Cambridgeshire County Council

Carbon Footprint Annual Report 2019-20 Appendix

Contents

Introduction

This is our annual carbon footprint report for the period April 2019 to March 2020.

We published our Climate Change and Environment Strategy in May 2020, so this report covers emissions from the period prior to the Strategy's launch. Many of the actions and projects now underway as a result of our Climate Change and Environment Strategy have not yet had time for the results to take effect, but will do so over the coming years, and so we expect to see greater emissions reductions in future, especially from 2021-22 onwards.

This report examines both the carbon footprint of Cambridgeshire County Council as an organisation, and that of the geographical area of Cambridgeshire as a whole.

Cambridgeshire County Council's Carbon Footprint

The carbon footprint of Cambridgeshire County Council (as an organisation) comprises emissions that occur as a result of the Council's own operations. We have calculated the carbon footprint of the County Council's own operations for the financial year 1 April 2019 to 31 March 2020.

The Council's own carbon footprint has been calculated in line with the UK Government's Environmental Reporting Guidelines for Voluntary Greenhouse Gas Reporting (1). For further details on the methodology, scope, boundary of reporting and exclusions, please see section 0 below.

1.1 Key findings

Scopes 1 and 2

We found that our scopes 1 (direct) and 2 (purchased electricity) emissions amounted to **7,623 tonnes CO_2e** (gross). This includes emissions from gas and oil for heating our buildings, electricity for our buildings and street lighting etc., emissions from fleet vehicles, and fugitive emissions from air conditioning units. The breakdown of this is shown in Figure 1. The largest share was for purchased electricity. This shows gross emissions, before any reductions or offsets.

Our scope 1 and 2 emissions together were 1% lower than the previous year. This is mainly due to emissions from electricity (scope 2) being 9% lower this year, despite using a similar amount of electricity, as the national grid becomes greener with more electricity generated from renewable sources. Scope 1 emissions are higher than the previous year, however this is partly due to having more accurate and more complete data than the previous year, and partly due to increased gas usage in 2019-20 because of colder weather.

Net GHG emissions for scopes 1 and 2, after taking into account purchasing of 100% renewable electricity, were reduced to **2,440 tonnes CO_2e**. The breakdown of this is shown in Figure 2 below, with the largest share coming from gas to heat our buildings.

We have started a programme of low carbon heating projects in order to reduce gas and oil usage in future.

All Scopes

By also including those ‘scope 3’ (indirect) emissions sources for which we have data, the total amounted to **206,617 tonnes** gross CO_2e. This is a 1% increase compared to the previous year, which is mainly due to having more accurate and more complete data.

The breakdown of all these known emissions sources is shown in Figure 3 and there is also a more detailed breakdown in Table 1 on page 7.

The vast majority (96% or **198,956 tonnes** CO_2e) of gross emissions were scope 3 (indirect). This includes transport emissions from vehicles not under Council control (such as employee’s own cars or contractors’ vehicles), emissions from county waste disposal and treatment, emissions from Local Authority maintained schools’ energy usage, agricultural emissions from the County Farms estate, and emissions associated with purchased goods and services delivered by third parties, such as capital construction works.

Importantly, some additional emissions associated with purchased goods and services are not included, because we do not have the relevant data to calculate these. However, this could potentially account for a significant quantity of additional unknown scope 3 emissions. Our action plan includes steps to identify more of this data in future.

A full list of what has been included and what is excluded, together with reasons for exclusions, is in section 0 below.

Net GHG emissions for all scopes, after deducting the emissions offset through our renewable electricity generation assets and for purchasing 100% renewable electricity, were **198,025 tonnes** CO_2e.

Outside of scopes

There were 37 tonnes CO2e emissions outside of scopes, from biofuels.

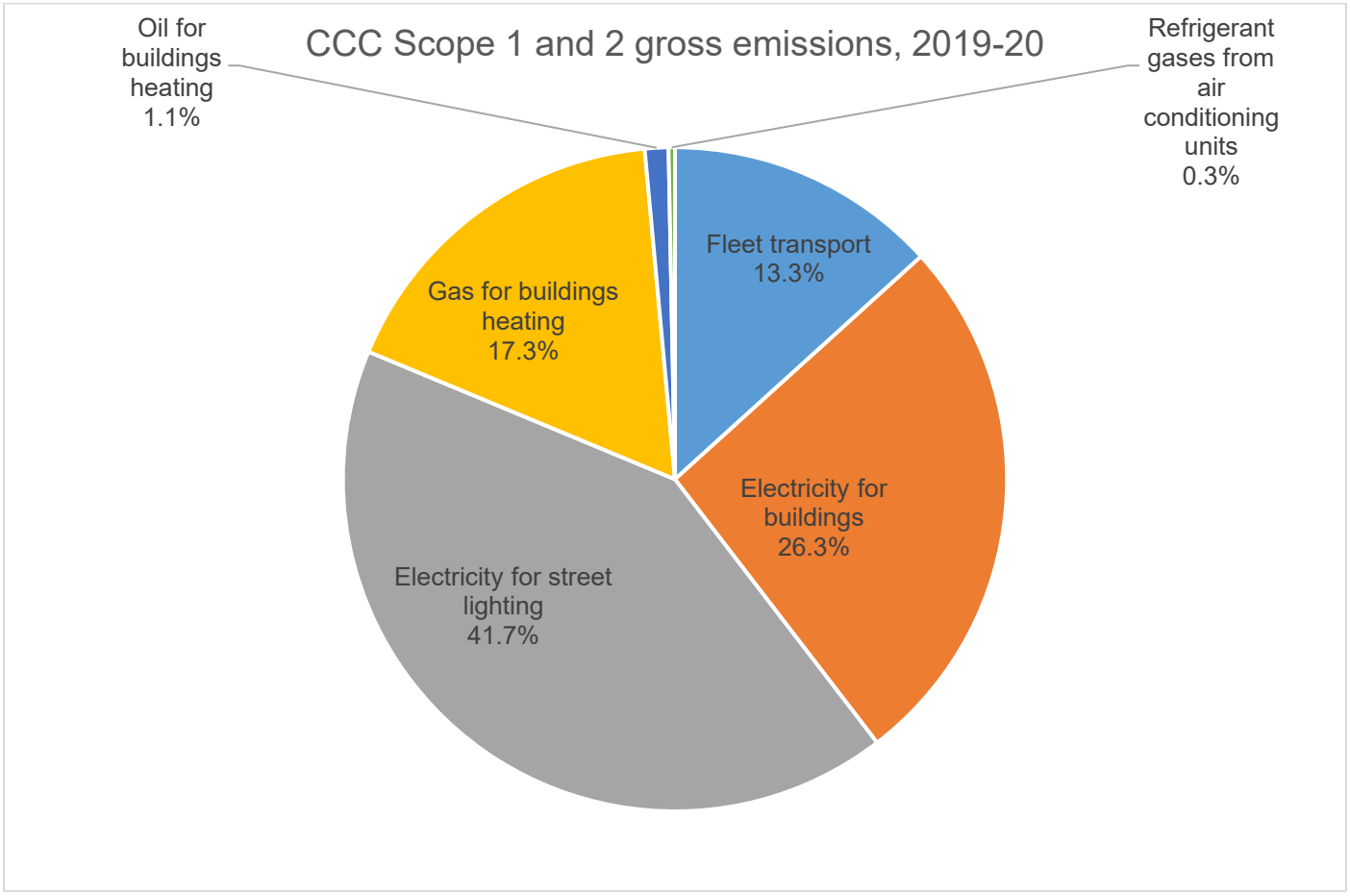

Figure 1: CCC Scopes 1 and 2 gross emissions sources, 2019-20

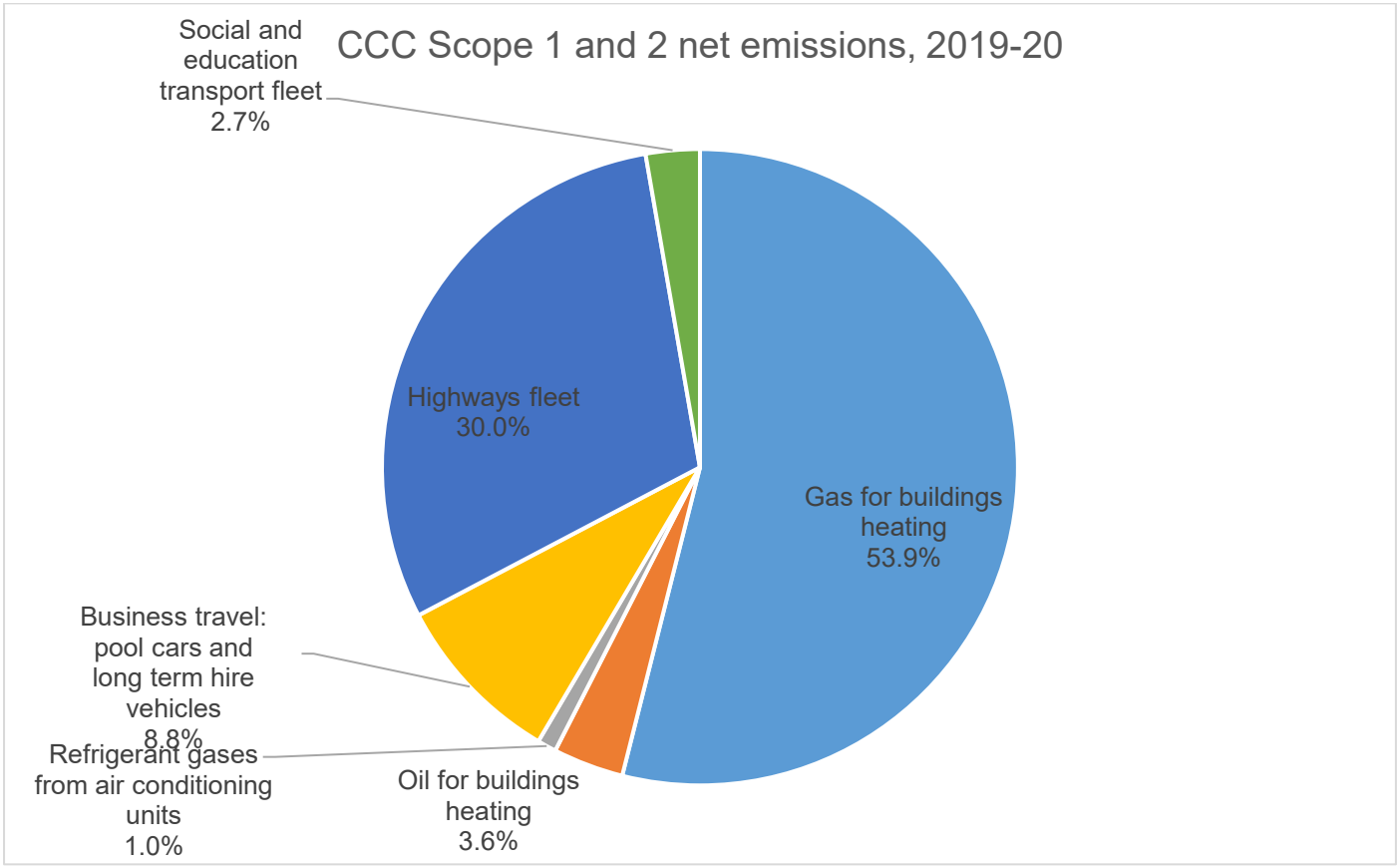

Figure 2: CCC Scopes 1 and 2 Net emissions sources

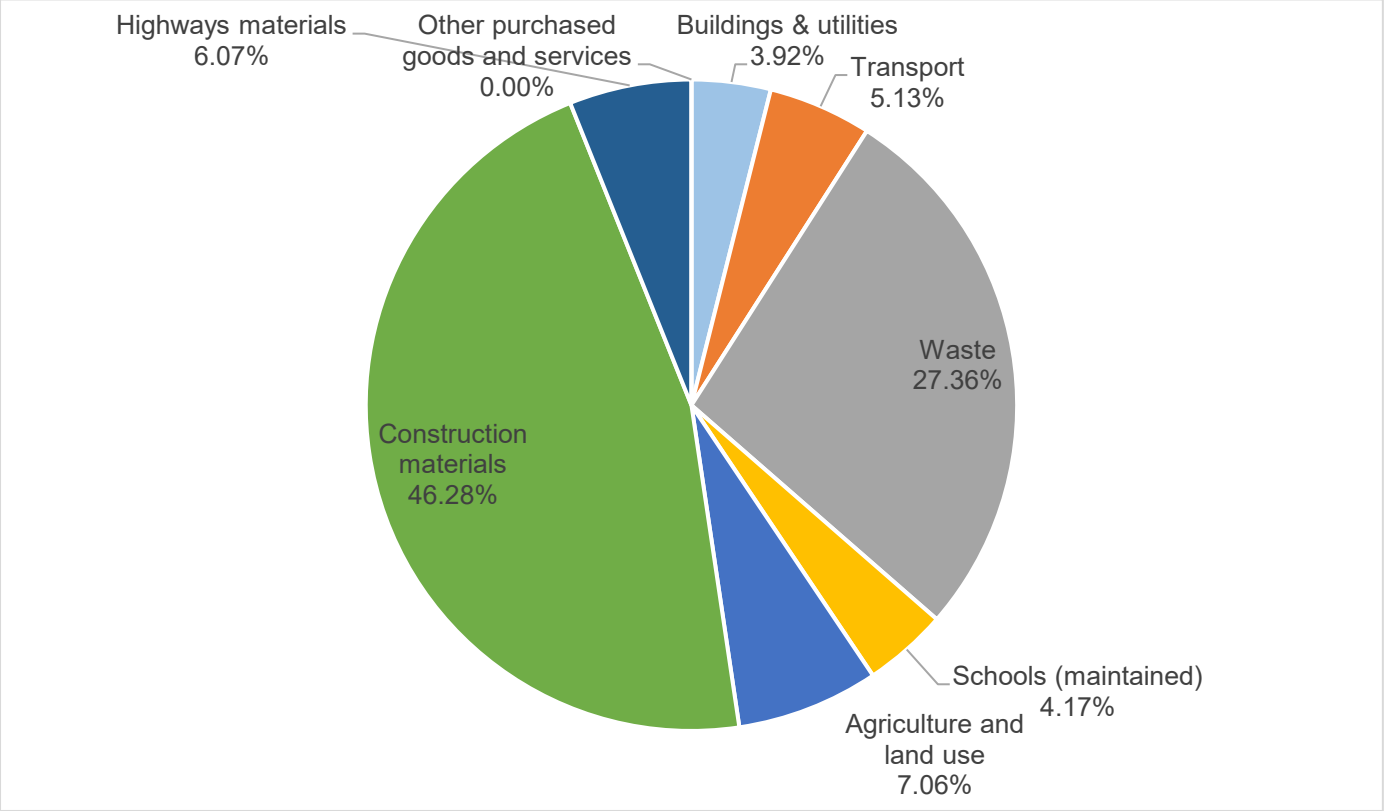

Figure 3: CCC Carbon footprint 2019-20, by source (All scopes)

1.2 Full Breakdown

Table 1: Cambridgeshire County Council Greenhouse Gas emissions 2019-20, breakdown by source and scope

Greenhouse Gas Emissions (Tonnes CO_2e)	Scope 1 (Direct)	Scope 2 (Electricity indirect)	Scope 3 (Other indirect)	Total (Tonnes CO_2e)	Change year on year
Buildings & utilities	**1,427**	**5,183**	**1,497**	**8,108**	**-8%**
Electricity for CCC buildings & sites	0	2,005	474	2,478	-6%
Electricity for street lighting	0	3,179	751	3,930	-13%
Gas for CCC buildings	1,316	0	171	1,487	+16%
Oil for CCC buildings	88	0	18	106	-4%
Refrigerant gases (from air con units)	24	0	0	24	-80%
Water supply and sewerage treatment	0	0	84	84	-43%
Transport	**1,013**	**0**	**9,593**	**10,606**	**-5%**
Highways services vehicles	731	0	241	903	+43%
Social and education transport	67	0	341	295	-32%
Business travel	215	0	1,887	2,102	-15%
Subsidised public bus routes	0	0	876	876	+33%
Employee commuting (estimated)	0	0	5,155	5,155	-13%
Waste contractor transport	0	0	1,093	1,093	-5%
Schools (maintained)	**0**	**0**	**8,616**	**8,616**	**-3%**
Electricity	0	0	3,198	3,198	-13%
Gas	0	0	4,480	4,480	-3%
Oil	0	0	804	804	+43%
Other heating fuels e.g. LPG	0	0	133	133	+546%
Waste	**0**	**0**	**56,516**	**56,516**	**-1%**
CCC site waste	0	0	151	151	+12%
Highways waste	0	0	54	54	n/a
County waste disposal to landfill	0	0	37,785	37,785	-1%
County waste recycling, composting	0	0	18,526	18,526	-2%
Agriculture and land use	**0**	**0**	**14,585**	**14,585**	**0%**
Agriculture (estimated)	0	0	14,585	14,585	0%
Land use, land use change and forestry	*0*	*0*	*Unknown*	*Unknown*	*n/a*
Purchased Goods and Services	**0**	**0**	**108,149**	**108,149**	
Construction materials for building works (estimated)	0	0	95,603	95,603	-2%
Materials for highways resurfacing, transport infrastructure projects etc.	0	0	12,546	12,546	+18%
All other purchased goods and services	0	0	*Unknown*	*Unknown*	*n/a*
Total (Gross)	**2,440**	**5,183**	**198,956**	**206,579**	**+1%**
Reductions					
100% renewable electricity tariff	0	-5,183	0	-5,183	-9%
Electricity generation at solar assets	0	0	-3,371	-3,371	-10%
Net Total	**2,440**	**0**	**195,585**	**198,025**	**+1%**

1.3 Buildings and utilities

Figure 4: Shire Hall, Cambridge

Buildings and utilities are responsible for 87% of all scope 1 and 2 emissions, and account for **8,108 tonnes CO_2e**. This is a reduction of 8% compared to last year.

The biggest source of *gross* greenhouse gas emissions within the buildings and utilities category is electricity usage, accounting for 5,183 tonnes CO_2e in scope 2 (including both buildings and street lighting). It also accounts for another 1,224 tonnes for transmission and distribution losses, and 'well to tank' (WTT) in scope 3. The Council purchased **20,279,057 kWh of electricity** in 2019-20, 61% of which was for street lighting. This is similar to the amount purchased last year. However, the associated emissions from electricity are nearly 10% lower than last year, due to the UK electricity grid being powered more by renewables and less by coal.

However, all of the gross CO_2e for scope 2 is offset to zero in the *net* emissions, by purchasing 100% renewable electricity through our supply contract.

The next biggest source of GHG emissions related to buildings and utilities is gas, which accounts for 1,316 tonnes CO_2e, plus 171 tonnes for 'well-to-tank' emissions. Gas is currently used to heat the majority of our buildings. The Council purchased **7,157,250 kWh of mains gas** in 2019-20. This is 16% more gas than last year, due to an increased requirement for heating, likely to be because of more days of colder weather. Shire Hall, the Council's headquarters in Cambridge (pictured in Figure 4), was the building with the highest usage of gas.

Oil, although more carbon intensive than gas, accounts for only 88 tonnes CO_2e, (plus 18 tonnes for WTT) because there were only four CCC sites that use oil. These used **354,763 kWh of heating oil** in 2019-20. This is 4% lower than last year.

Water and sewerage services for our buildings accounts for 84 tonnes CO_2e, based on an estimated annual water consumption of 110,594 cubic metres, 90% of which is assumed to return to the sewers. This is a 43% reduction compared to last year, due to more accurate data on water consumption becoming available this year.

Finally, leakage of refrigerant gases from air conditioning units is estimated at 24 tonnes CO_2e. This is 80% lower than reported last year, due to more accurate data becoming available this year.

This section does not include school buildings, which have been counted separately.

1.4 Transport

Figure 5: Some of CCC's Highways gritting fleet

Transport accounts for **10,606 tonnes CO_2e**, including 1,427 tonnes (42%) of scope 1 emissions. The majority of transport emissions are scope 3 because they are from vehicles not under the control of the Council.

Of the scope 1 (direct) transport emissions, the largest share was from our Highways services, accounting for 731 tonnes CO_2e. This includes the road gritters pictured in Figure 5. Highways transport also accounted for 241 in scope 3.

Also in scope 1 transport is the social and education transport fleet, which produced an estimated 67 tonnes CO_2e emissions. **Other social and education transport** (including volunteers driving, some contracted out social care journeys and **home to school transport** by bus and taxi) accounted for 341 tonnes CO_2e in scope 3. Some of these journeys are estimated.

Business travel (including pool cars, vans and other fleet vehicles) accounted for 215 tonnes CO2e in scope 1, and an additional 1,887 tonnes CO2e in scope 3, which includes flights and travel by public transport. This includes emissions associated with business travel in employees' own vehicles

(over 5 million miles in 2019-20) and travel by public transport (trains, buses and taxis), flight and hotel stays. Journeys by public transport are estimated due to incomplete data.

Scope 3 transport also covers vehicles not under the Council's control. The largest part of the transport section is the scope 3 (indirect) from our 3,978 **employees[1] commuting from home to work**, which has been estimated at 5,155 tonnes CO_2e. According to the 2019 staff travel survey, 77% of commuting miles were made by car or motorbike (including car sharing), with 17% of miles travelled by public transport. 1% of commuting miles were walked and 5% cycled. This estimate is based on 504 responses to the survey and has been extrapolated based on the total number employees and assuming an average of 47 weeks worked per year. However, the relatively small sample size of the survey responses means that this is only a rough estimate.

Waste transport by our waste management contractor Amey accounted for 1,093 tonnes CO_2e. This includes travel for servicing the containers at our nine Household Recycling Centres, and bulk haulage of waste from the waste transfer stations at Alconbury and March to treatment sites such as Waterbeach. (It does not include household waste collection, which is the responsibility of the City/District Councils.)

Although the Cambridgeshire and Peterborough Combined Authority is the Transport Authority responsible for provision of public transport, they have delegated this responsibility back to Cambridgeshire County Council for 2019-20. We have therefore included the transport undertaken by passengers on those **public bus routes** which are subsidised by the Transport Authority, as a Scope 3 emissions source here, accounting for 876 tonnes CO_2e. There were 534,712 such passenger journeys in 2019-20, 40% more than the previous year, across 51 bus routes. It is important to note that had these passenger journeys been made by car, total emissions would have been much higher (although outside of the Council's total).

Travel by contractors other than those mentioned above was not included due to not having access to this data.

1.5 Maintained schools

Schools emissions (which are all counted as scope 3) for all the Local Authority maintained schools in Cambridgeshire account for 8,616 tonnes CO_2e. The largest share of this is 4,480 tonnes CO_2e from **mains gas**, followed by 3,198 tonnes CO_2e from **electricity**, and 804 tonnes CO_2e from **heating oil**.

We do not currently have any data for schools' water and sewerage services or air conditioning gases in schools.

Academy schools are not included in these figures since these are not under the Council's control.

1.6 Waste

Waste accounts for the second largest share (27%) of our known emissions, at 56,516 tonnes CO_2e.

The vast majority of this (estimated at 56,311 tonnes CO_2e) is due to the Council's statutory responsibility as the Waste Authority for **treatment and disposal of waste** from Cambridgeshire

[1] Number of employees as at 30 September 2019, mid-way through the financial year 2019-20.

residents. In 2019-20 there were 317,665 tonnes of waste collected from both the household kerbside collections and the Council's nine Household Waste Recycling Centres. Of that, 45% went to landfill, whilst 55% was either composted or recycled. Note that waste collection is the responsibility of the City and District Councils, therefore transport of waste is not included in these figures, whereas treatment and disposal is the responsibility of the County Council and is included.

The remainder of the waste category is from the waste generated at the Council's own sites (249 tonnes of general waste, 180 tonnes mixed recycling and 55 tonnes of confidential waste paper, together accounting for 151 tonnes CO_2e emissions).

1.7 Agriculture and land use

Agricultural emissions from the County Farms estate are estimated at 14,585 tonnes CO_2e, or 7% of all known emissions in the Council's total carbon footprint. The vast majority of the County Farms estate is cropland, with a small area allocated to livestock.

Other emissions from land use, land use change and GHG removals from forestry have not been included, because we do not have the relevant data.

1.8 Purchased goods and services

The largest share (46%, or an estimated 95,603 tonnes CO_2e) of our carbon footprint is from **materials for construction or building works**. This comprises of emissions associated with extraction/mining, production/manufacture and transportation of materials to the point of purchase. The majority of construction works was building of new schools. Other works include renovations and maintenance works to our assets.

Materials for **Highways** work, including resurfacing schemes and highways services works, contributed an estimated 12,546 tonnes CO_2e.

Emissions from other purchased goods and services are unknown. This includes:

- Social care provision (other than our own buildings and staff travel);
- Legal, consultancy, insurance, pensions, investments, banking, telecommunications, post and other business services (other than our own buildings and staff travel);
- Education services;
- Office machinery, IT equipment, furniture and the like;
- Food and drink;
- Other goods and services not mentioned elsewhere.

Since the emissions data for these goods and services lies with other organisations it is more difficult to collect the relevant data. However, we are continually working to improve this.

1.9 Reducing our carbon footprint

There are two reasons for the difference between gross and net emissions; a reduction of 8,555 tonnes CO_2e.

Firstly, because we buy electricity generated from 100% renewable sources, although the gross emissions for electricity (based on grid-average carbon intensity) are 5,183 tonnes CO_2e, the net emissions (based on the supplier fuel mix for the tariff we purchase) are zero.

Secondly, our solar assets including the 12MW solar farm in Soham generated enough electricity to offset 3,371 tonnes CO_2e in 2019-20, which is enough to power more than 3000 homes.

Cambridgeshire County Council also already has several other key measures in place to reduce our gross carbon footprint and help mitigate against climate change. These include a range of energy efficiency projects across our property portfolio, such as on-site renewable generation assets (rooftop solar PV), Building Energy Management Systems (BEMS), and installation of LED lighting.

This year we are also starting a programme of low carbon heating works, which will see our scope 1 carbon footprint reduce over the next few years.

Without these projects, the Council's carbon footprint would have been higher. However, we recognise that there is more work to do. This is set out in our Climate Change and Environment Strategy and Action Plan (published May 2020).

3. Methodology

A carbon footprint is a measure of the greenhouse gases (GHGs) emitted into the atmosphere from sources in a specified region or organisation. The most common GHG is carbon dioxide (CO_2). Emissions of other GHGs such as methane (CH_4) or nitrous oxide (N_2O), are measured in 'carbon dioxide equivalent' (CO_2e), which takes into account the different global warming potential (GWP) of different gases. Quantities of GHGs are multiplied by their GWP to give results in units of carbon dioxide equivalent (CO_2e).

Different activities emit different gases, for example, burning fossil fuels releases carbon dioxide, methane and nitrous oxide into the atmosphere.

Nationwide, emissions of CO_2 make up 81% of GHG emissions, with the remainder from methane (11%), nitrous oxide (5%) and fluorinated gases (3%), when weighted by GWP (2), as shown in Figure 6.

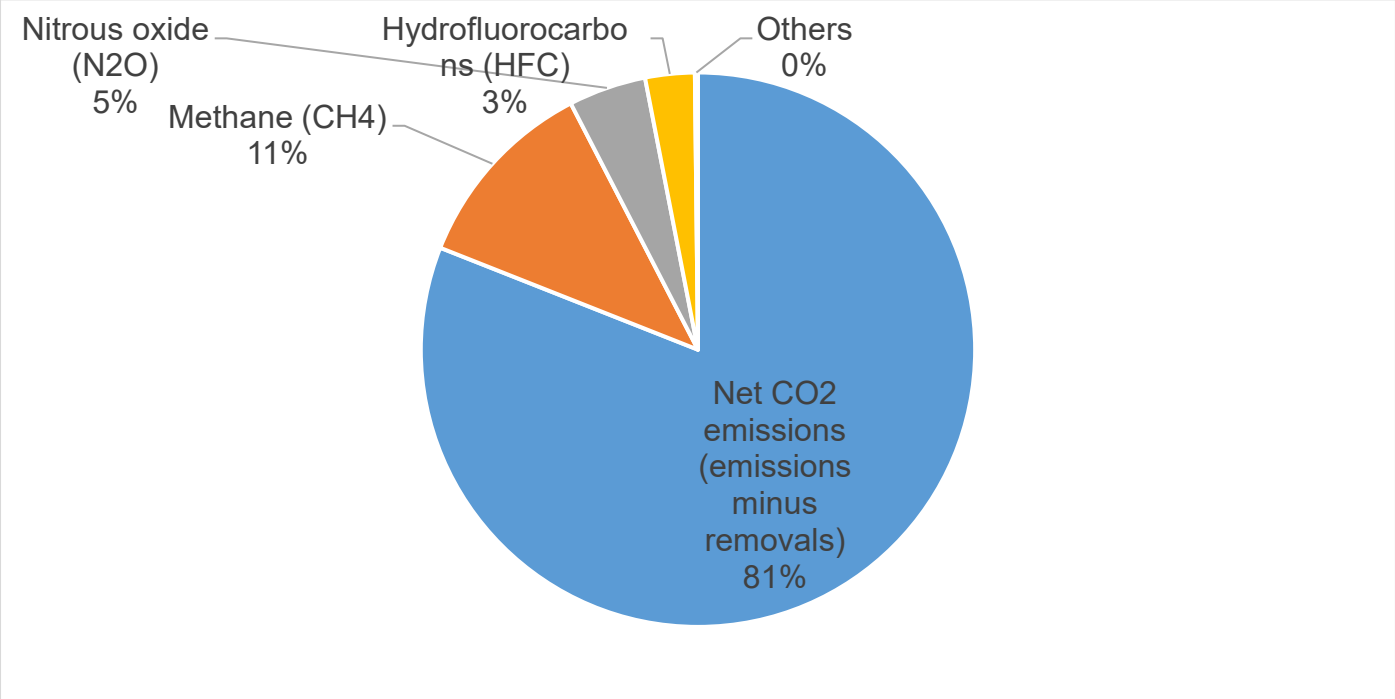

Figure 6: UK-wide Greenhouse Gas Emissions, 2018, by type of gas (tonnes CO_2e)

The Council's own carbon footprint has been calculated in line with the UK Government's Environmental Reporting Guidelines for Voluntary Greenhouse Gas Reporting[2], which is based on internationally-recognised standards from the World Resources Institute and World Business Council for Sustainable Development: the GHG Protocol Corporate Accounting and Reporting Standard, and the GHG Protocol Scope 3 standard.

Broadly, the methodology used was as follows:

1. Collect data on all activities under Cambridgeshire County Council control that emit GHGs (e.g. energy used, miles travelled, materials purchased). Actual data has been used wherever it is available.

[2] 2019 Environmental Reporting Guidelines, Chapter 3

2. Assumptions and estimates are only used where actual data was not available. Some activities have been excluded in cases where there was no data available and no basis upon which to estimate. Where this is the case, this is clearly stated below.
3. Convert data to metric tonnes of carbon dioxide equivalent (CO_2e), to calculate gross emissions using appropriate carbon conversion factors.
4. Note actions taken to reduce emissions (e.g. green energy tariff, solar generation), then also report net emissions.

The reporting period is the financial year 1 April 2019 to 31 March 2020.

The carbon conversion factors used for this reporting period are the 2019 UK Government published carbon conversion factors, except where there is no appropriate emissions factor given, or a more accurate conversion factor is available.

1.10 Scopes

Emissions-releasing activities are classified into three groups known as scopes. These are defined in the GHG Protocol Corporate Standard, and are described in Table 2 below.

Table 2: Scopes

Scope	Application to organisational carbon footprints	Application to geographical area carbon footprints
Scope 1 (Direct)	Emissions that occur directly from sites or assets owned or controlled by the organisation (e.g. gas boilers at own premises, fleet vehicles).	Emissions that occur within the boundary of the area being reported (e.g. houses, offices, factories, and roads within the County).
Scope 2 (Energy indirect)	Emissions from purchased electricity, heat or steam.	Emissions from electricity that is used within the area being reported.
Scope 3 (Other indirect)	Emissions that occur due to the organisation's activities / products / services, but at assets not owned or controlled by that organisation (e.g. travel in employee-owned vehicles or public transport, purchased goods and services).	Emissions from imported goods or services – i.e. used within the area being reported, but produced elsewhere.

Activities in all three scopes have been included in this report. However, Scope 3 emissions are more difficult to account for, because the required data often lies with other organisations. As a result, there is a higher degree of estimation in the scope 3 categories.

Carbon dioxide produced from biologically-sequestered carbon, e.g. from the combustion of biomass for electricity and / or heat generation, is not included in either scopes 1, 2, or 3. This is because the carbon dioxide would have been emitted anyway when the plants - from which the biomass is derived - decayed naturally at the end of their life. However, two other GHGs – nitrous

oxide and methane – are commonly emitted when biomass is combusted. These would not be emitted during natural decay and any nitrous oxide or methane emissions from biomass / biofuel consumption is included in the emissions under the three scopes. This is the approach generally taken in international accounting standards.

1.11 Boundary of Reporting, and Data Sources

All activities under the operational control of Cambridgeshire County Council are in scope, including those outsourced to third parties in cases where the overall control or responsibility still lies with the County Council.

A complete list of emissions sources included is shown below in Table 3.

Table 3: CCC Emissions Sources Included

Area	Activity	Methodology / Data source	Accuracy / Confidence level
Buildings and utilities	Gas burned for heating and hot water at CCC-controlled buildings	Usage data from utility bills	High
Buildings and utilities	Oil burned for heating and hot water at CCC-controlled buildings	Usage data from utility bills	High
Buildings and utilities	Electricity used at CCC-controlled buildings	Usage data from utility bills	High
Buildings and utilities	Electricity used for CCC street lighting, traffic signals and similar	Usage data from utility bills	High
Buildings and utilities	Refrigerant gases leakage from air conditioning units in CCC-controlled buildings	Based on leakage assumed from top-ups at servicing, applied to CCC list of A/C units, type of refrigerant gas and capacity.	High
Buildings and utilities	Water supply and wastewater collection and treatment	Usage data from utility bills. Some of this is estimated.	Medium
Buildings – maintained schools	Gas burned for heating and hot water at Cambridgeshire schools, where purchased through ESPO.	Gas usage data. Some schools will not have gas data because they do not use any gas, for example those with oil heating. A small number of schools we do not have data for.	Medium
Buildings – maintained schools	Electricity used at Cambridgeshire schools, where purchased through ESPO.	Electricity usage data.	High
Buildings – maintained schools	Oil and LPG used for heating at some Cambridgeshire schools.	Heating fuels usage data provided by the schools.	Medium
Transport	Travel in CCC pool cars. Travel in hire cars.	Data from a combination of mileage reports for pool cars and invoices for hire cars. Based on miles travelled and type of car where known.	High

Area	Activity	Methodology / Data source	Accuracy / Confidence level
Transport	Social and education transport in own fleet. Social and education transport by contractors (including home to school transport). Social and education transport by volunteer drivers.	Data from a combination of fuel card reports for some vehicles and estimated mileage for others. Fuel consumption data and type of fuel is used where known. Actual mileage records used if no fuel usage data available. Estimated mileage used if neither fuel usage nor actual mileage available.	Medium
Transport	Highways maintenance vehicles. Gritting fleet. Libraries vehicles.	Data from fuel usage (covering most highways vehicles) and estimated mileage for others (mileage used only where fuel usage is unknown).	High
Transport	Employee travel on CCC business in own vehicles	Data from miles claimed on employee expenses system.	High
Transport	Travel by public transport incl flights, trains, buses and taxis, where known	Currently only have partial data on this. Some train and bus travel estimated from spend.	Low
Transport	Hotel stays on CCC business	Currently only have partial data on this. Estimated from spend.	Low
Transport	Subsidised public bus routes	Responsibility of the C&P Combined Authority, delegated back to CCC. Estimated based on routes and passenger numbers data. Total route distance calculated from maps and assumed that average passenger travels 50% of total route distance.	Medium
Transport	Employee home to work commuting	Estimated based on annual staff travel survey in October. A sample of employees provided detailed information on their modes of travel and distance travelled for one week. Assumed this was representative of all employees and based on a typical week. Extrapolated to all employees and assumed working 47 weeks per year.	Low
Transport	Waste transport	Data provided by Amey on litres of diesel used.	High
Waste	Waste produced from CCC sites – general waste, recycling and confidential paper waste	Data from waste transfer notes / invoices.	High
Waste	Disposal / treatment of Cambridgeshire waste (as the statutory waste authority)	Based on waste volumes collected by all the City and District Councils in Cambridgeshire, and from all of the Household Waste Recycling Centres in Cambridgeshire, and proportions of waste recycled, composted and landfilled. Landfill gas emissions modelled using same method as CUSPE report (3), applied to updated data set.	Medium

Area	Activity	Methodology / Data source	Accuracy / Confidence level
Agriculture and land use	County farms / rural estates land use	Estimated based on area of land used for livestock, number of cattle, number of sheep, and area of land used for crops, with UK average GHG emissions rates for these uses (based on UK GHG inventory) applied. Assumed to be the same as previous year.	Low
Purchased goods and services	Construction and buildings works	Inventory of each material used and quantity (tonnes) data from project information and/or capital works contractors (where available). Materials used multiplied by the relevant conversion factors for each material. This data was available for the majority of the total spend on capital works, with the remaining spend assumed to have a similar composition of materials and emissions estimated on a pro rata basis.	High
Purchased goods and services	Highways works	Inventory of each material used and quantity (tonnes) data from project information and/or capital works contractors (where available). Materials used multiplied by the relevant conversion factors for each material. Data provided by our highways contractor (Skanska) for the works they did on our behalf.	High

1.12 Exclusions

The following activities have been excluded from this carbon footprint calculation:

Table 4: Exclusions

Area	Activity	Reason for exclusion
Buildings and utilities	Diesel used for on-site generators	No data currently available. Unable to estimate. Expect this to be very low.
Buildings and utilities	Energy used at sites outside of CCC control e.g. space in a shared building, third party premises, and CCC-owned sites let to commercial or private tenants.	We do not have access to this data.
Buildings and utilities	Biomass	There are currently no biomass facilities at any CCC sites or maintained schools.
Schools	Gas used at those schools that do not purchase energy through ESPO.	We do not have access to this data.
Schools	Electricity used at those schools that do not purchase energy through ESPO	We do not have access to this data.
Schools	Oil and other heating fuel data for some schools	We only hold partial data for heating fuels used at schools.
Schools	All data for Academy schools.	These schools are outside of Council control.
Transport	Travel by public transport other than that included in scope above.	We do not have access to this data.
Transport	Other travel by third parties, contractors and suppliers (other than those mentioned in scope)	We do not have access to this data.

Area	Activity	Reason for exclusion
Waste	Other waste streams from CCC sites not mentioned in scope above e.g. batteries, WEEE, skip waste, green waste.	We do not have access to this data.
Waste	Collection and transport of Cambridgeshire waste	This is not CCC's responsibility.
Waste	Transport, disposal and treatment of private / third party commercial waste	This is not CCC's responsibility.
Purchased goods and services	All other goods and services purchased by CCC not accounted for elsewhere	Only spend data available. No accurate method available to convert spend to emissions.
All	All other activities not mentioned in scope above.	No known GHG emissions other than those already listed.

Cambridgeshire's Carbon Footprint

The carbon footprint of the geographical area of Cambridgeshire comprises GHG emissions from commercial and industrial sources, domestic homes, transport, agriculture, waste and land use. The vast majority of this is outside of the control of the Council.

There are a number of ways to identify the carbon footprint of the geographical area. We have used two methodologies, each of which have different merits:

- CO_2 emissions by local authority area, data published by the UK Government (BEIS)
- Research by the Cambridge University Science and Policy Exchange (CUSPE)

Each of these methods is discussed below.

1.13 BEIS CO_2 Emissions Data for Cambridgeshire

The Government Department for Business, Energy and Industrial Strategy (BEIS) currently publishes detailed data at a local authority (district) level, on emissions of carbon dioxide (4), but does not provide data at a local authority level on emissions of other greenhouse gases. Carbon dioxide (CO_2) emissions account for 81% of nationwide GHG emissions.

2018 is the most recent year of data currently available. The total CO_2 emissions from Cambridgeshire in 2018 was 4,523,233 tonnes, and the highest share of that was from transport (44%).

The trend in Cambridgeshire is reflective of the national trend: emissions slowly and steadily declining over the last few years, due mainly to the decarbonisation of the electricity grid. See Figure 7 below. Total CO2 emissions in the county have reduced by 1.8% since the previous year.

Emissions from agriculture and waste are not included in these figures because they primarily produce methane and this data is for CO_2 only.

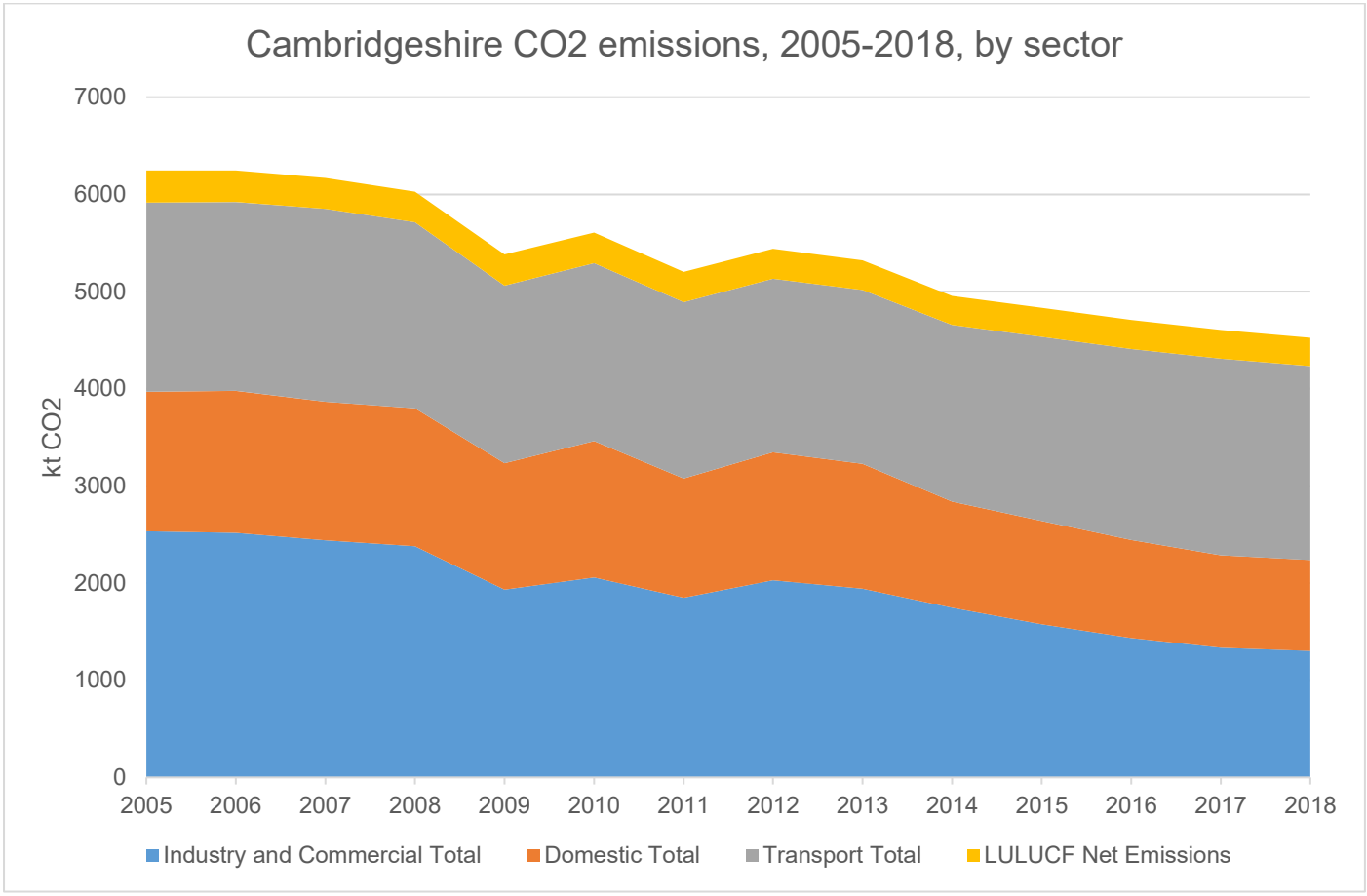

Figure 7: Cambridgeshire CO_2 emissions, 2005 to 2018. (LULUCF =Land Use, Land Use Change and Forestry.)

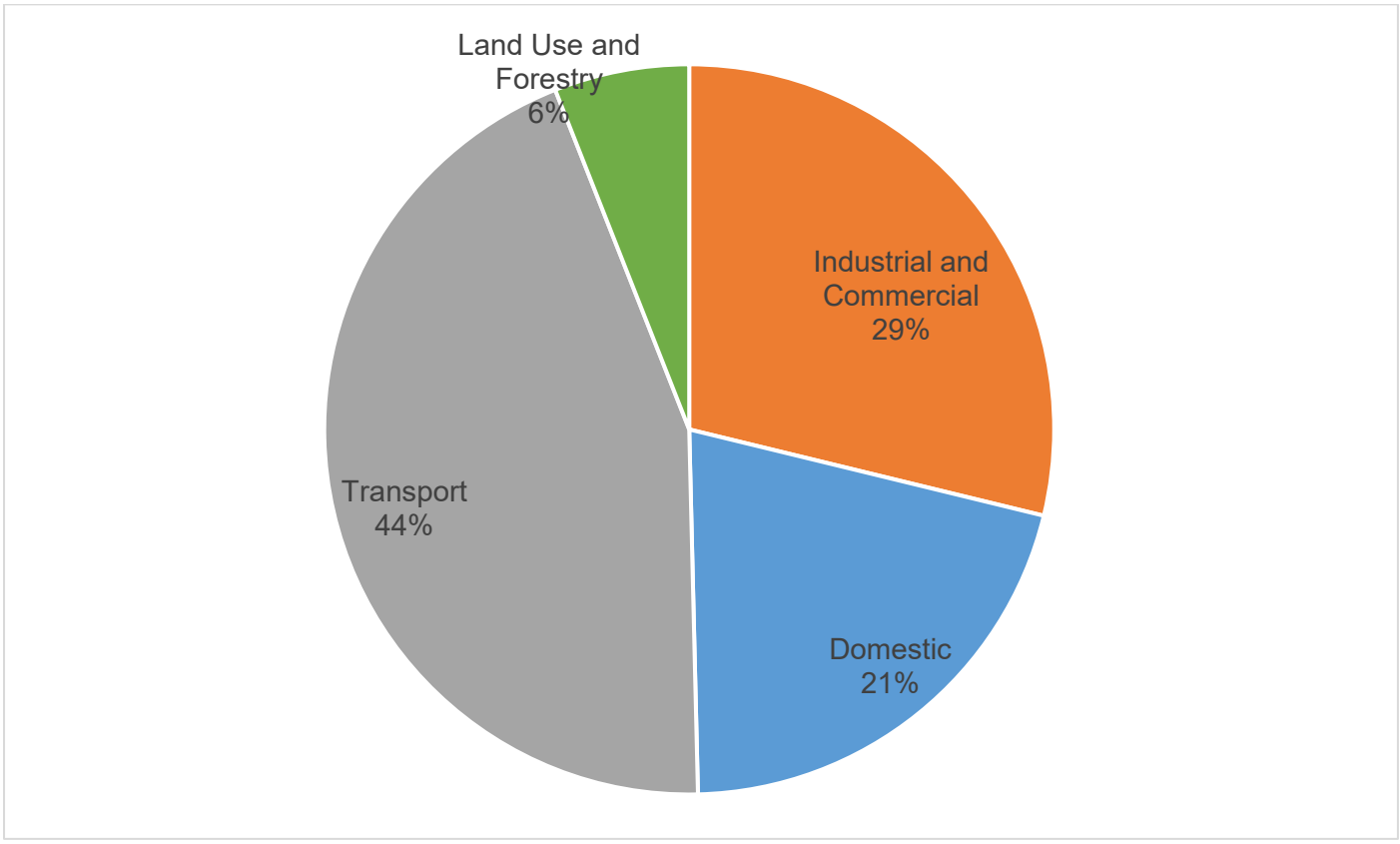

Figure 8: Cambridgeshire county CO_2 emissions, 2018, by source

This is further broken down into sub-sectors, as shown in Figure 9.

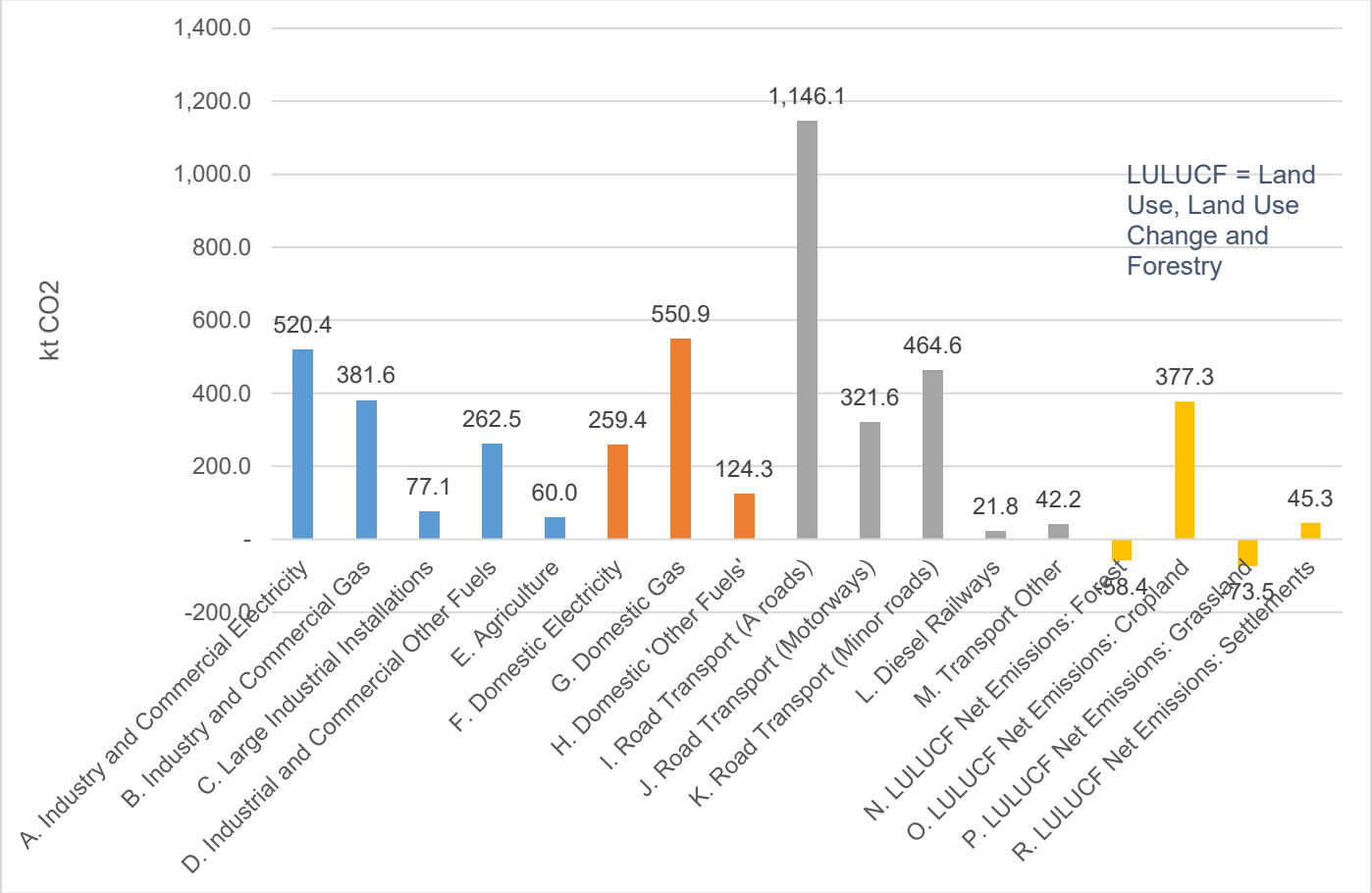

Figure 9; Cambridgeshire county CO2 emissions, 2018, by sub-sector

1.14 CUSPE Carbon Footprint Project

In 2019, Cambridgeshire County Council's annual collaboration with the Cambridge University Science and Policy Exchange (CUSPE) brought a team of researchers together to develop an evidence base of current carbon emissions for Cambridgeshire and Peterborough, improving on the 'CO_2-only' data published by the department for Business Energy and Industrial strategy, to provide a more accurate carbon footprint for the area.

In October 2019, the Council adopted the CUSPE team's report (3) as an evidence base for its Climate Change and Environment Strategy. This report found that Cambridgeshire and Peterborough communities together produced **6.1 million tonnes** of carbon dioxide equivalent (CO_2e) in 2017. This data does not show how much of that total was for Cambridgeshire and how much was for Peterborough.

The breakdown of this by sector is shown in Figure 10 below.

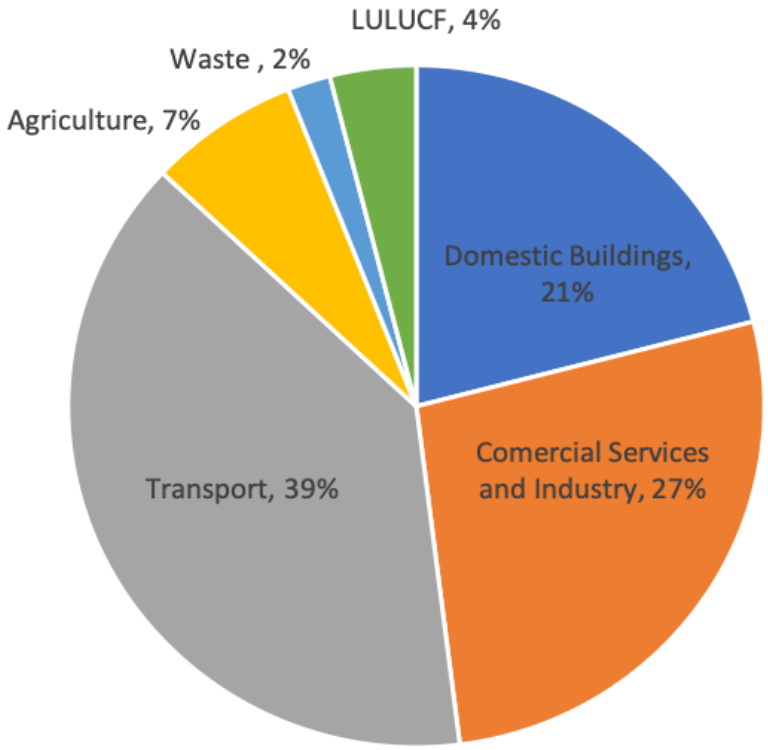

Figure 10: Breakdown of Cambridgeshire and Peterborough GHG emissions by source, 2017.

The CUSPE GHG emissions data differ from the BEIS GHG emissions data in a few key ways:

- CUSPE data includes both Cambridgeshire and Peterborough. BEIS covers all local authority areas in the UK but we have extracted the data for Cambridgeshire only.
- CUSPE data includes all GHGs, whereas the BEIS data is for CO2 only.
- The CUSPE report was a one-off research project, based on 2017 data, whereas the BEIS data is updated annually.
- Some small differences in methodology.

The CUSPE team also noted that “peatland emissions are not currently counted in the emissions inventory, but could significantly affect Cambridgeshire’s reported emissions - increasing them by as much as 90%. Whilst this is technically just a change in accounting, it does highlight the need for further research on peatland emissions and to prioritise the restoration and preservation of the area’s peatland. In time and with the correct investment, peatland has the potential to change from a net emissions source to a net sink.” (CUSPE, 2019)

Glossary

Expression	Meaning
Carbon	Used as abbreviation for carbon dioxide or carbon dioxide equivalent
Carbon Budget	An amount of carbon dioxide that a country, company, or organization has agreed is the largest it will produce in a particular period of time.
CO_2	Carbon dioxide
CO_2e	Carbon dioxide equivalent: A standard unit for measuring carbon footprints. It expresses the impact of each different greenhouse gas in terms of the amount of CO_2 that would create the same amount of warming, using GWPs.
GHG	Greenhouse gas: a gas that absorbs and emits radiant energy within the thermal infrared range. Greenhouse gases cause the greenhouse effect.
Greenhouse effect	The heating of the earth's surface caused by solar radiation trapped by atmospheric gases (rather like a greenhouse roof).
GWP	Global Warming Potential: this is a measure of how efficient a chemical is at trapping heat in the atmosphere relative to carbon dioxide. For example, methane has a GWP of 34 and nitrous oxide has a GWP of 298[3]. (5) By definition, CO_2 has a GWP value of 1. Quantities of GHGs are multiplied by their GWP to give results in units of carbon dioxide equivalent (CO_2e).
Kt	kilotonne = 1000 metric tonnes
LULUCF	Land Use, Land use change and forestry.
Mitigation	Methods to reduce or prevent greenhouse gases entering the atmosphere.
Net zero	Achieving an overall balance between emissions produced and emissions taken out of the atmosphere. This can take place on different scales and is often achieved through offsetting.
Offset	An action intended to compensate for GHG emissions by an equivalent quantity of reductions elsewhere or removals.
Sequestration	The long-term removal, capture or sequestration of carbon dioxide from the atmosphere to slow or reverse atmospheric CO_2 pollution and to mitigate or reverse global warming.
WTT – Well to tank	The emissions associated with extracting, refining and transporting fuels to the point of purchase.
Zero carbon	No emissions of GHGs at all

[3] Fifth Assessment Report of the Intergovernmental Panel on Climate Change

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