Net Zero Forum is a positive indication that these issues have been acknowledged by the Government, but the formation and operation of this Forum will be crucial to ensure effective delivery.

This report was commissioned by UK100 and carried out by the Edinburgh Climate Change Institute (ECCI) as an independent study to identify:

- The areas of activity local authorities have direct responsibility for greenhouse gas (GHG) emissions
- The powers to influence GHG emissions that local authorities have
- The percentage share of GHG emissions that local authorities have control over
- Identify those sources that local authorities have influence over.

The report estimates that **local authorities contribute around 6% of the UK emissions inventory** (range of 4% to 9% - direct and indirect emissions). This figure is three times the impact of all non-energy related emissions from industrial processes in the UK, which accounted for 2% of the UK's GHG emissions in 2018.[2] The Government's provisional figures in the Net Zero Strategy estimate that over 30% of the emissions reductions needed across all sectors to deliver on the 6th Carbon Budget target, rely on local authority involvement to some degree.[3]

1 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1026655/net-zero-strategy.pdf
2 Most recent final published figures available at time of print.
BEIS (2021), 2019 UK Greenhouse Gas Emissions, Final Figures, 2 February, https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/957887/2019_Final_greenhouse_gas_emissions_statistical_release.pdf
3 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1028157/net-zero-strategy.pdf

There is now great urgency for the development of a more coherent approach. An approach that puts in place the necessary consistent monitoring and reporting, that develops the partnerships needed, and equips local authorities with the powers, skills and resources that they need to play their full part in the delivery of Net Zero.

Key Findings

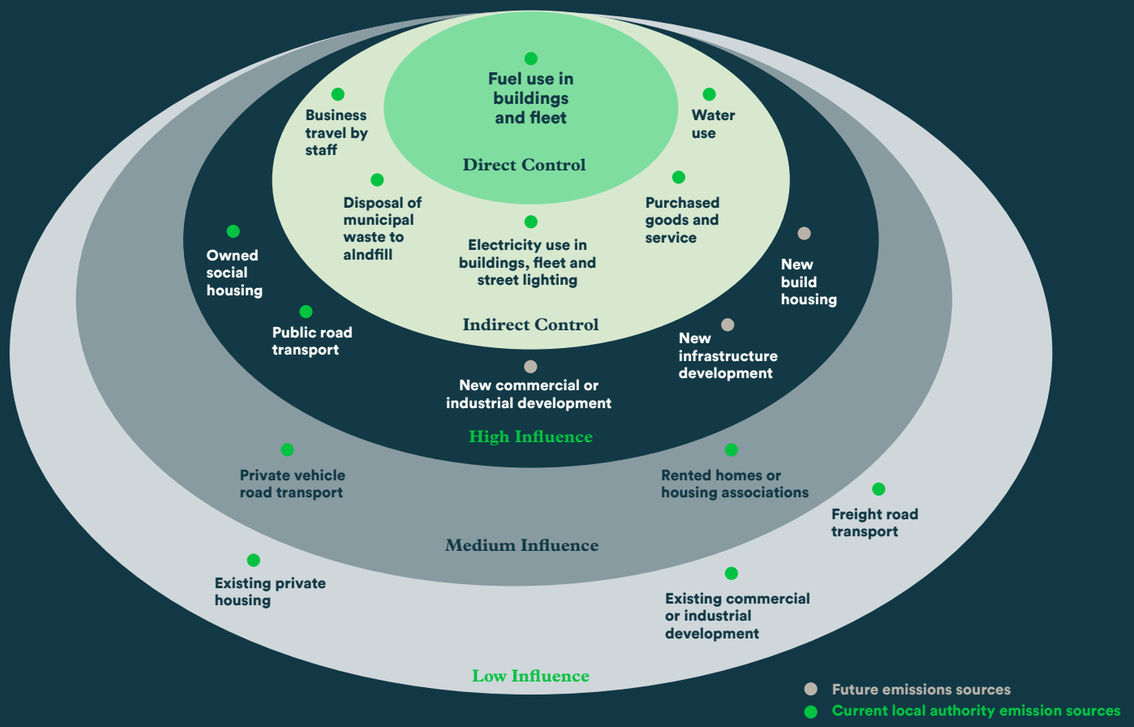
Many local authorities are not yet reporting their emissions annually. This research found published datasets from only 60% of UK local authorities; Scottish councils are mandated to report, so the figure in Scotland4 is 100%, compared to 58% in England, 45% in Wales[5] and 18% in Northern Ireland. There is also a lack of clear reporting guidance for local authorities in England and Northern Ireland in terms of boundaries and methodologies for some of the Scope 3 emission sources, which has resulted in inconsistencies in the overall dataset, especially for outsourced services. The two tier governance of English local authorities further complicates the picture as it can lead to double counting or gaps in reporting across the levels.

Despite these challenges, the research estimates that local authority direct and indirect emissions contribute around 6% of the UK inventory (range of 4% to 9%), which is larger than previous estimates of the direct and indirect energy emissions from the whole public sector (estimated at 2.6% in the end user GHG inventory). By including an estimate of Scope 3 emissions, in particular the emissions resulting from the purchase of goods and services, this has added a further 4.9% of the UK inventory to the emissions indirectly controlled by local authorities. However, research has highlighted that Scope 3 are the most uncertain and least likely to be reported (just 24 local authorities reported a comprehensive assessment of emissions resulting from purchased goods and services) which emphasises the need for consistent boundaries and reporting methods.

The report recommends that improved reporting, sharing best practice and training and development are all required to enable local authorities to have a better understanding of how to measure and subsequently address their emissions, and to support them to most effectively direct powers and resources in managing operational emissions and towards influencing wider area-based emissions sources.

4 The Sustainable Scotland Network is managed on behalf of the Scottish Government by the Edinburgh Climate Change Institute. It has produced guidance for Scottish local authorities, and is the repository for the published reports
5 The Welsh Public Sector Net Zero Reporting Guide has been published and therefore 100% of Wales local authorities are due to report this year. https://gov.wales/public-sector-net-zero-reporting-guide

The figure below highlights the areas where local authorities currently have direct control and the potential areas where they could have a high degree of influence with additional enabling powers. Significantly, the Government's Net Zero Strategy puts the scope of influence of local authorities over all UK emissions at 82%.[6]



6 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1026655/net-zero-strategy.pdf

UK100 Recommendations

It is clear that more work is needed to support consistency of reporting across the UK. Capability and capacity must be built to enable local authorities to monitor their effectiveness and demonstrate their impact in contributing to the UK's ambition to deliver Net Zero. As next steps UK100 urges the UK Government to:

- Develop clear, consistent guidelines and requirements for reporting of GHG emissions across tiers of local authorities.
For our part, UK100 will be working with our Net Zero Pledge members - the group of the most ambitious local authorities committed to going further and faster than the Government's targets - to ensure they are reporting their emissions annually. We are exploring and signposting good practice in reporting and joint working between different local authority tiers. And in 2022, we will develop a Climate Leadership Academy to raise awareness of these and other issues relevant to Local Net Zero to ensure that locally elected leaders and their officials have the tools necessary to deliver on their commitments. However, Net Zero will not be delivered by the most ambitious authorities alone and UK Government support is urgently needed for a wider approach.

- Put in place a Net Zero Delivery Framework that supports seamless working and enhanced partnership between the UK Government and local authorities.
Shared information and data together with clear roles and responsibilities are two elements of UK100's proposed National - Local Net Zero Delivery Framework.[7] The efficiency and effectiveness that comes from working in partnership needs to be capitalised on and taken forward as a deal between local authorities and national Government - to improve partnership and enhance local delivery of Net Zero.

- Provide local authorities with additional enabling powers, supported by the skills, knowledge and capacity to use them well.
With additional powers to affect change over future emissions sources, local authorities across the UK could not only work to reduce their own footprint, but could facilitate greater progress on the journey to Net Zero. As convenors of place, local authorities could enable more sectors of the economy to decarbonise quicker and more effectively, which would enable the Government to reach its Net Zero target and level up local communities at the same time.

7 http://uk100.org/publications/research-national-local-net-zero-delivery-framework

1. Introduction

Whilst the UK Government has legislated for Net Zero, it has not recognised the clear role for local authorities in delivery. Neither the 10 Point Plan nor the 2020 Spending Review, reflect any acknowledgement of the need for local climate action or the role of local authorities in the design and delivery of a Net Zero programme. Increasing evidence highlights that in fact local authorities are crucial to achieving the targets. Both the Climate Change Committee[8] (CCC) and the National Audit Office[9] (NAO) highlight the role of local authorities, and the Government's recent Transport Decarbonisation Plan[10] is clear that many of the measures that must be implemented will need to be done so locally.

Unpacking what will be required to deliver also necessitates an understanding of the contribution local authorities currently make to UK emissions, so that what getting to Net Zero really looks like across the country can be better understood. ECCI has been asked by UK100 to quantify, in tCO_2e, the overall emissions which UK local authorities control expressed as a % of UK emissions. The output includes a robust explanation and justification for definition of the emissions scope and boundaries, a methodology for calculating the figure, and an outline of any assumptions made.

The work is designed to demonstrate and quantify the potential impact of local authorities, given the right support. Our research accompanies a report developed by Centre for Sustainability, Equality and Climate Action, Queens University Belfast and the Place-Based Climate Action Network, which offers a synthesis of available research on the economic costs and benefits of ambitious local action towards Net Zero. This utilises the growing evidence base from UK Climate Commissions supported by the PCAN project.[11]

8 CCC (2020) Local Authorities and the Sixth Carbon Budget, https://www.theccc.org.uk/publication/local-authorities-and-the-sixth-carbon-budget
9 NAO (2021) Local Authorities and Net Zero, HC304, https://www.nao.org.uk/report/local-government-and-net-zero-in-england
10 Department for Transport (DfT) (2021) Decarbonising Transport: A Better, Greener Britain, https://www.gov.uk/government/publications/transport-decarbonisation-plan
11 uk100.org/publications/economic-benefits-local-climate-action

1.1 Aim and objectives

The aim of this project is to improve the estimate of the overall level of emissions which can be controlled by UK local authorities, and provide a documented methodology, rationale for the chosen boundary and data sources and an estimate of the uncertainty. The objectives are to produce:

- An estimate of emissions controlled by UK local authorities as a % of UK emissions
- A breakdown of emissions by country
- A breakdown of emissions by source, where possible
- An explanation and justification for chosen scope and boundary
- A documented methodology, including data sources and extrapolation methods used and assumptions
- A review of key data gaps.

1.2 Research team

The project was led by a team from the ECCI, which is a centre of excellence for researchers, policy makers, businesses, students and educators within the School of GeoSciences at the University of Edinburgh. It also drew on the knowledge and resources of the Sustainable Scotland Network (SSN), who support every local authority in Scotland as part of their network and supported the delivery of Scotland's mandatory public sector reporting on climate impact for several years.

1.3 Exclusions

No raw data collection or analysis of unpublished data was undertaken for the purposes of this project, nor the verification of published data. Therefore, no responsibility can be accepted for errors in the estimated total caused by inaccurate published data being used.

2. Methodology

The methodology section is split into two parts; the first looks at how the data was collected and collated into a standardised format and the second looks at how the data was analysed, in particular how the gaps in the dataset were filled.

2.1 Data collection

This section looks at how the local authority emissions dataset was collected, including how the full list of relevant organisations was defined, how the data was classified and located and the relevant boundary and time period for the dataset.

2.1.1 What is a local authority and how are they arranged?

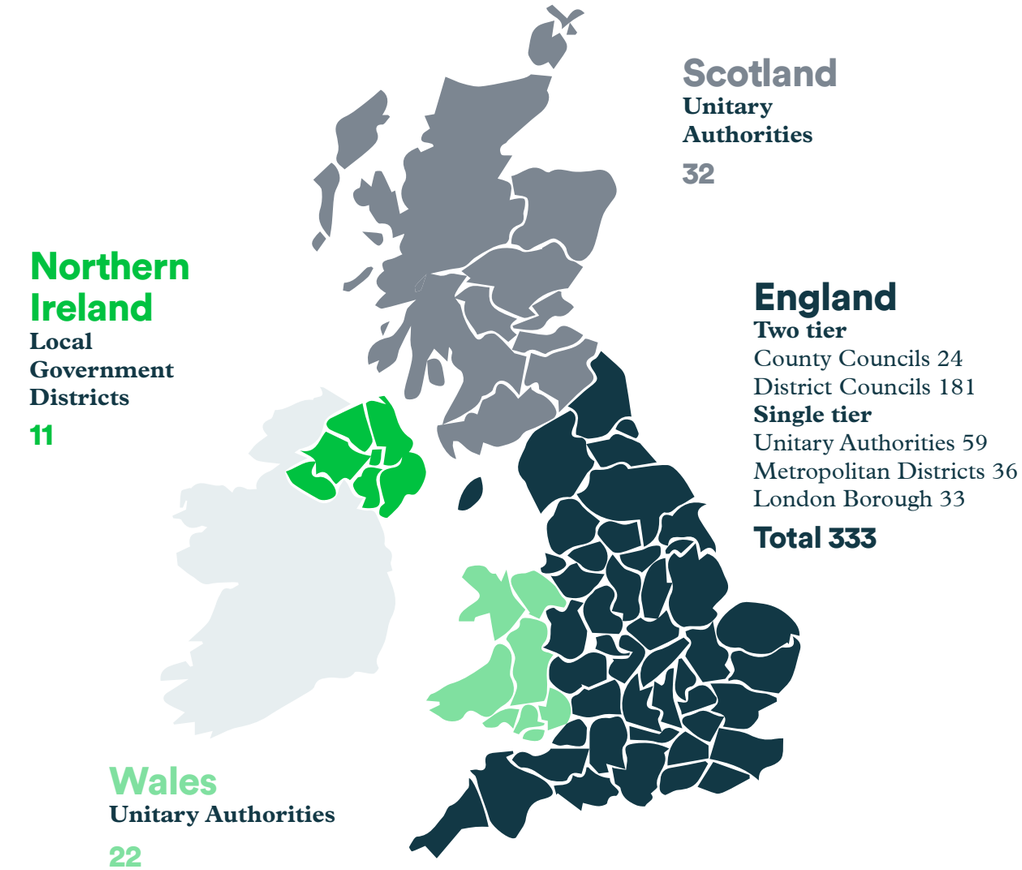
The four devolved administrations in the UK use different names, and in the case of England, different structures for local authorities.[12]

a. Scotland has a single tier structure with 32 unitary authorities, designated as Councils. They are responsible for all local government functions
b. Wales has a single tier structure with 22 unitary authorities, designated as principal areas or Awdurdodau unedol in Welsh
c. Northern Ireland has a single tier structure with 11 unitary authorities, designated as Local Government Districts. In Northern Ireland, local councils do not carry out the same range of functions as those in the rest of the UK (see Table 1 for summary of responsibilities)
d. England has a complex system of single and two tier local government:
   - Three different types of single tier council, where just one council carries out all local government functions:
     - 36 Metropolitan Boroughs
     - 59 Unitary Councils
     - 33 London Boroughs
   - Two tier Councils
     - 24 Upper tier County Councils responsible for strategic services such as transport and people-facing services such as public health, children's services and adult social care
     - 181 Lower tier District Councils responsible for more place-related services such as housing, planning, and licensing.

12 For consistency, none of the regional or combined authorities have been included in this research as their functions are largely delegated down from Government, rather than up from local authorities.

Figure 1 summarises the number and type of local authorities across the four devolved administrations.

Figure 1: Types and number of local authorities in the UK



2.1.2 What is the emissions reporting boundary of interest?

The starting point for understanding the emissions under the control of UK local authorities is to decide what constitutes a reasonable reporting boundary for this type of organisation. However, this requires understanding the remit and responsibilities of these organisations. Table 1 shows a summary of responsibilities of different local authority types in the UK – this information is from a variety of different sources; as it is actually very difficult to get a clear and authoritative picture of services delivered by different organisations.

Table 1: Responsibilities of different local authority types[13]

Devolved administration	Scotland, Wales and England			Northern Ireland	England			
Level	Unitary				Two tier		London	
Type	Councils/Unitary Authority	Metropolitan Districts	Local Govern-ment Districts		County Councils	District Councils	London Boroughs	Greater London Authority
Education	■	■			■		■	
Highways	■	■			■		■	■
Transport planning	■	■			■		■	■
Passenger transport	■				■			■
Social care	■	■			■		■	
Housing	■	■				■	■	
Libraries	■	■			■		■	
Leisure and recreation	■	■	■			■	■	
Environmental health	■	■				■	■	
Waste collection	■	■	■			■		
Waste disposal	■	■	■		■			
Planning applications	■	■	■			■		
Strategic planning	■	■			■			■
Local taxation collection	■	■				■		

13 Table adapted from Local Government Information Unit https://lgiu.org/local-government-facts-and-figures-england/ with additional information about Local Government Districts in Northern Ireland

However, from the perspective of emissions reporting, responsibility for delivery of a particular service does not mean that a local authority will include it within their reporting boundary. A good example of this is housing, where a local authority has the duty to have a scheme determining priorities for the allocation of accommodation and the procedures to be followed but is not required to maintain and run the housing stock. Even if a local authority owns social housing, once it is rented, the occupier is likely to have a contractual relationship directly with an energy supplier and therefore the council will not have direct access to the activity data. Therefore, emissions from socially rented housing stock might be included, partially included or more probably excluded from the council's reported emissions.

While it would be useful to define first the reporting boundary of interest and then search for appropriate data, there are nearly 400 local authorities in the UK but no collated dataset of reported emissions and therefore it is important to understand first how local authorities have defined their own reporting boundary. The data collection spreadsheet was designed to collect almost any type of reported data, in tCO_2e if possible and broken down into categories if available or scopes or overall total if not.

2.1.3 Time period

Organisations in the UK tend to report their corporate footprint using a financial year basis to maintain consistency with the audited accounts and public bodies are no exception to this.

This research was carried out in July 2021 and therefore the most recent financial year for reporting would be April 2020 to March 2021. However, there is usually a time delay between a few months to a year where the data is collated, processed and reported. Therefore, a five year time window of 2017/18 to 2020/21 was set for data collection. An initial survey of 10 randomly selected organisations found that by far the most common reporting year available was FY 2018/19 and preference was given to this year's data to make the dataset as consistent in terms of reporting period as possible. Some organisations had a full set of easily accessible reports for all four years, while others only had a report from one of the years. Anything earlier than 2016/17 was not used. To align the datasets, a correction was applied to the emissions to account for the decarbonisation of the national grid over this period and to pull the dataset into approximate alignment with 2018/19 (this is discussed in more detail in Section 2.2.4).

2.1.4 Data search terms

To limit the time spent looking for relevant data, the search terms (used in Google) were predefined as:

XXXX[14] Council GHG emission report
XXXX Council carbon footprint report
XXXX Council carbon emissions
XXXX Council climate change report

Where these search terms led to a council climate change website or climate change strategy, it was sometimes possible to follow a trail of breadcrumbs to the data or the relevant report. If nothing relevant was found for any of the possible four time periods after using these four search terms, the council was marked as having 'no data found'. A separate request was made to UK100 members to ensure these organisations provided data in the form of a pdf report, a table or a summary of key metrics.

2.1.5 Sample size

Table 2 shows the final proportion of organisations with usable data, by type of authority, by devolved administration and for UK100 members. All applicable authorities in the UK were sampled. For UK100 members where no data was found, an email survey was carried out, which resulted in some organisations returning data. This shows that the type of organisation with the least available data was the Local Government Districts in Northern Ireland. The organisation type with the most available data was Unitary Authorities, partly due to the 100% return rate for Scottish Councils.

14 Where XXXX was replaced with the name of each council

Table 2: Sample sizes for reported data

Type of local authority	Number in category	Returned data	Provided by UK100	No data found	Sample size with data	Sample % with data
Unitary Authority	113	80	2	31	82	73%
Metropolitan Borough	36	19	2	15	21	58%
District Councils	181	99	1	81	100	55%
County	24	13	4	7	17	71%
London Borough	33	14	2	17	16	48%
Local Govern-ment Districts	11	2	0	9	2	18%
Devolved administration	**Number in category**	**Returned data**	**Provided by UK100**	**No data found**	**Sample size with data**	**Sample % with data**
England	333	182	11	140	193	58%
Northern Ireland	11	2	0	9	2	18%
Scotland	32	32	0	-	32	100%
Wales	22	10	0	12	10	45%
UK100 members	**Number in category**	**Returned data**	**Provided by UK100**	**No data found**	**Sample size with data**	**Sample % with data**
Various types	54	34	11	9	45	83%

In addition to reported data from local authorities, two national datasets from the Office of National Statistics (ONS) were used for land area and population size. For two tier councils, the statistics are available for the lower tier; to have the same calculations for upper tier, the land area and population were collated from the relevant list of district councils that they were made up from.

- Standard Area Measurements (Latest) for Administrative Areas in the United Kingdom. The Eurostat-recommended approach is to use the 'land area' measurement to compile population density figures
- Estimates of the population for the UK, England and Wales, Scotland and Northern Ireland - Persons by single year of age and sex for local authorities in the UK, mid-2019.

2.1.6 Organisational and operational boundaries

When producing a boundary for emissions reporting, organisations need to define both the organisational boundary (what parts of the organisation are included) and operational boundary (which emission sources are included). However, in many cases, these two separate aspects of a boundary get conflated and organisations report a mixture of assets and emissions that are included; this is illustrated in the anonymised example below:

> ***Natural gas used in Council owned properties (where the Council is responsible for the boiler) and controlled transport (mainly waste and cleansing services, ground maintenance vehicles and light commercial vans). This doesn't include council owned Leisure Trust sites. Electricity consumed within Council owned buildings. This doesn't include council owned Leisure Trust sites. Business travel for staff where they are using their own vehicles and outsourced activities. It includes Leisure Trust and some other company controlled buildings and staff travel.***

It should be noted that most organisations appeared to have followed the 'Operational Control' approach to defining organisational boundaries as described in the Greenhouse Gas (GHG) Protocol Corporate Accounting and Reporting Standard.[15] This is described below:

> ***Under the control approach, a company accounts for 100 percent of the GHG emissions from operations over which it has control. It does not account for GHG emissions from operations in which it owns an interest but has no control. Control can be defined in either financial or operational terms. When using the control approach to consolidate GHG emissions, companies shall choose between either the operational control or financial control criteria.***

15 The Greenhouse Gas Protocol; A Corporate Accounting and Reporting Standard. Chapter 3, https://ghgprotocol.org/standards

However, the allocation of emissions in categories was not always straightforward or obvious and it is highly likely that in some cases emissions have been miscategorised, especially in terms of Scope 3 (see below for details on emission scopes).

2.1.7 Grouping and Categorisation of the emissions dataset

Under the GHG Protocol,[16] emissions are usually broken down into three different scopes:

- **Scope 1 –** these are direct emissions from assets owned or controlled by the organisation. For example emissions from natural gas to heat council buildings or diesel used for owned fleet
- **Scope 2 –** these are indirect emissions from the generation of electricity, heat or cooling elsewhere and purchased by the reporting organisation. For example, grid electricity used in council buildings
- **Scope 3 –** these are all other indirect emissions that occur as a result of activities and services undertaken by an organisation. For example, emissions from private vehicles used for business travel. The difference between scope 1 and scope 3 is the ownership and control of the emission source.

There are two other categories of emissions:

- **Outside of scopes –** these are CO_2 only emissions from the use of bioenergy (usually biomass or biodiesel)
- **Removals (or sequestration)** which is the uptake of CO_2 by vegetation or other carbon sinks on the organisation's estate.

Both categories of emissions are reported by very few local authorities and were therefore not included for the majority of the analysis.

16 The Greenhouse Gas Protocol; a corporate accounting and reporting standard, https://ghgprotocol.org/standards

Difficulties of grouping and categorisation

One of the largest difficulties in collating emissions from multiple organisations reports is that there is a lack of consistency about how the emissions are grouped and categorised.

Issues with grouping

A good example of this is where organisations report a single figure for emissions from buildings (in tCO_2e) which is composed of heating fuels (Scope 1), electricity generation (Scope 2) and probably electricity transmission and distribution (Scope 3). It is impossible to accurately separate out these figures without contacting the organisation for their raw dataset. This was outside of the scope of this project so a separate category of Mixed Scope was created for emissions from energy in buildings.

Issues with categorisation

The GHG Protocol for Corporate Accounting and the Corporate Value Change (Scope 3) Standard[17] provide a full list of emission source categories, as shown in Figure 2.

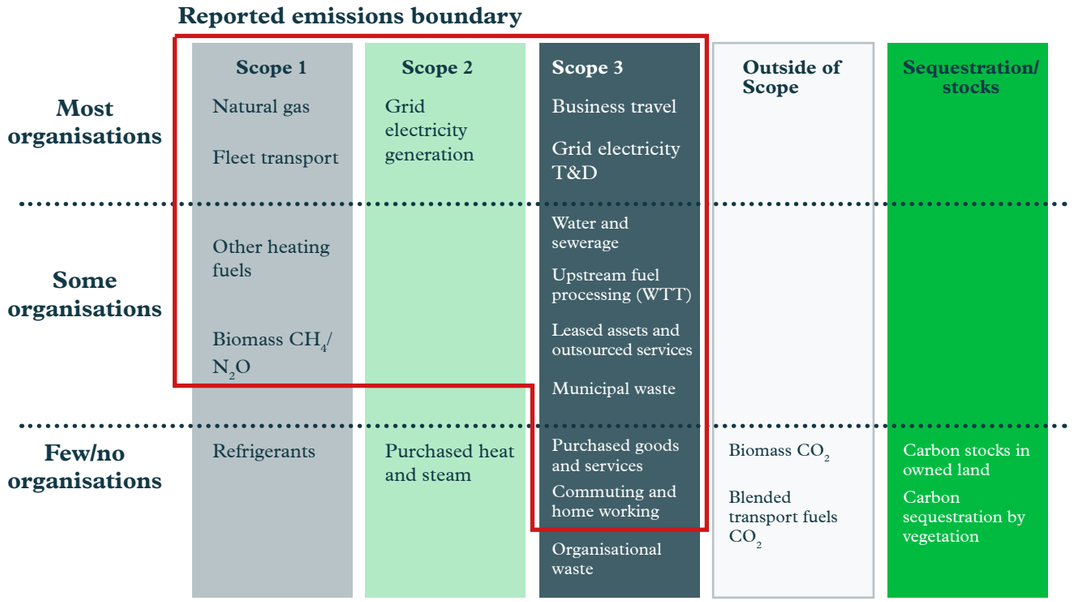
17 The Greenhouse Gas Protocol; Corporate value chain (Scope 3) accounting and reporting standard

Figure 2: Categorisation of emission sources within the GHG Protocol standards

Generation of electricity, heat or steam	**Physical or chemical processing**	**Transportation of employees/goods in company controlled vehicles**	**Fugitive emissions from company controlled sources**	
Generation of purchased electricity	**Generation of purchased heat or steam**	**Generation of purchased district heating**		
Purchased and services goods	**Capital goods**	**Fuel and energy-related activities**	**Upstream transportation and distribution**	**Waste generated in operations**
Business travel	**Employee commuting**	**Upstream leased assets**	**Downstream transportation and distribution**	**Downstream leased assets**
Processing of sold products	**Use of sold products**	**End of-life of sold products**	**Investments**	**Franchises**

However, this categorisation does not always fit neatly with what is reported by organisations and therefore a pragmatic approach was used, adding in additional sub-categories where required, for example for water supply and treatment (a subset of purchased goods and services), for transmission and distribution (T&D) losses (a subset of fuel and energy-related activities).

Figure 3: Reported boundary



The red line shows how the boundary of local authority control has been determined. This is based on a pragmatic approach but also aiming for completeness. For example:

1. Purchased goods and services is a very underreported category (only 22 organisations had reported these) but it is potentially a very large emission source and has therefore been included
2. Refrigerants are also very underreported, but also a very small percentage emission source and therefore have been excluded
3. Organisational waste is a very small source, few organisations report it and in many cases it is likely to be included within municipal waste so it has been excluded.

2.2 Data Analysis

This section looks at the analysis process for the dataset, in particular how gaps in both an individual organisation's dataset and missing organisations were filled. It also details how the error bars in the datasets were estimated.

2.2.1 Method for estimating gaps in emissions portfolio

As shown in Table 2, there were 40% of organisations with no available data and therefore all appropriate emission sources needed to be estimated.

There were also gaps in the organisations who had reported emissions because the reported emissions boundary (how each organisation defines the emission sources and parts of the organisation that are included in its carbon footprint) varies significantly between organisations. It depends on the guidance being followed, the jurisdictional boundary that is drawn between measuring and monitoring across sectors, the degree to which services are outsourced, and the availability of data.

Therefore, to estimate an overall emissions figure for the local authority dataset, emission sources were extrapolated both for organisations that returned no data and those that did not report an emission source that was still likely to be part of their overall footprint. The factor used to extrapolate the data was population; this was used in preference to land area which was considered to have a weaker relationship with emissions in general.

2.2.2 Method for estimating organisation gaps in dataset

The extrapolation was based on the type of organisation: four categories were used:

1. Unitary
2. London
3. Upper
4. Lower

For all organisations with emissions data for a particular category, the per capita emissions were calculated. An average per capita emission estimate with standard deviation and sample size for each type of organisation was calculated.

If there were insufficient numbers of organisations reporting an emission source, rather than separating into types, all the available data was used for one per capita estimate. The emissions gaps were filled by multiplying the appropriate per capita emission by the population of the local authority.

In the case of purchased goods and services, there were only 24 organisations with this data and therefore it was not possible to produce an organisation type estimate. Therefore, to avoid overestimating emissions from two tier authorities, for these organisations, the per capita estimate was halved to account for the fact that the population estimate in these areas is essentially counted twice (the population estimates are given at the district council level and then were added up to also give an estimate at the county council level).

2.2.3 Method for estimating uncertainty

There are several sources of error in these estimates and these are captured in Table 3. Errors for reported emissions were estimated for each category. Error for estimated emissions were calculated as a 95% confidence interval (average +/- 2 times the standard error).[18]

Table 3: Sources of error in the dataset

Source of error	How large is it?	Who does it affect?	How will it be dealt with?
Measurement of activity data e.g. kWh or vehicle miles travelled – inaccuracies in metering or inability of systems to capture all data or use of conversion factors for units	Low (+/- 5%) for some metered sources but can be potentially quite high for Scope 3 (business travel, waste etc.)	All reporting organisations	Estimated standard % error per emission source
Emission factors – generally these are average emissions per unit of activity and therefore can contain significant variation	Low (+/-2%) for fuel combustion but can be very high for waste, travel and purchased goods and services	All reporting organisations	
Definition of organisational/ operational boundary – not reporting emission sources that do exist and not including organisational entities that are in the boundary	Likely to be quite large, especially for Scope 3 emission sources which are discretionary – can be hard to identify	Some reporting organisations	Calculated two times standard error of mean from reported data
Organisations not reporting GHG emissions publicly	Likely to be around 10 – 20% of all local authorities	No reporting organisations	

18 Standard error equals the standard deviation divided by the square root of the sample size

2.2.4 Corrections for time period and mixed scope

As noted in Section 2.1.3, not all the data came from the same reporting year. There are several unknown factors that would cause a reduction or increase in emissions such as energy efficiency projects or an increase in service provision. However, it is not possible to estimate these factors as they are dependent on each organisation's process.

One factor affecting emissions however is entirely predictable and this is the electricity grid factor applied to the consumption data. The grid factor in the UK has been steadily decreasing for both generation and T&D losses since 2006.[19]

Therefore, to correct the electricity emissions, it was assumed that the consumption was constant, but the emission factor had changed and therefore, electricity emissions from earlier or later years were multiplied by the percentage change in factor in relation to 2018/19.

Where organisations had reported energy in buildings as a mixed scope, a factor was used to separate these into heating fuels (Scope 1) and electricity (Scope 2) by estimating the average split between these emissions sources for organisations who had provided these separately.

19 The UK Government Conversion Factors for Company Reporting use fuel-mix data from two years previously to create the annual electricity emission factor. Therefore, the reduction in the carbon intensity of the grid starts in FY 2008/09 from an organisational perspective

3. Results

3.1 Introduction

This section shows the results of the research in the following order:

- An estimate of emissions controlled by UK local authorities as a % of UK emissions
- A breakdown of emissions by country
- A breakdown of emissions by source, where possible.

Justification for the chosen comparable dataset is provided and some of the key patterns of the dataset are discussed; reasons are provided in more detail in Section 4.

3.2 Comparison with UK total

The Devolved Administration GHG Inventory 1990-2019 is produced by the National Atmospheric Emissions Inventory.[20] All emission estimates include the basket of seven Kyoto GHG in kilotonnes of CO_2e, using the global warming potentials from the IPCC's Fourth Assessment Report.[21] This inventory does not include international aviation and shipping. While there are alternative datasets which can also be used for comparison (for example the UK local authority and regional carbon dioxide emissions national statistics: 2005-2019 produced by the Department for Business, Energy and Industrial Strategy (BEIS)) that have a breakdown at a more granular geographic level, the UK GHG Inventory was chosen for the following reasons:

1. It represents the reported GHG emissions for the UK, rather than just CO_2. This is important because all the local authorities report their data in units of CO_2e, not just CO_2
2. This dataset contains emission sources such as waste, which is an important emission source for local authorities as shown in Section 3.3.2
3. It is available on an end user basis, where energy supply emissions are allocated to end user rather than as a separate sector.

20 Greenhouse Gas Inventories for England, Scotland, Wales & Northern Ireland: 1990-2019, Harry Smith, Luke Jones, Ben Richmond, Kathryn Hampshire, Lucy Garland. National Atmospheric Emissions Inventory. https://naei.beis.gov.uk/

21 https://unfccc.int/process-and-meetings/transparency-and-reporting/greenhouse-gas-data/frequently-asked-questions/global-warming-potentials-ipcc-fourth-assessment-report

Table 4 shows the total GHG, split across the four devolved administrations, along with other key statistics around number of local authorities, land area and population.

Table 4: UK GHG inventory by devolved administration

Country	Number of local authorities	Land area (ha)	Population	GHG inventory (kt CO_2e) in 2018	Average emissions (tCO_2e/ ha)	Average emissions (tCO_2e/ head)
England	333	13,022,972	56,062,351	362,640	28	6
Northern Ireland	11	1,379,295	1,893,667	21,932	16	12
Scotland	32	7,790,147	5,463,300	49,325	6	9
Wales	22	2,073,652	3,152,879	34,152	16	11
Total	398	24,266,066	66,572,197	468,049	19	7

Table 4 also shows that the proportion of GHG emissions is more closely related to the size of the population than the land area and that the emissions are not apportioned completely evenly between the devolved administrations. Figure 4 shows how the UK GHG inventory was split between the nine emission source categories in 2018.

Figure 4: UK GHG inventory in 2018, split by emission source category (end user basis)

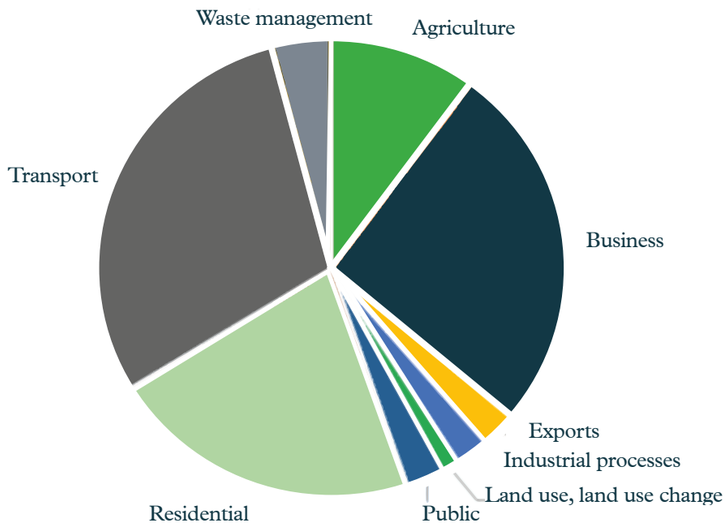


Table 5 shows how the emissions are split between categories for the four devolved administrations. It is important to note that while the emission sources are allocated between categories based on end use, there is still some allocation to individual categories that is captured in the carbon footprint of local authorities, for example, municipal waste disposal, fleet transport etc.

Table 5 also shows that Northern Ireland is quite different from the other devolved administrations in terms of emissions from agriculture and land use. There is also a clear difference between the emissions from the public category; Scotland and England report a higher percentage of emissions than Northern Ireland and Wales. Transport is a major category for all four administrations.

Table 5: Emission category breakdown

	Percentage breakdown by category								
	Agriculture	Business	Exports	Industrial processes	Land use, land use change and forestry	Public	Residential	Transport	Waste management
England	8%	26%	2%	2%	0%	2.7%	23%	31%	4%
Northern Ireland	25%	17%	1%	1%	11%	1.5%	17%	22%	3%
Scotland	16%	24%	2%	1%	5%	3.1%	18%	28%	3%
Wales	16%	34%	4%	6%	-1%	1.6%	15%	20%	3%
Total	**10%**	**26%**	**2%**	**2%**	**1%**	**2.6%**	**22%**	**30%**	**4%**

The UK GHG inventory emissions detailed in this section have been used here to provide a context to the estimated emissions resulting from the direct and indirect control of local authorities.

3.3 Overall Results

3.3.1 Reported emissions

Table 6 shows the total reported emissions for each devolved administration, along with the % of local authorities for which data was available. This table only shows emissions that were actually reported, in one of three formats:

1. Broken down by category and scope
2. Broken down by only by scope
3. Total emissions only.

For this reason, the overall total emission is slightly higher than the breakdown by scope as some organisations could only be included on the basis of their total emissions.

The percentage of reporting bodies was highest for Scotland as all public bodies are required to report on an annual basis through their Public Bodies Climate Change Duties report and the data is collated centrally. It was lowest for Northern Ireland, where data was found for only 18% of Local Government Districts. Table 6 shows that across the UK, 60% of organisations produced publicly available data on emissions for the relevant time period.

Table 6: Reported emissions by UK local authorities

Devolved administration	Reported emissions in $ktCO_2e$							% of reporting organisations
	Scope 1	Scope 2	Mixed scope	Scope 3	Out of scope	Removals	All scopes	
England	881	741	130	1,908	5	12	3,909	58%
Northern Ireland	2	-	6	0	-	-	14	18%
Scotland	533	350	-	336	48	-	1,266	100%
Wales	61	32	20	95	0	-3	248	45%
Total	**1,477**	**1,123**	**156**	**2,339**	**53**	**9**	**5,437**	**60%**

The total emissions reported for this 60% were 5,437 $ktCO_2e$; if this were scaled up, pro-rata for the 40% of missing organisations (based on population), this would be 8,319 $ktCO_2e$ which represents 2% of the UK total. This is lower than the emissions for the public category for the UK total (2.6% from Table 5), but in reality, these are measuring two different pots of emissions and it is important to understand where these figures overlap and where they don't:

1. The public sector in the UK inventory is wider than just local authorities and therefore 'public' in the UK inventory contains more organisations and services than just local authorities
2. The two figures do not represent the same organisational boundary; the reported emissions cover stationary sources such as natural gas, electricity generation and a range of transport, waste, energy and purchased goods and services, whereas the public category in Table 5 the UK inventory is only stationary energy and electricity consumption.

Out of scope and removals make a very small contribution to the overall total and are reported by very few organisations. Therefore, for remaining results, these two categories have been removed and only Scope 1, 2 and 3 emissions have been estimated.

3.3.2 Estimated emissions

As explained in the methodology, there are two key gaps in this dataset:

1. Organisations that have not publically reported any emissions (e.g. 40% of local authorities)
2. Missing emission sources from organisations that have reported data.

The methodology section describes how these gaps have been estimated, using a pro-rata population estimate based on the type of local authority, if a sufficient sample size is available or based on the whole population of local authorities. Table 7 shows the estimated total emission from the local authority sector, based on the standardised boundary shown in Figure 3.

Table 7: UK GHG inventory by devolved administration

Devolved administration	Estimated emissions in $ktCO_2e$			
	Scope 1	Scope 2	Scope 3	All scopes
England	2,302	1,547	19,382	23,230
Northern Ireland	134	79	672	886
Scotland	533	348	1,942	2,823
Wales	222	132	1,170	1,524
Total	**3,191**	**2,106**	**23,167**	**28,464**

Table 8 shows that Scope 1 and 2 make up around 1.2% of the total UK inventory, which is around 46% of the public category. This means that local authorities probably make up between 40 and 50% of public sector Scope 1 stationary and Scope 2 electricity emissions. This is consistent with the detailed data available in Scotland about the public sector, where emissions from local authorities made up 48% of reported emissions from the whole public sector in 2018/19.[22] However, it is Scope 3 emissions that show the most interesting pattern. At 4.9%, these are estimated to make up a much larger proportion of UK total emissions inventory than Scope 1 and Scope 2 combined. It should be noted that these are not new emissions; the UK inventory captures most of these emissions under other categories such as transport, business and waste management. For example, a key service purchased by local authorities is social care and the emissions from energy use in the delivery of this care will be captured in the business and the transport sector. Some emissions in Scope 3 will not be captured in the UK inventory because they will be from goods originating in and transported from other countries. However, what is interesting about this estimated Scope 3 emission source is that local authorities maintain a reasonable degree of financial control through procurement of these goods and services.

22 Sustainable Scotland Network: Public Sector Climate Change Reporting 2019/20 Analysis Report sustainablescotlandnetwork.org/uploads/store/mediaupload/1343/file/SSN_AnalysisReport_2021.03.15.pdf. Note that emissions from Scottish Water are included in the remaining public sector and therefore the percentage is unlikely to be completely representative of the other devolved administrations

Table 8: Estimated emissions from local authorities

Devolved administration	% of UK GHG inventory			
	Scope 1	Scope 2	Scope 3	All scopes
England	2,302	1,547	19,382	23,230
Northern Ireland	134	79	672	886
Scotland	533	348	1,942	2,823
Wales	222	132	1,170	1,524
Total	**3,191**	**2,106**	**23,167**	**28,464**

The detailed breakdown of emissions by category is shown in Table 9.

Table 9: Estimated emissions in $ktCO_2e$ per category, with percentage split and percentage error

Devolved administration	Estimated emissions in $ktCO_2e$										
	Heating fuels	Transport fuels	All electricity	Purchased goods and services	Specifically water and wastewater services	Upstream energy production and distribution (inc. electricity T&D)	Municipal waste	Business travel	Up and downstream and leased assets	Employee commuting and home working	Total
England	1,574	728	1,547	11,392	188	361	4,856	168	1,873	543	23,230
Northern Ireland	80	54	79	403	10	14	179	8	46	13	886
Scotland	372	161	348	1,164	30	30	526	21	133	39	2,823
Wales	139	83	132	719	16	23	298	12	77	25	1,524
Total	**2,165**	**1,026**	**2,106**	**13,678**	**244**	**427**	**5,859**	**209**	**2,128**	**621**	**28,464**
	% breakdown of estimated emissions from local authorities										
England	7%	3%	7%	49%	1%	2%	21%	1%	8%	2%	100%
Northern Ireland	9%	6%	9%	46%	1%	2%	20%	1%	5%	2%	100%
Scotland	13%	6%	12%	41%	1%	1%	19%	1%	5%	1%	100%
Wales	9%	5%	9%	47%	1%	2%	20%	1%	5%	2%	100%
Total	**8%**	**4%**	**7%**	**48%**	**1%**	**2%**	**21%**	**1%**	**7%**	**2%**	**100%**

Devolved administration	% error in emissions estimate from local authorities										
	Heating fuels	Transport fuels	All electricity	Purchased goods and services	Specifically water and wastewater services	Upstream energy production and distribution (inc. electricity T&D)	Municipal waste	Business travel	Up and downstream and leased assets	Employee commuting and home working	Total
England	19%	43%	13%	58%	15%	34%	25%	25%	50%	43%	43%
Northern Ireland	15%	66%	13%	59%	19%	25%	28%	28%	61%	45%	44%
Scotland	5%	10%	5%	59%	10%	15%	25%	15%	61%	45%	35%
Wales	12%	53%	11%	58%	17%	22%	27%	25%	59%	41%	42%
Total	**16%**	**40%**	**11%**	**58%**	**15%**	**32%**	**25%**	**24%**	**51%**	**43%**	**42%**

Table 9 shows that the category of purchased goods and services makes up nearly half of the total emissions for all four devolved administrations, followed by Municipal waste at around 21%; Figure 5 shows the category breakdown as a pie chart. Figure 6 shows that there is much higher uncertainty around the estimates for Scope 3 emissions and Figure 7 shows the error estimates for each category as an error bar.

Figure 5: UK local authority estimated emissions breakdown by category

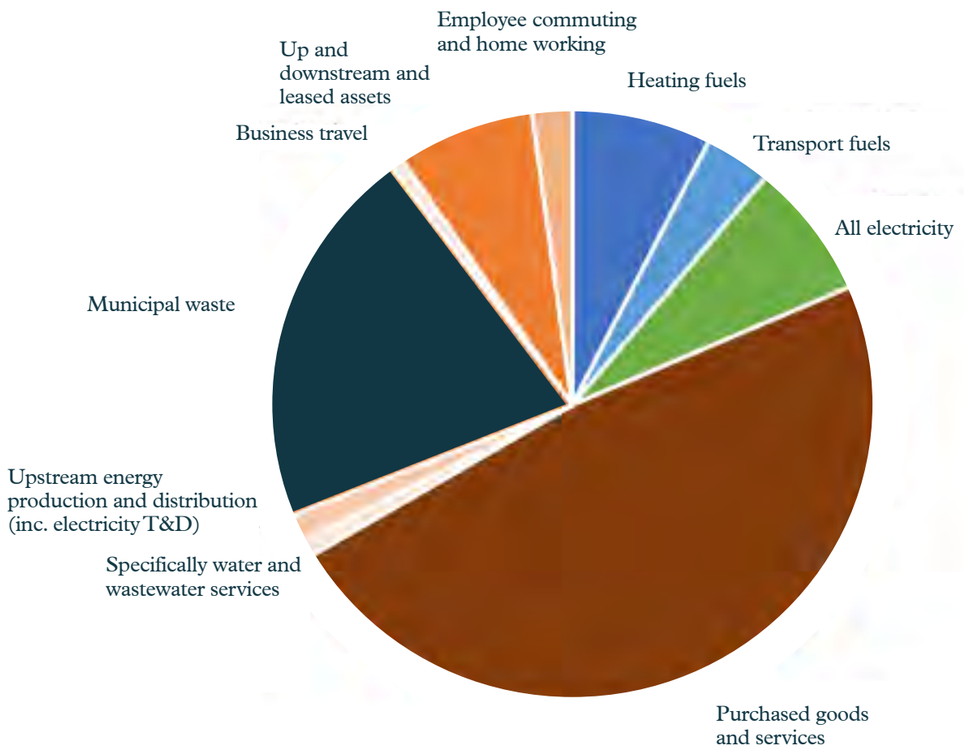


Figure 6: Estimated GHG emissions from the UK local authorities by scope

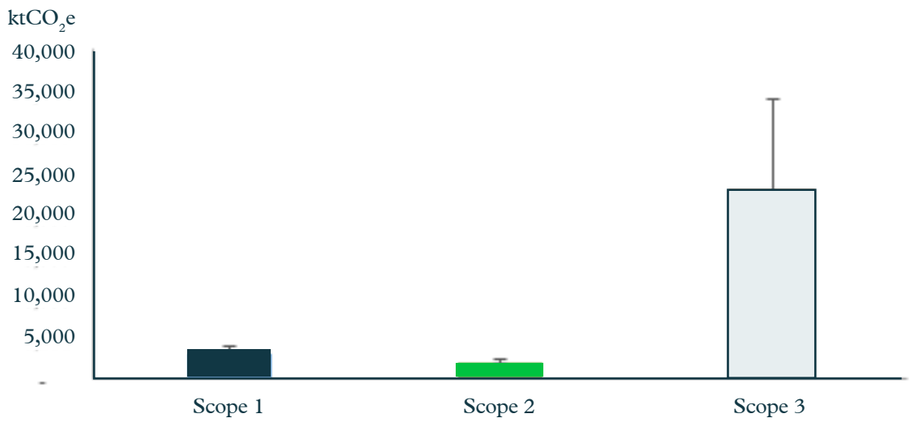
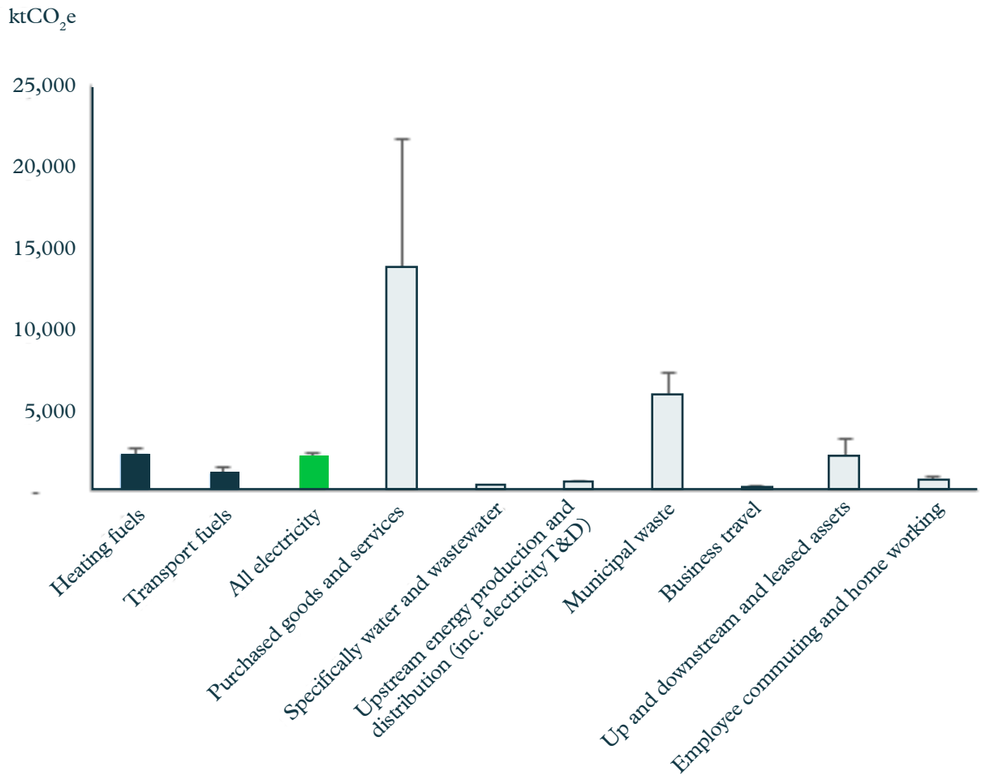


Figure 7: Estimated GHG emissions from the UK local authorities by category



4. Discussion

4.1 Introduction

The aim of this section is to discuss the results from Section 3 in the context of the UK100 research requirements, including expanding on what is meant by control and influence and how the dataset can be improved in the future.

4.1.1 What does the total emissions estimate mean in the context of the UK GHG inventory?

The estimate that local authority emissions account for 6% of the UK inventory (range of 4% to 9%) is larger than previous estimates of the emissions from the whole public sector (estimated at 2.6% in the end user GHG inventory). However, this does not mean that previous estimates were underestimating the emissions under local authority control, just that this previous estimate was only composed of some Scope 1 (stationary energy) and Scope 2 (electricity generation). Based on the detailed Scottish data available from the SSN analysis of the Public Bodies Climate Change Duties reporting, the estimate of Scope 1 and 2 emissions under the control of local authorities would be expected to be around 48% of overall public category; this methodology estimated them at 43%,[23] therefore it is reasonable to assume the estimated emissions under the direct consumption control (both stationary energy and electricity) in the UK inventory are reasonably accurate.

However, this research has also estimated the Scope 3 emissions, in particular the emissions resulting from the purchase of goods and services and from the delivery of services such as municipal waste collection and disposal, this has added a further 4.9% of the UK inventory to the emissions under local authorities through indirect control.

23 SSN climate change reports analysis report 2019-20: https://sustainablescotlandnetwork.org/reports/summary-analysis-report-2019-20

4.1.2 Inventories versus organisational carbon footprints

It is important to note that asking the question about the percentage of emissions within a country's GHG inventory that a particular type of organisation can control cannot necessarily be answered with 100% accuracy because there are fundamental differences between the accounting methods for inventories versus carbon footprints. There is no point where the figures produced by individual companies or organisations in the UK are added together to produce the emissions of the UK because that is not how countries are required to account for their Nationally Determined Contributions (NDCs) under the international agreements (they use the IPCC methodology which is essentially a territorial inventory + shipping and aviation). The method in this research to estimate emissions used the reported boundary of organisations and a 'per capita' extrapolation method to complete the gaps (both whole organisation and emission source), which produces essentially a whole local authority sector carbon footprint of direct and indirect control, rather than an inventory-compatible figure, and an undetermined proportion of emissions identified in this research might be from outwith the UK inventory boundary. Notwithstanding this point, it is worth noting that local authorities have direct and indirect control over a significant level of emissions; furthermore, they have the potential to influence many more of the emission sources within their local authority area, that are under the direct control of public and private organisations and individuals.

4.1.3 What is the difference between influence and control?

This is where allocating emissions gets tricky; as corporate GHG reporting methods were developed initially for large industrial corporations with potentially complex organisational structures but relatively simple emission sources. The methods, particularly in the context of boundary setting, were not designed around the function of local authorities who are responsible for both delivering services and shaping places through the implementation of policy and strategy. For the purposes of this research, the reporting boundary was set pragmatically through a combination of emissions sources that public bodies are known to produce and through the available data reported by those organisations. However, very occasionally a different type of emission source was reported, for example energy emissions from social housing, showing that the boundary of control and influence is not fixed.

Figure 8 shows how local authorities have direct or indirect control over emissions but also have influence over emissions in their local area.

Figure 8: Control and influence in local authorities

	Influence Group	Includes	Current reporting
Direct Control: Local authority-owned Emissions	**Direct Control**	Direct emissions from local authority buildings and fleet for the delivery of local authority services. Including emissions from public transport provision	Mandatory in Scotland, required under guidance in England and Wales
	Indirect Control	Indirect emissions from local authority operations, typically including electricity use, business travel, waste disposal, water supply and treatment. Includes goods and services purchased to deliver local authority services	Inconsistently included and reported across the UK
Influenced: Area-based emissions	**High Influence**	Emissions sources where local authority powers has financial but not operational control or can exert policy or planning control, e.g. public transport and active travel infrastructure, local levels on congestion and parking, new build housing and social housing, private social care homes	Reported separately from local authorities organisational emissions, using BEIS or SCATTER data. No discrimination between different spheres of influence in terms of setting targets or reporting
	Medium Influence	Emissions sources where local authority powers can set and monitor some conditionality and implement measures to enable low emissions choices, e.g. private and rented housing, domestic waste and recycling, visitor taxation, licesing and inspections	
	Low Influence	Emissions sources where local authorities can show leadership by setting area-wide sstrategies and targets, and support partnerships and education to encourage zero carbon choices among individuals, communities and businesses – but are dependent on those choices for emissions reduction	

A high percentage of local authorities in the UK have declared a climate emergency and set targets on wider area emissions[24] and in some cases, an area-wide strategy was available, whereas organisational emissions data was not. Some organisations have gone for a combined strategy for both organisational emissions and area-wide, and in other cases they are being dealt with separately. The fact that so many organisations are looking at both their own footprint and the area-wide footprint and an enormous amount of information, targets and strategy are coming out of local authorities as they start to recognise their role in solving this problem, is really encouraging.

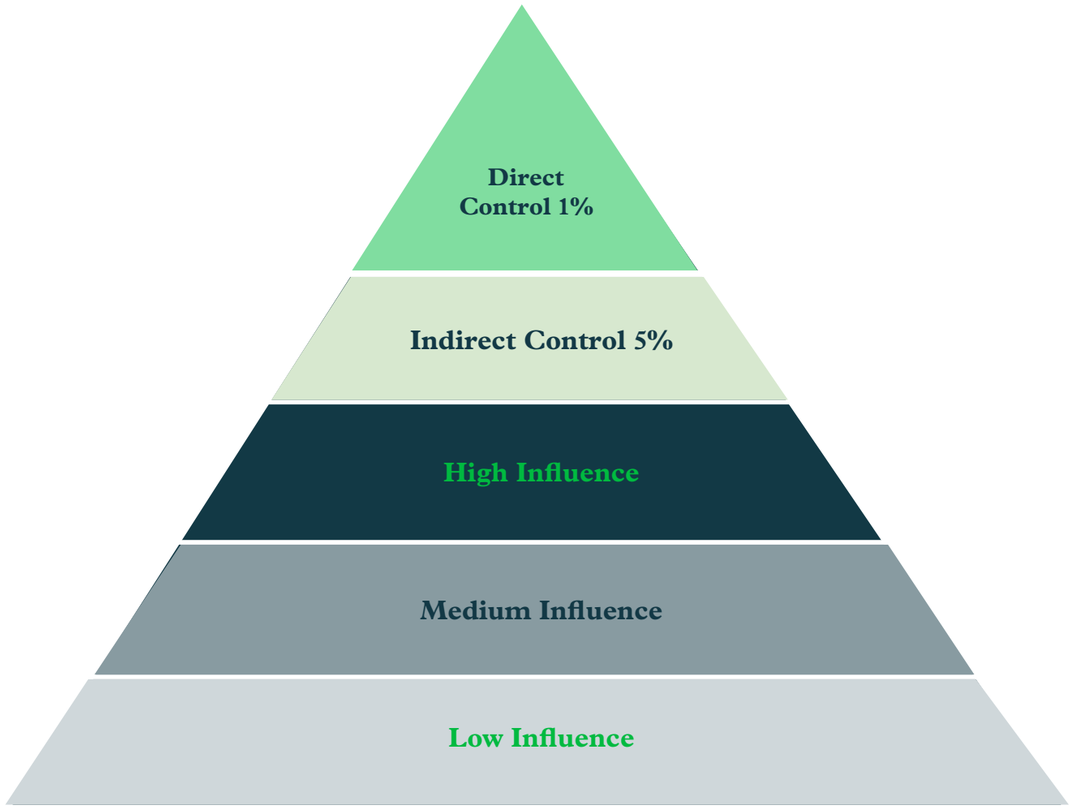
Nearly all the organisations examined were using the BEIS Local Authority territorial CO_2 emissions estimates (either the full dataset or the sub-dataset) or using SCATTER (which draws largely on the underlying BEIS data) to estimate this area-wide footprint and set targets. In many cases, it is evident that this data is used without really understanding how it is generated and how it relates to their own organisational footprint. The area-wide footprint comes with its own problems; because it is so large and made up of potentially hundreds of thousands of individual problem owners and emission sources, it is hard for local authorities to get traction and make significant inroads into this footprint.

There is a risk that efforts get swamped by the sheer size of it and politicians/civil servants and individuals will start to lose faith in the process.

Understanding better what parts of this area-wide dataset is likely to be highly influenced by local authorities will help organisations focus their short-term actions effectively and potentially enable them to demonstrate impact, enabling further work on harder to influence areas. Figure 9 demonstrates the areas of influence and control for local authorities.

24 see https://www.aether-uk.com/Resources/ClimateEmergencies for a map

Figure 9: Areas of influence for local authorities



However, it is very hard to split out the high, medium and low influence sectors without significant work and developed assumptions. There are two examples that demonstrate this:

1. Domestic emissions were 97,000 $ktCO_2$ out of a total of 296,000 $ktCO_2$ for the subset total; around a third. However, local authorities might have high influence over the social housing sector, possibly medium influence over the private rental sector and low influence over the private owned sector. While the emissions could be crudely split based on the percentage of properties in these categories for each local authority, in fact the distribution of fuel type and consumption, and therefore emissions, is unevenly distributed; social housing is more likely to be in the bottom quartile of consumption than private housing but the exact distribution is unknown and would vary from council to council.

2. Public transport by bus might be in the high influence bracket because of the influence that local authorities can exert through transport policy, awarding franchises or even through outsourcing of the service. However, to get the estimated energy use by bus, it is necessary to use a different dataset[25] and convert from units of thousand tonnes of oil equivalent to unit of CO_2e.

4.1.4 Why is the error so large for Scope 3 emissions?

The largest source of emissions using this method was purchased goods and services but this was also one of the least reported and most uncertain of the emission sources. In total only 24 organisations reported a realistic number for all purchased goods and services e.g. they had looked at total organisational expenditure on goods and services rather than attempting to carbon cost a small proportion of specific expenditure. Within this set of 24 organisations there was generally little detail about how this emission source had been calculated[26] and a very wide range of per capita emissions (0.21 tCO_2e per capita with a SD of 0.31).

It would be possible to do an approximate check of total emissions from goods and services by reviewing overall local authority budget and expenditure categories and using standard spend factors for a limited number of categories, however it is worth thinking about what emissions estimate for purchased goods and services represents.

Carbon reporting relies on using activity data (e.g. kWh of gas used) and emission factors to estimate direct and indirect emissions resulting from the activity. This methodology allows for reasonably accurate reporting of emissions from fuels, transport, and other direct emissions. Accounting for indirect emissions such as electricity and public transport rely slightly more on assumptions and averaged out data. For example, the electricity factor is calculated from the annual UK fuel mix and divided by the total electricity generated; bus factors are based on the average emissions per passenger for the UK fleet. However, accounting for the consumption of goods is far more complex because of the huge variety of materials, manufacturing processes, transport distances and modes that contribute to the emissions profile of each product. Similarly, services vary in the way that they are delivered, e.g. social care can be delivered at home or in a care home setting, which has an impact on the resulting emissions.

25 https://www.gov.uk/government/statistics/road-transport-energy-consumption-at-regional-and-local-authority-level-2005-2019
26 There were exceptions to this, for example Southwark Council provided a detailed and repeatable methodology

Due to the vast range of products and services available, they are grouped in categories (for example Classification Of Individual Consumption by Purpose (COICOP) or by Standard Industry Classification code). These emission factors are usually estimated based on expenditure ($kgCO_2e/£$ spent) and an approximation of emissions resulting from the total procurement spend of an organisation can be estimated by allocating spend to the categories used in the emission factor set and multiplying by the relevant factor. However, this methodology only produces estimates that are high level and approximate. To support better public procurement, a more dynamic approach is required, enabling procurers to identify probable hotspots of carbon emissions within their supply chain (which might be related to the spend, or high carbon categories, or volume of materials) but then using a more collaborative approach with suppliers to identify both key sources of emissions within the specific product or service, and opportunities for reducing these and reporting savings. The aim would be to achieve carbon reductions in the supply chain but also enable clear signals to the market to drive suppliers to reduce and report as a key driver of increased revenue.

4.2 Potential improvements to reporting

4.2.1 At a whole UK level

The lack of consistent reporting at an organisation control level across the UK and even within devolved administrations demonstrates that the current guidance is insufficient. The Scottish Guidance is under review and the Welsh Guidance[27] is very new but both are now more detailed and prescriptive about the methodology, in particular setting the boundary of a public sector organisation that delivers services. The most inconsistency was seen in England, which also has the largest share of emissions.

The following points would help provide some clarity for reporting bodies in England and Northern Ireland.

1. Guidance about setting an appropriate boundary
2. Clear, consistent and appropriate categories of emission sources
3. Standardised data format
4. Central repository of data.

Not all the problems in the dataset are created by local authorities. There are several areas of carbon accounting practice which do not lend themselves to ease of use or clarity of reporting:

1. Waste – apart from waste to landfill, emission factors for waste disposal actually represent average transport to a waste processor and therefore, in many cases this results in double-counting with Scope 1 when the local authority is also the owner of the fleet of waste collection vehicles
2. Leasing, subcontracted services, and purchased goods and services – there is little available detailed methodology about how to account effectively for services that are delivered through leased buildings by an 'Arm's Length Organisation'. It was obvious that many local authorities are unclear about how to categorise emissions from contractors, private finance initiatives and other service delivery mechanisms
3. Electricity generation and T&D – there is no reason why these two parts of the electricity emission factor need to be separated and reported as Scope 2 (generation) and Scope 3 (T&D) – it is just confusing to organisations and has absolutely no

27 Welsh public sector net zero reporting guide https://gov.wales/public-sector-net-zero-reporting-guide

accounting benefit because a reduction in consumption of grid electricity will save both parts equally

4. Well to Tank (fuel and energy-related activities) – these are essentially just a tax on energy use and again, there is nothing that local authorities can do to reduce these, without reducing consumption of fuel at the same time. They can be added centrally or automatically in a reporting system
5. Outside of scopes – this is a grey area and there is little consistent guidance about whether they should be reported or not. Again, these can be calculated automatically in a reporting system and reported back to organisations if they want to add them.

Clear guidance is required about how to interpret these emission sources correctly so that they can be reported easily, and the information can be used to make better decisions.

A further action which would potentially benefit all local authorities in the UK would be to develop a more useful combined dataset for area-wide emissions, making use of the higher resolution data subsets in key areas such as transport and housing. This dataset could be made publicly available and contain a breakdown, in tCO_2e, of major emission sources and enable local authorities to draw on other national datasets to estimate breakdowns e.g. in the housing sector.

4.2.2 At a UK100 level

Two tier authorities

In some cases, there was clear evidence that District Councils and County Councils were not working together on the climate emergency; this was evidenced in part by both organisations claiming and setting area-wide targets on what are essentially the same set of emissions. There were also examples where there was clear cross-working and joined up strategy between the two tiers (for example Warwickshire Climate Alliance). Within the UK100 membership, there are also several of the Combined Authorities (who are not covered by this project) but who are also required to work with a group of individual authorities.

A key action for UK100 would be to identify and signpost good practice about joint working between different local authority tiers.

Training and development

Many of the organisations had used consultancies to develop climate emergency strategies, demonstrating that local authorities potentially lack internal skills or capacity or both to respond to the fast changing climate policy environment. Whilst there are numerous training schemes in operation which seek to build knowledge and skills within local authorities, it is clear that part of the green job revolution will be developing these types of skills. UK100 could look at partnering with one or more of the higher education organisations to develop professional development training courses to up-skill and re-skill existing staff.

Member reporting

A simple action would be to set a reporting date and portal for local authorities to link to their reports, strategies, and action plans. This project demonstrated that having all this information scattered across the internet and not easily accessible makes it hard for organisations that are starting out to find and emulate best practice.

Annual awards (for example best short-term action plan, best strategy, best monitoring) by UK100 for their membership would also help highlight best practice.

4. Conclusions

4.1 UK local authorities and UK emissions: control and influence

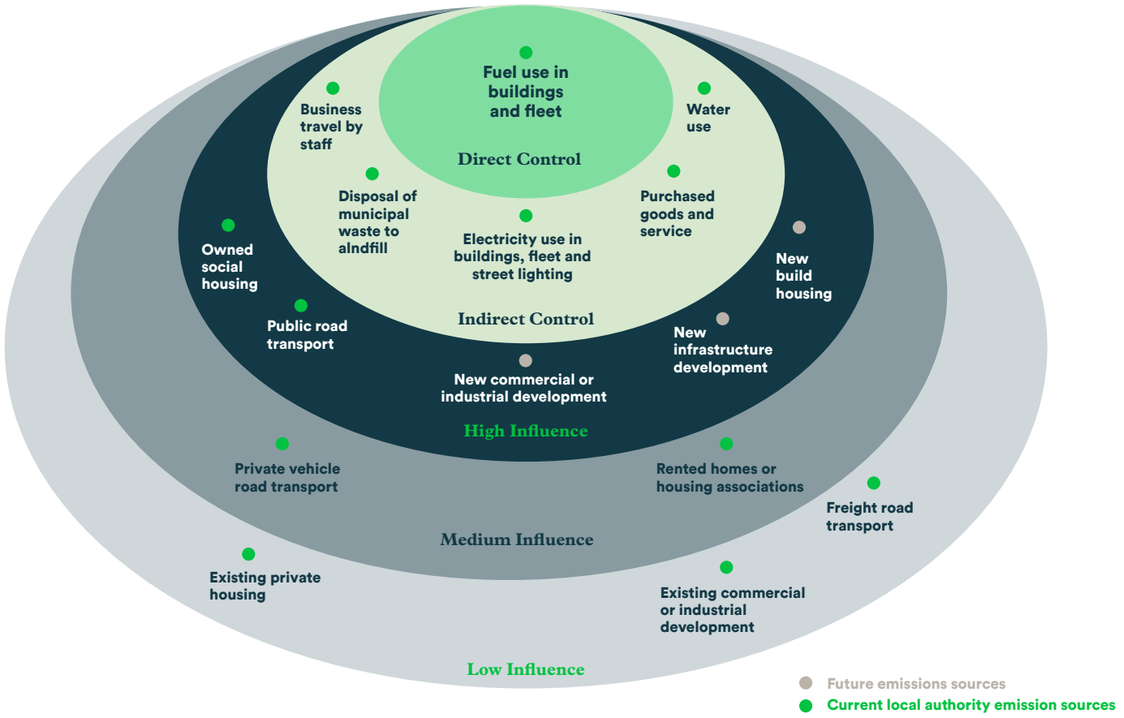
Our research shows that the previous estimates of directly controlled emissions from UK local authorities were largely accurate but that they have indirect control over a larger percentage of UK emissions than was previously estimated. Our analysis suggests that, in total, UK local authorities can control between 4 and 9% of overall UK emissions, the equivalent of 28,000 $ktCO_2e$.

We also concluded that UK local authorities have influence across the majority of wider area-based emissions from their administrative area, and that emissions sources can be grouped by the degree of potential influence which local authority can exert into high, medium and low influence. This influence reflects their critical role in local place-making, and the increasing recognition of the importance of a place-based approach to the system changes needed to transition to a zero carbon economy at both local and national levels. Our report includes a simple model for grouping emissions from the delivery of local authority services into categories of Direct and Indirect Control, and wider area-based emissions into categories of High, Medium and Low Influence.

Overall, our research concludes that with more enabling powers, supported by the skills, knowledge, and capacity to use them well, UK local authorities can deliver more impact on a significant proportion of UK emissions. The Government's analysis in the Net Zero Strategy lends support to this conclusion. It estimates that 82% of all UK emissions are under the scope of influence of local authorities.[28] Figure 10 highlights the potential areas where local authorities currently have direct control and where they could have a high degree of influence with additional enabling powers.

28 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1028157/net-zero-strategy.pdf

Figure 10: Emission sources in areas of local authority influence and control



4.2 Challenges of monitoring and reporting impact

Our research methodology also highlighted and had to address several challenges in gathering and building a reliable and comprehensive dataset for local authority emissions. These stem from a number of factors, including:

- The non-mandatory nature of reporting in England and Northern Ireland, leading to large gaps in data
- The lack of guidance in these devolved administrations, leading to inconsistency of reporting
- The complexity of attribution caused by the different layers of council structures (in England in particular)
- The limited powers of local authorities in some areas (in particular Northern Ireland)
- The different local authority structures for service delivery and asset ownership, with a subsequent impact on where emission are 'owned' and 'reported'
- Lack of effective methodologies for estimating some of the categories of Scope 3
- Lack of a joined-up approach between organisational and area-based emissions.

Together these contribute to inconsistency of reporting practice, gaps in data availability, and lead to variances in the ownership and attribution of emissions that can lead to both duplication or omission of ownership of some emissions at different levels across area-wide boundaries.

It is clear from this project that more work is needed to support consistency of reporting across the UK and to build capability and capacity to enable UK local authorities to monitor their effectiveness and demonstrate their impact in contributing to the UK's national targets on climate change.

4.3 Recommendations for reporting

The lessons learnt in Scotland (and currently being understood in Wales) are that firstly without a commitment to mandatory reporting, there are too many competing requirements for local authorities and it will be deprioritised by some organisations. Secondly, without centralised reporting and some level of analysis, it is hard to improve data accuracy and understand higher level policy requirements. Since there are already two existing reporting systems in operation, it would be sensible to adopt a minimum level of compatibility, learn some of the pitfalls and be open to joint working on a system to cover England and Northern Ireland.

Some key aspects of a reporting system for the public sector are:

- Detailed and prescriptive about the methodology, in particular setting the boundary of a public sector organisation that delivers services
- Guidance about setting an appropriate boundary
- Clear, consistent and appropriate categories of emission sources
- Standardised data format
- Central, publicly accessible repository of data.

In addition to an organisation level reporting system, it is obvious that many organisations across the UK would benefit hugely from a combined dataset for area-wide emissions, translating some of the high level categories into more detailed breakdown where possible and enabling local authorities to target area-wide emissions where they have the highest degree of influence to help build capacity, confidence and consensus for Net Zero areas.

4.4 Drawing on best practice

The research has highlighted pockets of best practice that can be used to build local authority capacity and impact. We would highlight:

- The mandatory reporting across the public sector in Scotland, supported by Scottish Government and the SSN, which has been in place for over five years, with very high levels of completion and engagement in the process
- The reporting guidance which has been developed and is now being supported through its implementation by the Welsh Government; this has set a very comprehensive boundary for public sector emissions reporting
- Best practice at an organisational level has been noted in passing in the dataset of local authority emissions generated by this project; a more in-depth review could be used to identify examples of clear boundary definition, accessible layout and completeness of emission sources.

4.5 How UK100 can support delivery and impact

UK100 and its partners can use the lessons learnt from this project and identified areas of best practice to support local authorities to monitor the effectiveness of their interventions, and to increase their contribution to emissions reduction and the delivery of UK Net Zero targets. These would include:

- Support for adoption of some of the findings from this report, such as the adoption of the framework for Control and Influence to inform strategy and monitor impact
- Advocacy for consistent and comprehensive reporting of emissions impact across UK local authorities, starting with UK100 members
- The curation and collation of best practice from across the UK, to form the basis of a local authority toolkit for emissions reporting
- The development of a capacity building programme across UK local authorities, which could potentially be rolled out to include:
  - Membership round tables on reporting
  - The adoption of consistent terminology and practice on ownership
  - Curation and creation of existing assets and resources as the basis for a local authority toolkit
  - Training and support.

Through undertaking this research, clear gaps have been identified that need addressing in order to fully understand the contributions that local authorities can make in the delivery of Net Zero. Reporting emissions is a clear first step. There are numerous opportunities to improve the data that is available and an important first step is improved guidance for local authorities to better measure. The research highlights that local authorities have influence across the majority of wider area-based emissions from their administrative area and with enhanced powers, they could do much more to reduce these emissions.

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