One Planet Cardiff | Our vision for a Carbon Neutral City by 2030

Analysis of Council Operational and City-wide emissions

Annual Review 2024/25

CARDIFF CAERDYDD

CRYFACH TECACH GWYRDDACH | STRONGER FAIRER GREENER

This document is available in Welsh / Mae'r ddogfen hon ar gael yn Gymraeg

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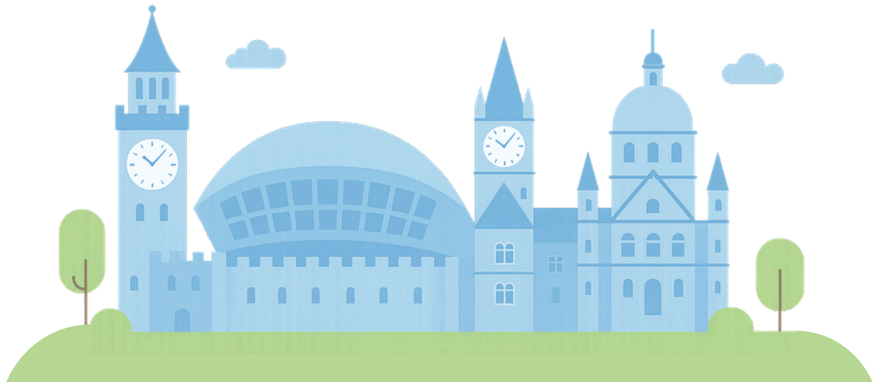
Background

As part of our response to the Welsh Government's ambition for a carbon neutral public sector in Wales by 2030, the Council's operational emissions are calculated annually and submitted to Welsh Government. The findings of the fourth annual Operational Carbon Analysis are discussed in the following pages of this report, with a comparison between the current reporting year (2024/25), the 2019/20 baseline and the previous year (2023/24).

Also presented are the carbon statistics produced by Central Government relating to the city as a whole. This reporting provides the basis for the monitoring of our progress against the One Planet Cardiff Strategy target of a Carbon Neutral City by 2030.



Analysis of Carbon Emissions

The initial 2021 One Planet Cardiff Strategy reported the Council's estimated carbon emissions at a 2019/20 baseline year, alongside an analysis for 2020/21. This was to ensure that the One Planet Cardiff carbon baseline related to "normal" pre-pandemic activities, so as not to be skewed by the various implications of the Covid lockdowns. The key recognition from that analysis was that the carbon emissions "caused" by the Council's procurement activities dwarfed all other types of more direct emissions, i.e., those from heating and powering buildings and from our travel and mobility activities.

The Council continues to use the Welsh Government carbon reporting framework methodology to record its emissions in a consistent way that aligns with other public sector organisations across Wales. This framework requires us to use "activity" based reporting under the following headings:

- Buildings
- Street lighting
- Fleet
- Business travel
- Commuting
- Homeworking
- Waste
- Land based emissions and sequestration (carbon capture)
- Supply chain (emissions arising from Procurement spend)

Welsh Government produce guidance for local authorities to calculate their carbon emissions, and where there are changes to the methodology we backcast our carbon data for the baseline year plus previous year to enable comparability of data.

The Council has developed a Corporate Carbon Dashboard which will make the Council's operational emissions accessible to Council managers and disaggregates the corporate emissions at a broad Directorate level. This is to support Directorate Climate Change Leads in identifying their main carbon emission sources and to start planning proactively to address these.

THE CARBON MONITORING DASHBOARD

Headline Operational Data

Between 2019/20 and 2024/25, and excluding procurement emissions, this analysis showed that the Council's direct operational emissions reduced from 51,148 tonnes CO_2 e to 42,747 tonnes CO_2 e. This represented a **16% reduction since the start of the One Planet Cardiff strategy.** There have been emissions reductions in most activity areas, except fleet, and particularly in street lighting and waste (see table to the right). However, the increase in procurement emissions negates these emissions reductions and **overall there is a 38% increase in emissions over this period.**

Between 2023/24 and 2024/25, and excluding procurement emissions, there is a 2% increase in operational emissions. Of note is that the initial decrease in buildings related emissions from 2019 to 2023, predominantly due to the reduced use of Council properties through hybrid working initiatives and estate rationalisation, seems to have now reached a settled position. There was a marginal 1% increase in buildings emissions between 2023/24 and 2024/25, and the slightly colder winter of 2024/25 compared with the mild winter of 2023/24 may account for this minimal increase. The emissions reductions in street lighting also now seem to have levelled off with only a 1% reduction recorded between 2023/24 and 2024/25, after a 38% reduction from the baseline year (2019/20) to 2023/24. Fleet emissions continue to increase with a 9% increase between 2023/24 and 2024/25.

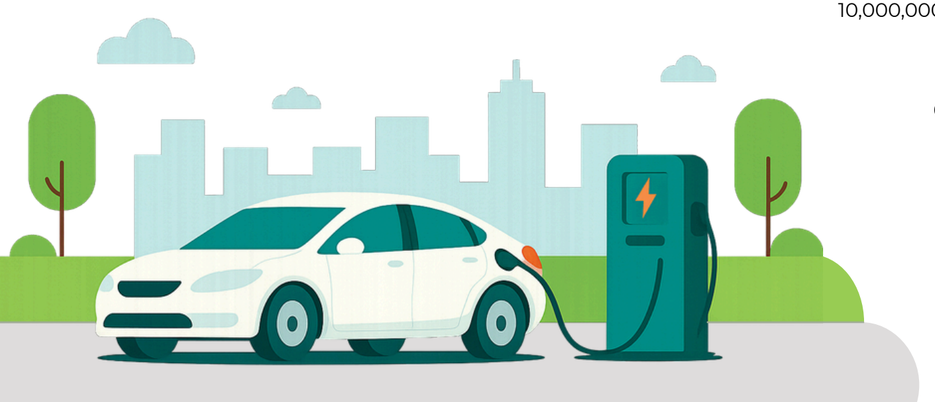
TOTAL OPERATIONAL CARBON EMISSIONS BASELINE YEAR (2019/20), PREVIOUS YEAR (2023/24) AND CURRENT YEAR (2024/25)

CATEGORIES	2019/20	2023/24	2024/25	% Change from baseline	% Change from previous year
	Carbon (kg CO_2 e)	Carbon (kg CO_2 e)	Carbon (kg CO_2 e)		
Buildings	27,605,290	22,934,234	23,268,931	-16%	1%
Street lighting	4,035,571	2,518,028	2,493,224	-38%	-1%
Fleet	5,744,400	5,513,308	6,029,992	5%	9%
Business travel	713,496	565,019	561,953	-21%	-1%
Commuting	12,684,031	10,949,309	10,542,820	-17%	-4%
Homeworking	65,040	1,065,087	1,395,259	2045%	31%
Waste	2,372,527	348,698	527,240	-78%	51%
Land emissions	-2,072,623	-2,074,728	-2,072,623	0%	0%
Procurement	125,262,100	166,879,846	201,151,615	61%	21%
Totals	176,409,832	208,698,801	243,898,412	38%	17%
Total (no procurement)	51,147,732	41,818,955	42,746,797	-16%	2%

Headline Operational Data

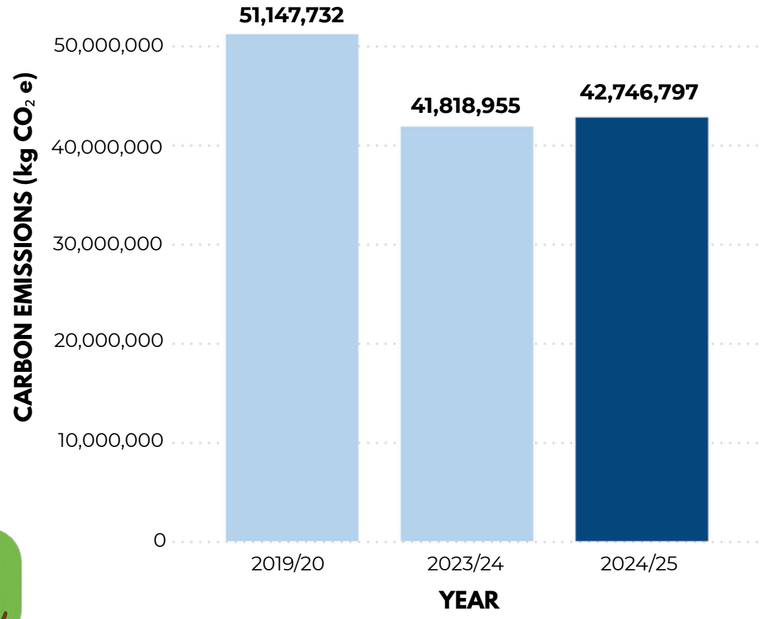
The data is showing that the initial positive trend of carbon reduction across the Council operations since the baseline year of 2019/20 seem to have now reached a peak or potentially reached a settled position. Buildings, street lighting, business travel, and commuting emissions remain fairly similar to the previous year, while fleet, procurement and home working related emissions have all increased. Waste also shows an increase in emissions, although this is due to a change in reporting methodology and without this methodology change, waste emissions continue to reduce.

In summary, the data shows that we are not continuing to reduce our emissions as a Council year on year and therefore it will be challenging to reach our organisational 2030 carbon neutral target. The following to the right provide further details.

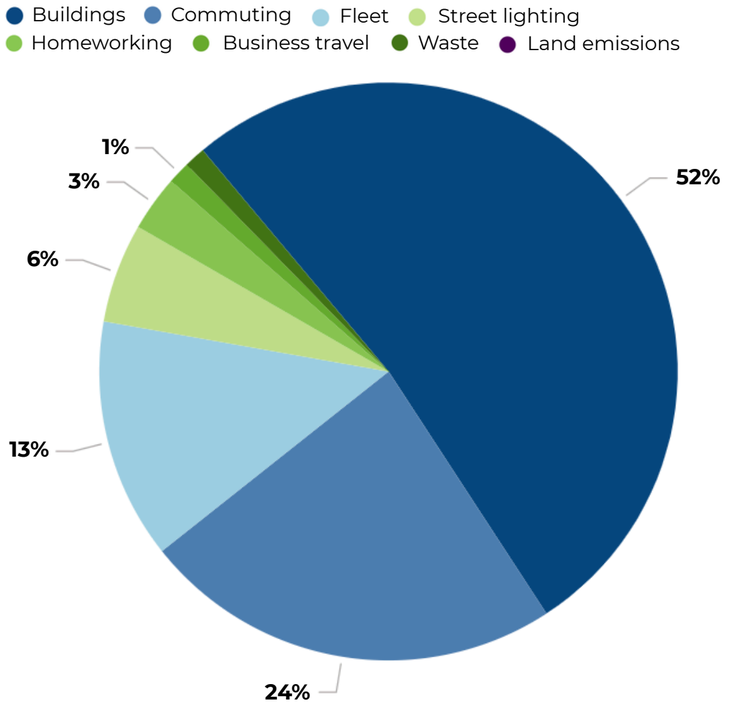


YEAR ON YEAR COMPARISON OF OPERATIONAL CARBON EMISSIONS WITHOUT PROCUREMENT

For Baseline (2019/20), Previous Year (2023/24) and Current Year (2024/25)



BREAKDOWN OF OPERATIONAL CARBON EMISSIONS WITHOUT PROCUREMENT FOR 2024/25

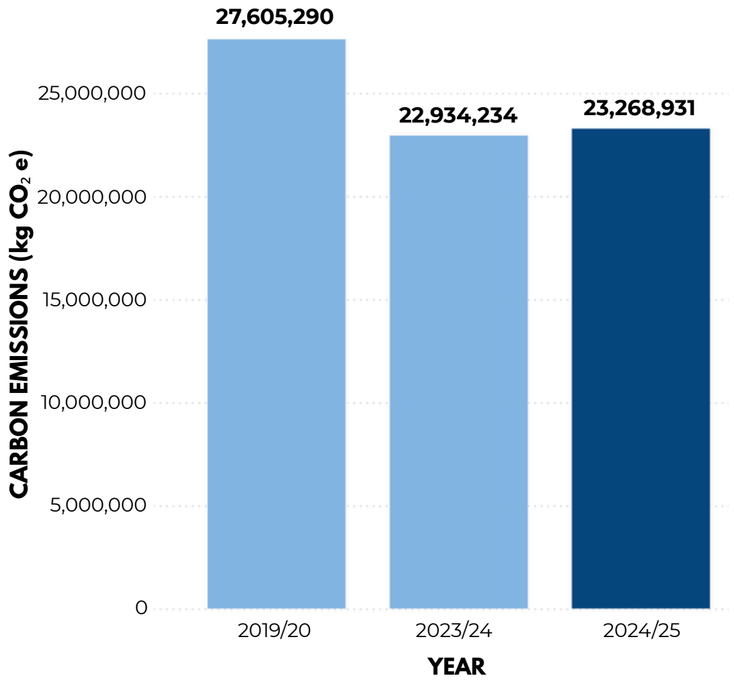


Buildings

Building emissions reduced by 16% between the baseline year of 2019/20 and 2024/25 but increased by 1% between 2023/24 and 2024/25.

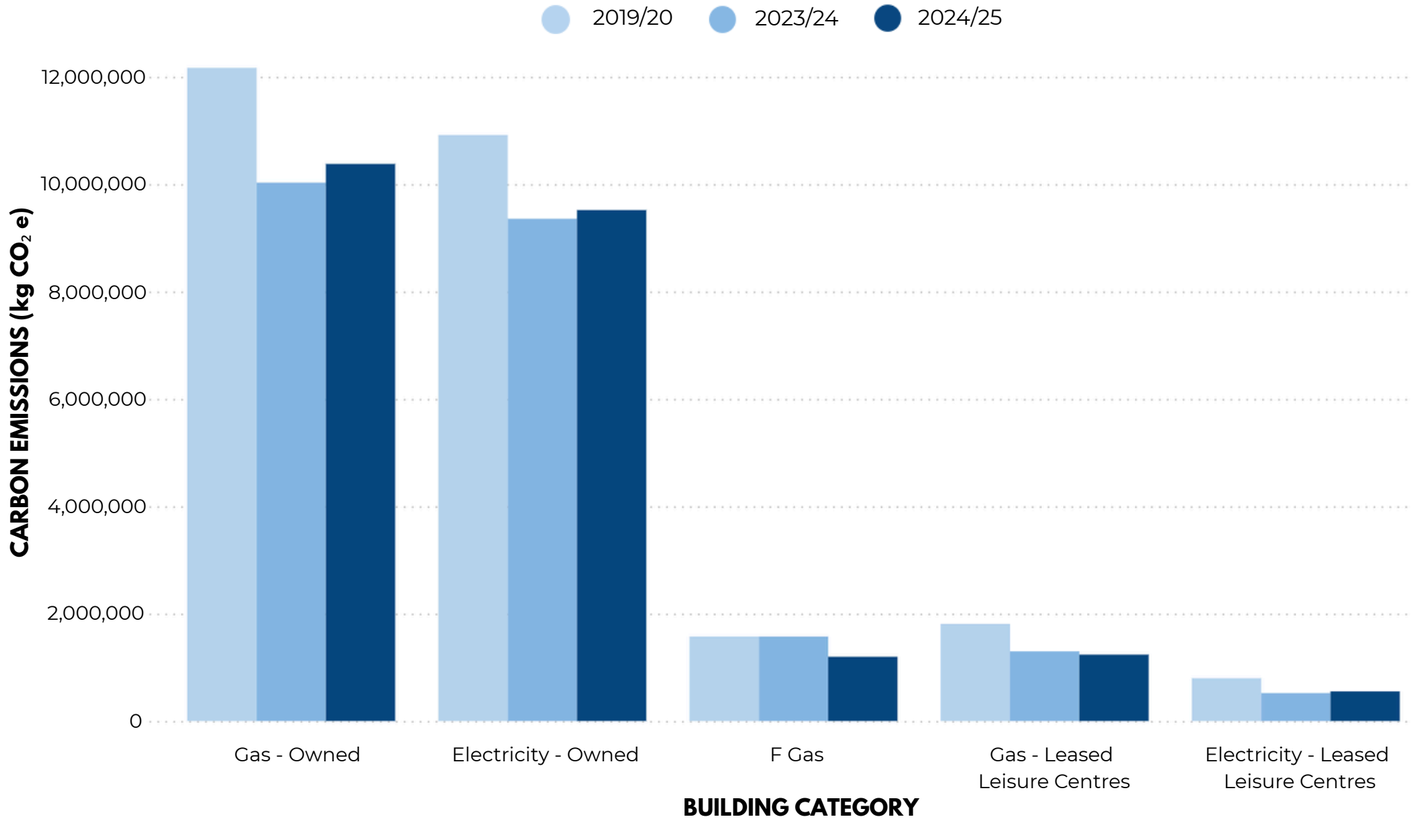
COMPARISON OF TOTAL BUILDING EMISSIONS (kg CO_2 e)

For Baseline (2019/20), Previous Year (2023/24) and Current Year (2024/25)



COMPARISON OF THE BREAKDOWN OF TOTAL BUILDING EMISSIONS (kg CO_2 e)

For Baseline (2019/20), Previous Year (2023/24) and Current Year (2024/25)



Buildings

CURRENT POSITION

The downward trend identified between the baseline year and 2024/25 is largely attributed to the reduced use of Council properties resulting from hybrid working, site relinquishment and other re-purposing of sites. Site specific points to note here include:

- The commencement of a major energy efficiency refurbishment, including the mains gas heating from City Hall
- Closure of St Davids Hall
- The repurposing of County Hall
- Handover of Wilcox House
- Addition of three 'Net Zero Schools' (with the closure of their old, high gas consuming sites).

While there was a mix of carbon reduction successes, the slight increase in emissions between 2023/24 and 2024/25 can be reflected in inefficiencies and / or a delay to many carbon reduction projects identified for 2024/25. Most recently, Re:fit 4 was not able to be fully realised due to the appointed contractor entering administration. That being said the Council was able to progress phase 1a and phase 1b of the Re:fit 4 plan via direct awards. In addition, the slightly colder winter of 2024/25 compared with the mild winter of 2023/24 may account for this minimal increase. The emissions data trend for Cardiff Council's buildings is similar to that reported by the Welsh Government Energy Service for the overall public sector buildings carbon emissions since 2019.

Hybrid working and the re-purposing of sites still contributes a large amount in the keeping of carbon at lower than pre-Covid levels. While some emissions reductions should be realised when the Re:fit programme of works can continue on the schools portfolio, significant carbon decreases may not be seen until later years of the One Planet Cardiff Strategy due to the time required for large schemes to be devised, procured, and implemented, and for the electricity emissions factor to decrease as renewable energy contributes more to the decarbonisation of the national grid.

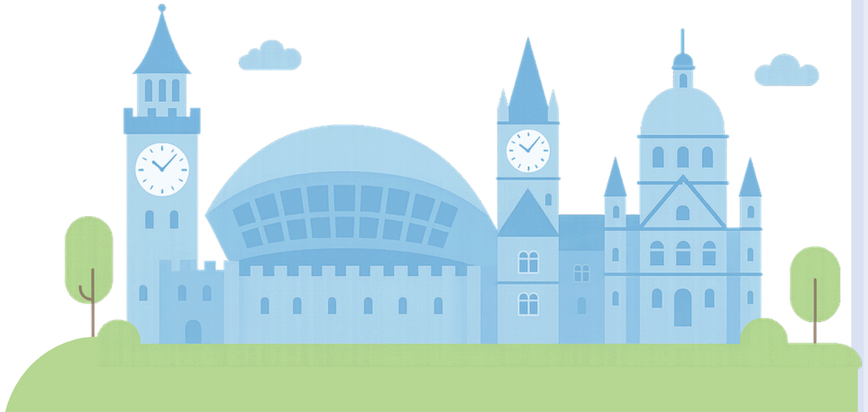
It should be noted that both the nationally set electricity and gas emissions factors have remained fairly similar over the past 3 years, although they have decreased since the baseline year of 2019/20.

FUTURE WORK

Modernisation of the estate continues to be the most challenging area of focus due to the resource, time, scale and complexity associated with the type of physical interventions required to make a significant reduction to carbon footprint in buildings. The main area of challenge is in the school's estate including statutory operation, types of properties, potential disruption resulting from large scale work, and scale and cost of the interventions required.

This is all alongside limited funding options. We are now considering and planning our programme of schemes for 2026/27 which will likely consist of specific and focussed investments across the estate i.e. LED, PV etc., together with new refit schemes once that framework opens again (Re:fit 5). Therefore, building emissions reductions should start to be realised when the Re-fit programme of works can continue on the schools portfolio.

NB All data reported to Welsh Government and in this report include Scope 3 emissions, as well as Scopes 1 & 2. Energy Management report their buildings energy use data internally without scope 3 data (approx. 25% of total emissions), so it should be noted that the two data sets are not directly comparable.

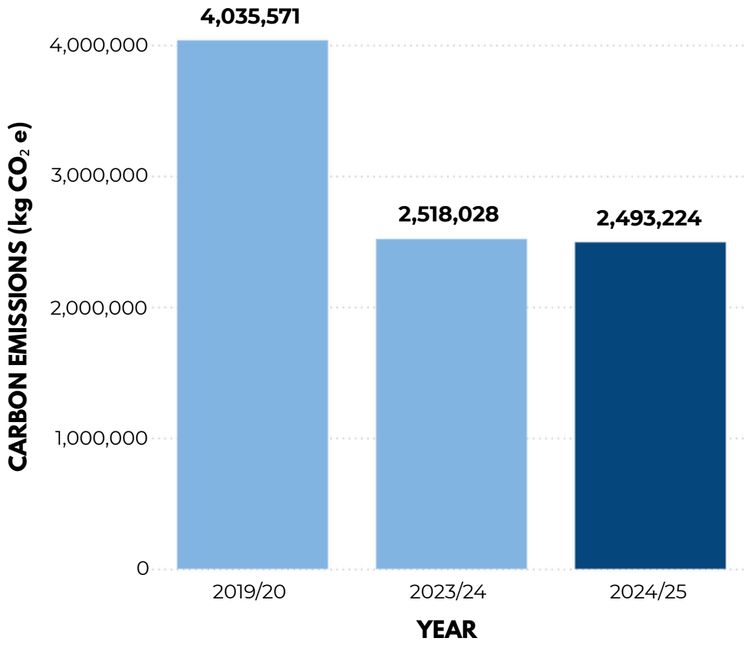


Street lighting

Street lighting emissions have reduced by 38% between the baseline year of 2019/20 and 2024/25, but by only 1% from 2023/24 to 2024/25.

COMPARISON OF TOTAL STREET LIGHTING EMISSIONS (kg CO_2 e)

For Baseline (2019/20), Previous Year (2023/24) and Current Year (2024/25)



CURRENT POSITION

This data trend can be mainly attributed to the conversion of circa 24,000 residential lanterns from metal halide to LED which was started in September 2021 and completed in December 2023. The completion of this project means all the council's circa 39,000 highway street lighting lanterns have now been converted to LED and are controlled by a Central Management System (CMS).

The CMS is used to dim the lighting from midnight until 6am primarily on the residential network and this has further reduced energy consumption and helped to lower CO_2 emissions.

FUTURE WORK

There may be some further small reductions in the future as we convert or de-illuminate our street furniture such as signs and bollards as funds become available. However, this will be small amounts due to the lower initial consumption of these 5,000 assets. Conversion of traffic signal lights also offers the opportunity of further reductions, but again this is subject to funding and will inevitably take place over several years as opposed to in one go. In addition, emissions from this activity area will also decrease with the broader National Grid decarbonisation trends.

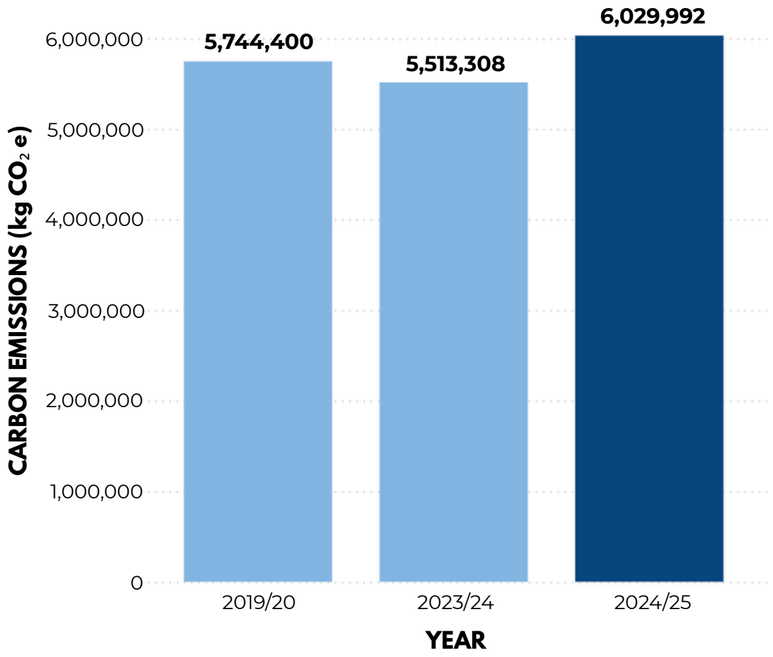
It should also be considered that any year on year future reduction in carbon from changes to our street furniture / traffic signal assets will likely be offset as our adopted assets increase across the council due to new works and housing expansion in Cardiff.

Fleet

Fleet emissions increased by 5% between the baseline year of 2019/20 and 2024/25, and by 9% between 2023/24 and 2024/25.

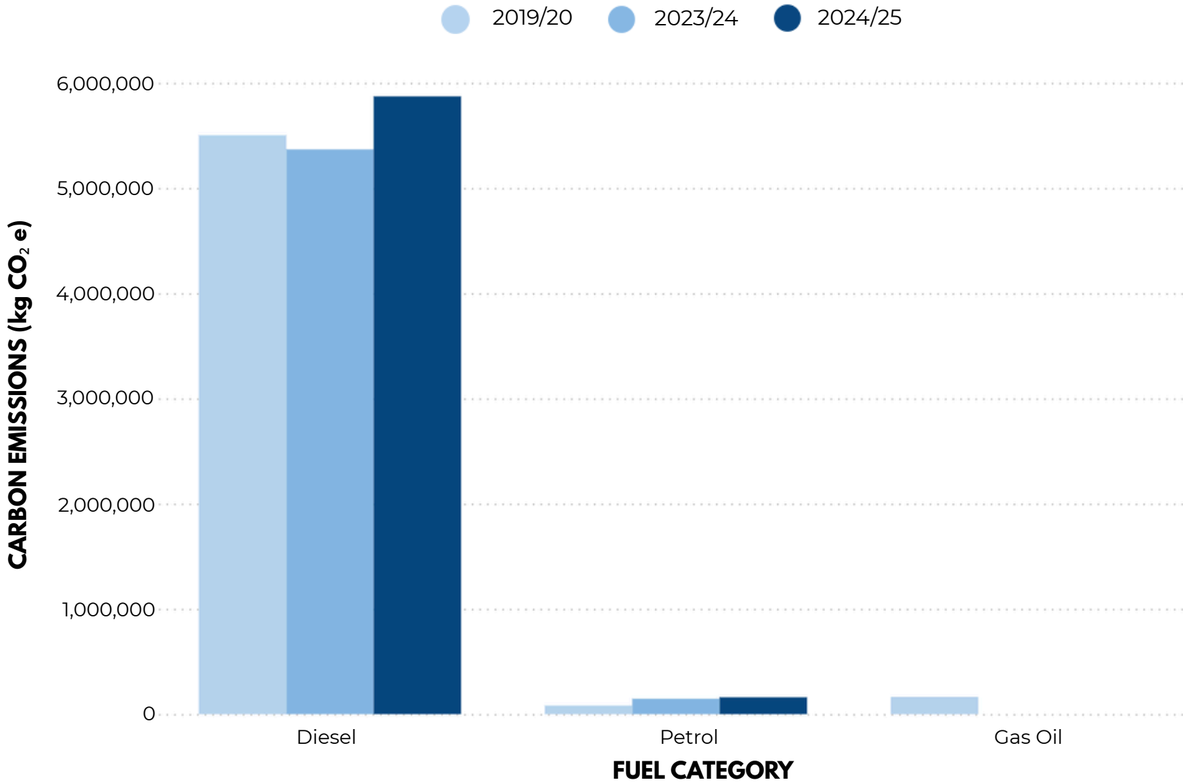
COMPARISON OF TOTAL FLEET EMISSIONS (kg CO_2 e)

For Baseline (2019/20), Previous Year (2023/24) and Current Year (2024/25)



COMPARISON OF THE BREAKDOWN OF TOTAL FLEET EMISSIONS (kg CO_2 e)

For Baseline (2019/20), Previous Year (2023/24) and Current Year (2024/25)



Fleet

CURRENT POSITION

Until 2024/25 we had seen a slight decrease in emissions from fleet year on year. This has primarily been due to a decrease in the numbers of vehicles in the fleet and a move to include electric vehicles. The recent increase in emissions (from the baseline and from the previous year) is primarily due to an increase in our fleet numbers in some service areas and particularly Waste Management, Housing and Social Services. This trend of increase in fleet mileage and emissions is also reported by the Welsh Government Energy Service in its 2024/25 review of all Welsh public bodies carbon emissions.

Increases in fuel used from 2023/24 to 2024/25 are indicated in the table to the right.

FUTURE WORK

Central Transport Services, working with Directorates, are continually looking to increase the number of electric vehicles (currently out of the 957 vehicles in our fleet we have 114 being fully electric). They are developing a fully costed fleet replacement programme with the aim of transitioning wherever possible to electric vehicles. This programme and its financial implications will be considered later in the 26/27 financial year.

COMPARISON OF THE TOTAL LITRES OF FUEL USED IN THE PREVIOUS YEAR (2023/24) AND CURRENT YEAR (2024/25)

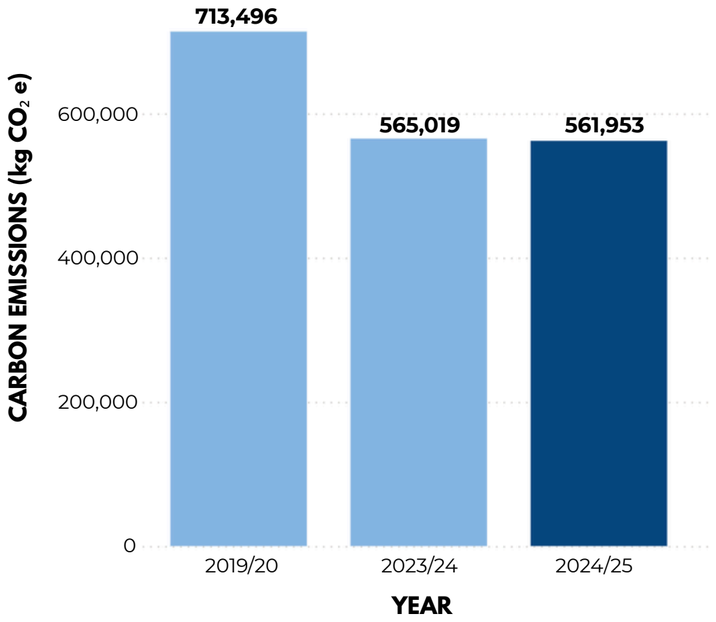
DIRECTORATE	TOTAL LITRES USED IN 2023/24	TOTAL LITRES USED IN 2024/25	DIFFERENCE IN LITRES
ADULTS HOUSING & COMMUNITIES	320,077	338,904	18,827
CHILD SERVICES	23,315	30,840	7,525
ECONOMIC DEVELOPMENT	1,226,523	1,446,396	219,873
EDUCATION	12,686	13,327	641
PERFORMANCE	0	3,294	3,294
RESOURCE	19,247	20,678	1,431

Business Travel

Business travel emissions decreased by 21% between the baseline year of 2019/20 and 2024/25, and by 1% between 2023/24 and 2024/25.

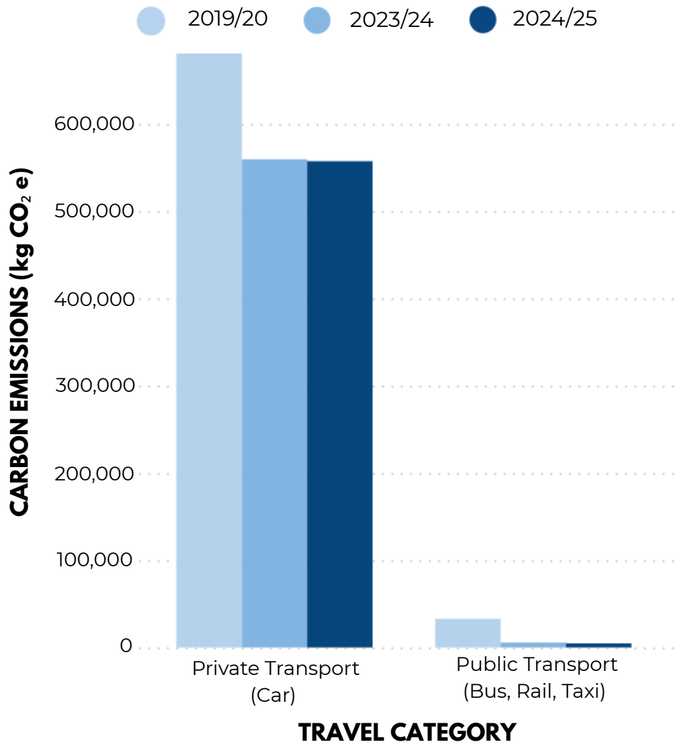
COMPARISON OF TOTAL BUSINESS TRAVEL EMISSIONS (kg CO_2 e)

For Baseline (2019/20), Previous Year (2023/24) and Current Year (2024/25)



COMPARISON OF THE BREAKDOWN OF TOTAL BUSINESS TRAVEL EMISSIONS (kg CO_2 e)

For Baseline (2019/20), Previous Year (2023/24) and Current Year (2024/25)



CURRENT POSITION

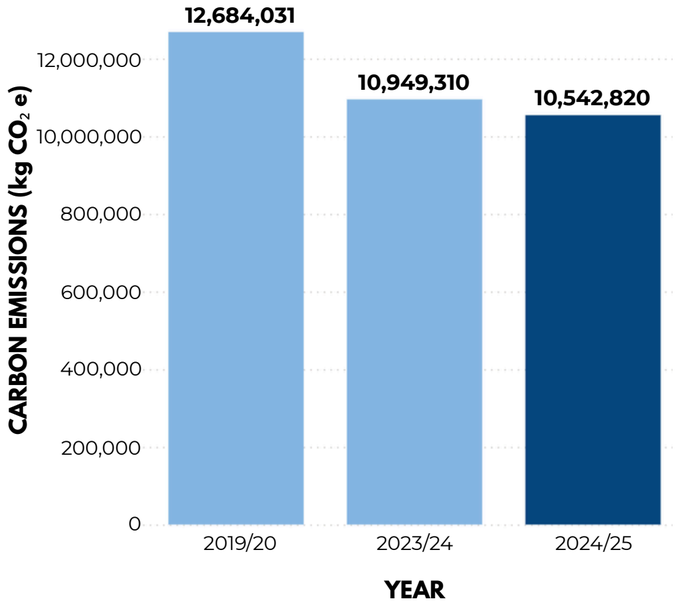
Business travel (i.e. travel in private cars and public transport trips for the purposes of conducting Council business during the working day), decreased from the baseline year 2019/20 due to a decrease in claims for personal car use over this period. Personal car claims are down from 1,934,766 miles in 2019/20 to 1,642,634 miles in 2024/25. This is likely supported by the move to online meetings but also reflects some changes to service delivery methodologies, such as the introduction of e-bikes and re-zoning of locality areas to reduce the need for some community based staff to travel. Between 2023/24 and 2024/25, both claims for personal car use and for bus, rail & taxi have decreased slightly by 1%.

Commuting

Commuting emissions decreased by 17% between the baseline year of 2019/20 and 2024/25, and by 4% between 2023/24 and 2024/25.

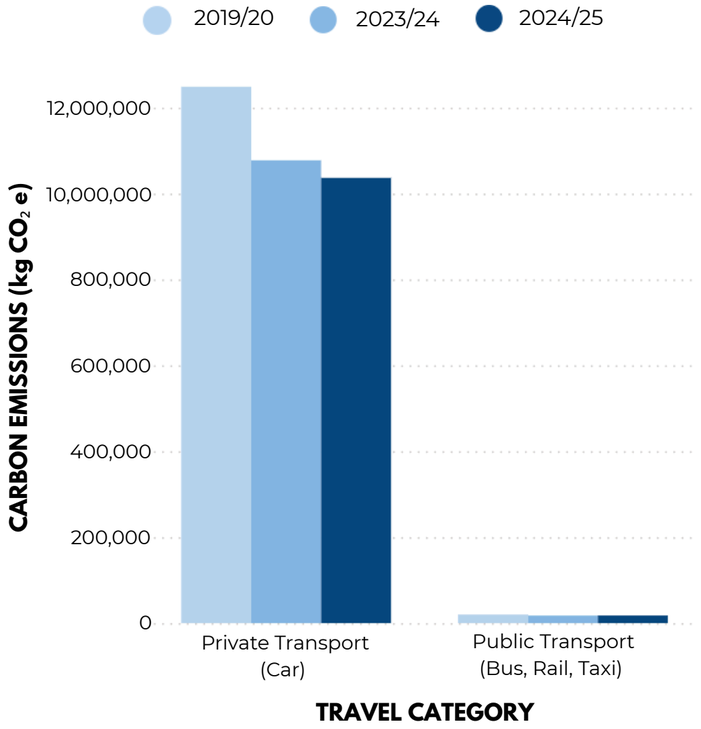
COMPARISON OF TOTAL COMMUTING EMISSIONS (kg CO_2 e)

For Baseline (2019/20), Previous Year (2023/24) and Current Year (2024/25)



COMPARISON OF THE BREAKDOWN OF TOTAL BUSINESS TRAVEL EMISSIONS (kg CO_2 e)

For Baseline (2019/20), Previous Year (2023/24) and Current Year (2024/25)



CURRENT POSITION

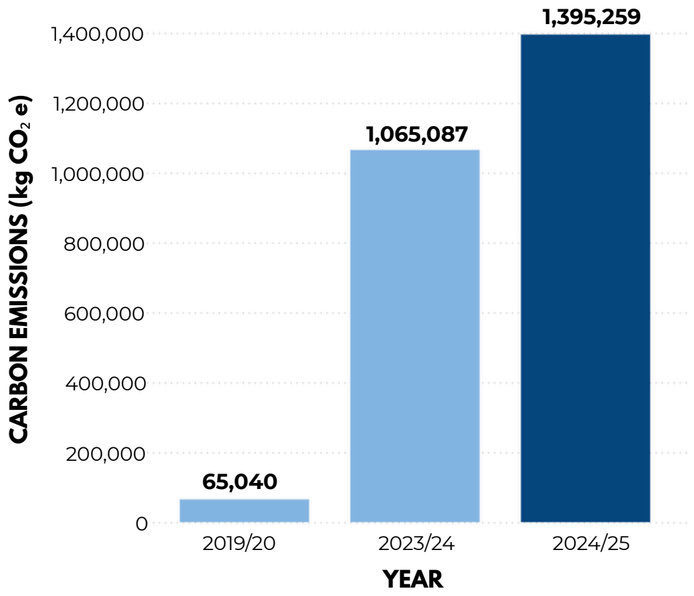
The decrease in commuting emissions between 2019/20 and 2023/24 is due to the shift to hybrid working following Covid, with only a small number of staff working from home in 2019/20. The average working from home estimates changed from 15% in 2023/24 to 20% in 2024/25. Consequently, the commuting emissions decreased between 2023/24 and 2024/25 by 4%. The 2024 staff travel survey indicates that the majority of the staff commute is by private car.

Homeworking

Homeworking emissions increased by 2045% between the baseline year of 2019/20 and 2024/25, and by 31% between 2023/24 and 2024/25.

COMPARISON OF TOTAL HOMEWORKING EMISSIONS (kg CO_2 e)

For Baseline (2019/20), Previous Year (2023/24) and Current Year (2024/25)



CURRENT POSITION

There has been a significant increase in emissions from the baseline year because there were only a few staff working from home pre-Covid in 2019/20. The 31% increase in carbon emissions from the previous to the current year is due to the percentage of staff estimated to be working from home increasing from 15% in 2023/24 to 20% in 2024/25.

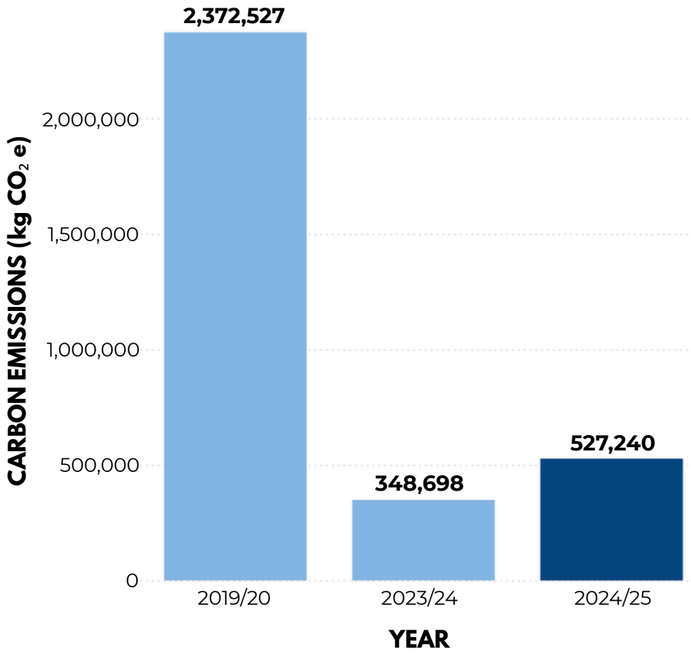
It should be remembered that the commuting and homeworking emissions are clearly linked but the figures also rely on other metrics, such as the use of public transport vs private cars, and the energy efficiency of individual homes and workplaces. These factors operate and impact at the city-wide level more significantly than the Council operational level.

Waste

Waste emissions decreased by 78% between the baseline year of 2019/20 and 2024/25, however emissions increased by 51% between 2023/24 and 2024/25.

COMPARISON OF TOTAL WASTE EMISSIONS (kg CO_2 e)

For Baseline (2019/20), Previous Year (2023/24) and Current Year (2024/25)



CURRENT POSITION

All waste is collected in Council waste vehicles and the fuel used is accounted for in the fleet footprint calculation. **The main factor in the 78% reduction in waste emissions between the baseline year and 2024/25 is that waste has been diverted from landfill to the Viridor 'energy from waste' facility.**

The increase in waste emissions between 2023/24 and 2024/25 is due to how Welsh Government classify some of our waste streams. Some of our glass recyclate, inert 0-10mm crushed glass, serves as a sustainable alternative to natural sand or aggregate, with a key application as landfill cover material. We sell some of this glass recyclate to a contractor who in turn uses this crushed glass as landfill cover material which we consider to be a very positive and circular outcome.

However, Welsh Government class this as landfill disposal rather than recycling, and so associated emission factors are applied. There was a significant amount of this glass sold for this purpose in 2024/2025 compared to 2023/2024. If this waste stream is not considered, then waste emissions continue to reduce.

FUTURE WORK

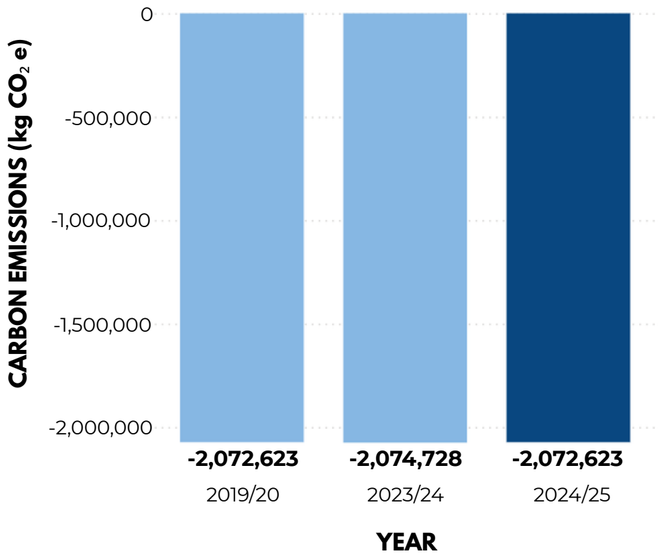
A comprehensive programme of future work is underway, targeting both service improvements and resident engagement. This includes increasing recycling rates, reducing residual waste by extending garden collections, improving trade waste recycling and targeted campaigns for segregated recycling in flats, supporting the circular economy by introducing reuse and repair initiatives, optimising collection routes and focused behaviour change campaigns for the public and businesses.

Land Based Emissions

Land based emissions have seen a 0% change between the baseline of 2019/20, the previous year 2023/24 and the current year 2024/25.

COMPARISON OF TOTAL LAND BASED EMISSIONS (kg CO_2 e)

For Baseline (2019/20), Previous Year (2023/24) and Current Year (2024/25)

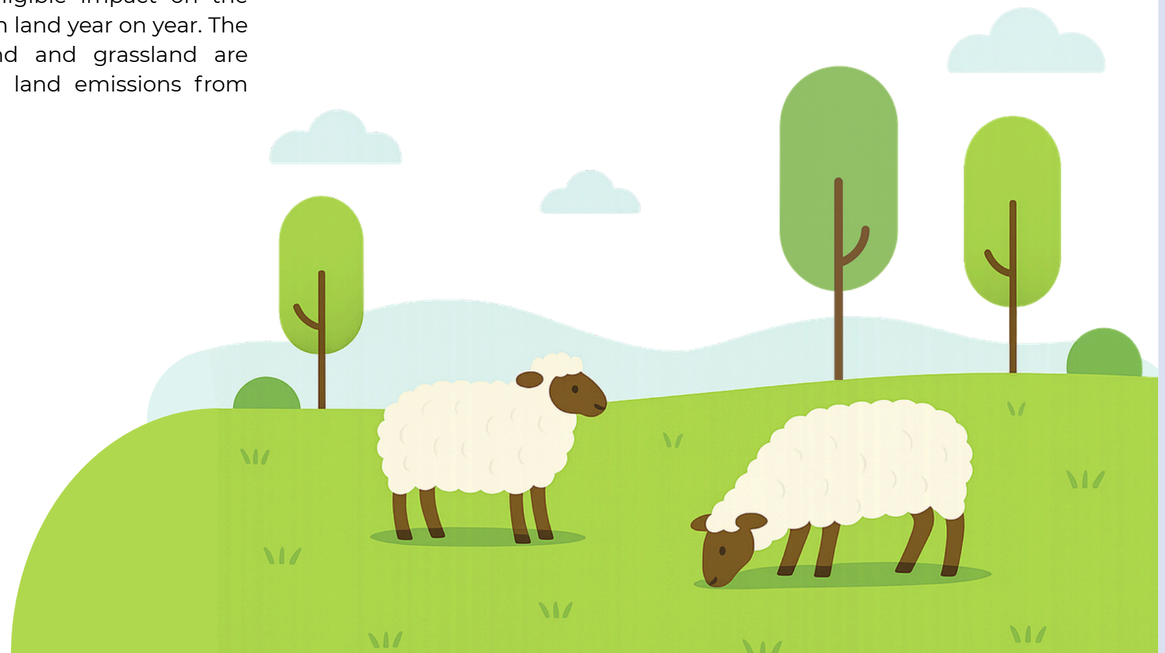


CURRENT POSITION

The figures for land based emissions give an indication of the positive effects that trees and green infrastructure on the Council's land have in capturing, or "sequestering" and storing carbon. This has a positive impact on carbon reduction as well as many other environmental benefits.

The total operational land hectarage changes slightly each year as small parcels of land are sold and acquired, and this consequently has negligible impact on the change of Council emissions from land year on year. The offset emissions from woodland and grassland are almost twice the CO_2 e as the land emissions from settlement areas.

The total operational land hectarage was more or less the same value in 2024/25 as in 2019/20 and in the previous year, and therefore there is no change in emissions.

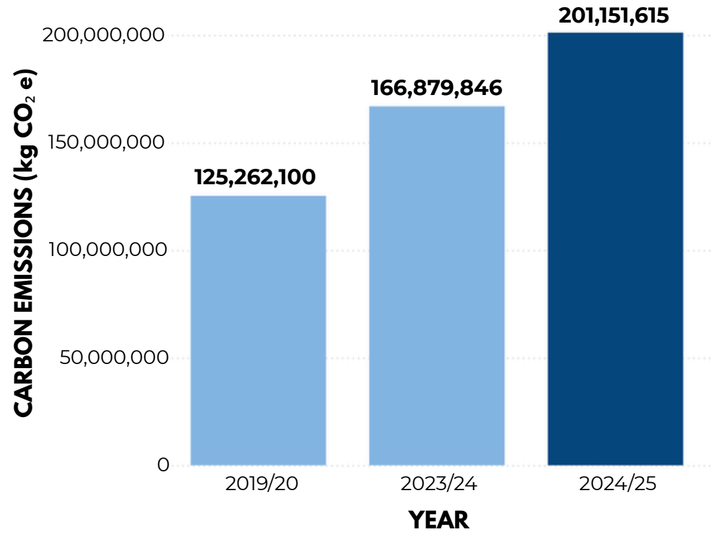


Procurement

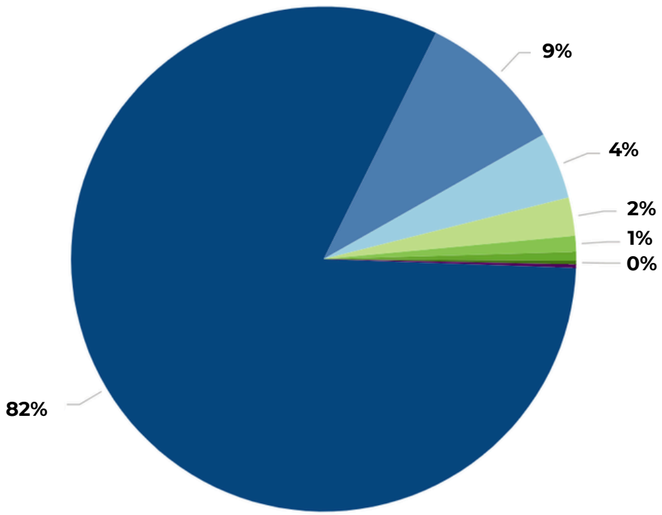
As overall spend increased, procurement emissions increased by 61% between the baseline year of 2019/20 and 2024/25, and by 21% between 2023/24 and 2024/25.

COMPARISON OF TOTAL PROCUREMENT EMISSIONS (kg CO_2 e)

For Baseline (2019/20), Previous Year (2023/24) and Current Year (2024/25)



CURRENT YEAR (2024/25) INCLUDING PROCUREMENT



CURRENT POSITION

Supply chain or procurement emissions account for the huge majority of the Council's operational carbon footprint at 82% of the total emissions. As noted in previous OPC reports, the methodology used for assessing this complex area has some significant limitations and that the statistics should be treated with a considerable degree of caution. Welsh Government instigated several pieces of work aimed at improving the analysis framework, and the Council's Procurement team have also made good progress in work to understand the Council's supply chain footprint and to identify the highest carbon spend areas.

Between 2023/24 and 2024/25 spend has increased in a number of areas due to many factors including inflation, increase in demand for services and also additional large scale ongoing capital projects. **Spend has increased by approximately 6% (from £664,992,766 to £704,048,108), whereas emissions have increased by 21%.** This is due to the majority of the emissions factors within procurement increasing within this period, 94 of the 110 factors increased, with 15 of those increasing by more than 50%. This trend of increase in emissions has also been reported by the Welsh Government Energy Service for procurement carbon emissions across the public sector in 2024/25.

Procurement

However, we know that the figures disguise much more positive trends and outcomes. Firstly, it should be recognised that we are simply spending more this year than in previous years, which is a reflection of our overall pace of service delivery and progress against the Corporate Plan. Secondly, we are confident that a significant and growing proportion of our projects are now aimed specifically at carbon reduction and more broadly at our strategic response to the climate emergency. Key headline projects which demonstrate this include:

- Major flood defence works at the coastal edge of the city and sustainable drainage systems elsewhere;
- Significant energy retrofit works to our buildings, including a major upgrade of the heating systems in City Hall;
- The Cardiff Living programme – delivering highly efficient, low carbon housing across the city;
- Major cycle lane installations and upgrades across Cardiff;
- The Cardiff Heat Network, delivering very low-carbon and resilient heat to major buildings in Cardiff Bay; and
- The new schools building programme which is now specifying very highly efficient near net-zero ready schools for our younger population.

FUTURE WORK

Procurement data has become more granular over time and whilst procurement are still heavily relying on Tier 1 data (financial expenditure), there are plans in place to provide more detailed Tier 2 data (carbon emissions data from suppliers) on pilot areas with suppliers for next year's submission (2025/26). However, there are challenges with providing Tier 2 data including varying supplier maturity when it comes to calculating emissions / carbon footprints, and for those suppliers that are able to provide emissions data, there is no central system for suppliers to report their carbon emissions across the Welsh Public Sector.

We have been working on implementing a new Carbon Reduction Plan threshold of £2m (excl. VAT), whereby suppliers will need to commit to providing a Carbon Reduction Plan within 6 months of contract start date. The Welsh Procurement Policy Note 06/21 will still remain for contracts above £5m (excl. VAT) threshold, whereby suppliers must provide a Carbon Reduction Plan with their tender submission.

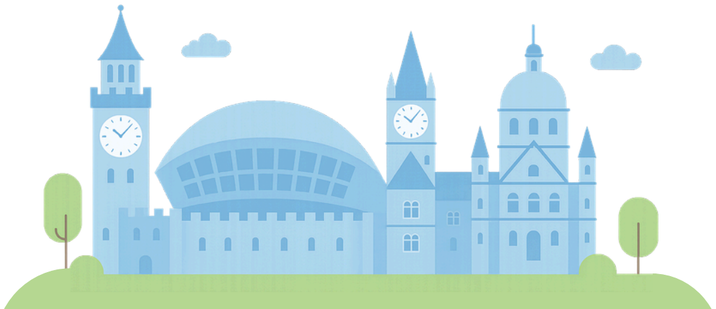
We are working to improve our understanding of supplier carbon maturity during the tender process and have introduced 'information only' questions into tenders to better understand whether suppliers can provide emissions data or Carbon Reduction Plans for contracts under £2 million (excl. VAT).

This will help us gauge how many suppliers are calculating their emissions and will support our move to gathering Tier 2 data when a reporting tool is agreed to capture these emissions.

Ardal is in discussions with the Supply Chain Sustainability School regarding their emissions reporting tool, which may support Tier 2 data collection. Ardal is also involved in a Welsh Government Energy Service (WGES) pilot aimed at standardising emissions data collection from suppliers across the Welsh Public Sector.

For the 2025/26 report, we plan to be able to:

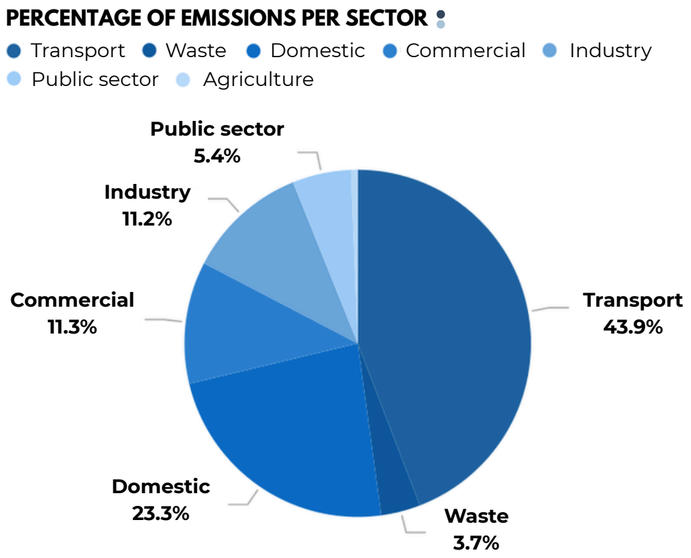
- ·Include Tier 2 data in our net zero reporting (from Carbon Reduction Plans received at the very minimum).
- Gain insights into supplier carbon maturity through the new tender questions we plan to introduce.
- Establish a streamlined emissions reporting system for suppliers to upload their carbon emissions data onto — whether via Ardal's collaboration with the Supply Chain Sustainability School, or through a digital solution identified from the upcoming WGES project.



Analysis of Cardiff's City-Wide Emissions

In monitoring the progress of the wider City's decarbonisation, we rely on Central Government's Department for Energy Security and Net Zero (DESNZ) estimates. They publish carbon emissions at a local authority boundary level annually. These figures relate to calendar years and the latest data relates to 2023, i.e. the year prior to those reported for the Council operational activities above. Therefore this data analysis is between 2023 (current year), 2019 (baseline year) and 2022 (previous year).

The percentage of emissions released per sector for Cardiff in 2023 are shown in the pie chart to the right. Transport is the largest contributing sector accounting for 43.9% of the total CO_2 e emissions, which is then followed by the domestic and commercial sectors at 23.3% and 11.3% respectively.



The published City-wide figures showed that emissions across the entire City boundary (i.e., relating to all citizens, organisations and visitors in the city) stood at 1.55 million tonnes in 2023, representing a **21.6% decrease in per capita emissions and an 14.7% decrease in absolute emissions from 2019 to 2023.**

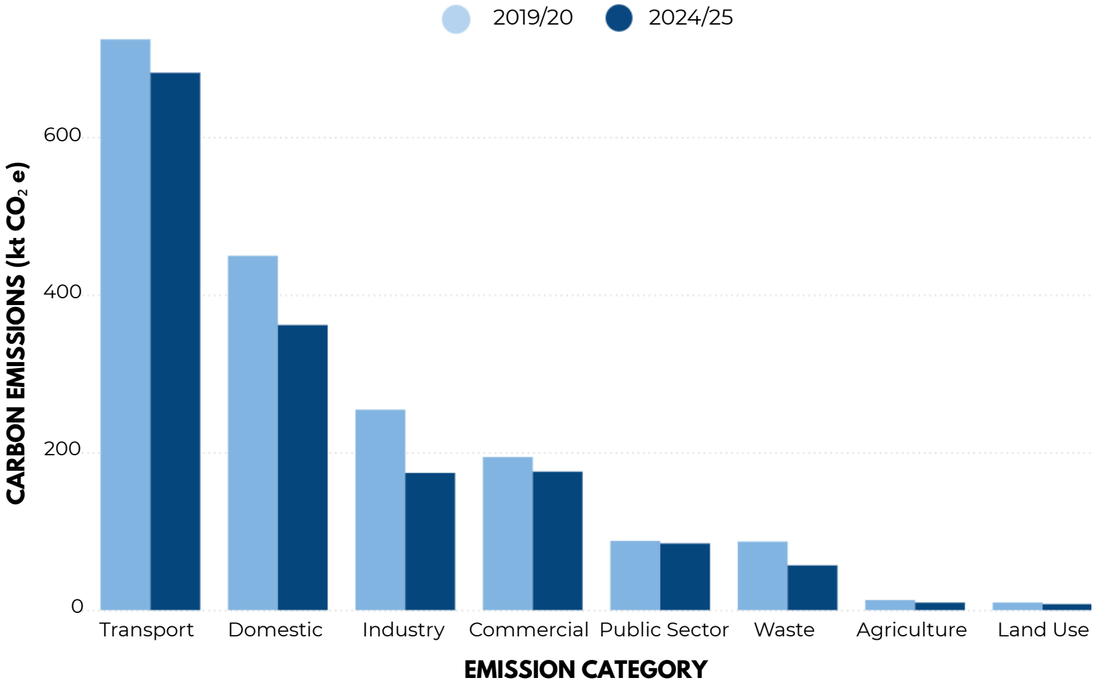
The following sections give details of the absolute and per capita emissions for Cardiff. They illustrate clearly that, despite some progress, the key challenges and target areas for action in the city remain as transportation, domestic building retrofit, industry and commercial decarbonisation.

Headline City Data 2019 - 2023

When looking at the longer period from 2019 to 2023, the trends show individual (per capita) emissions decreased by 21.6% and total (absolute) emissions decreased by 14.7% overall. It is likely that these long-term numbers could have been even lower, but emissions temporarily spiked between 2020 and 2021 as the world rebounded from Covid restrictions. Transport was the largest source of Cardiff's carbon emissions for both the baseline and current year. Waste showed the most significant reduction in emissions of 34.8% over this period reflecting an increasing diversion of waste from landfill.

COMPARISON OF CITY-WIDE EMISSIONS BY CATEGORY (kt CO_2 e)

For Baseline (2019) and Current Year (2023)



CITY-WIDE CHANGES IN EMISSIONS AND PERCENTAGE CHANGE IN EMISSIONS

For Baseline (2019) and Current Year (2023)

CALENDAR YEAR	TRANSPORT (kt CO_2 e)	DOMESTIC (kt CO_2 e)	COMMERCIAL (kt CO_2 e)	INDUSTRY (kt CO_2 e)	PUBLIC SECTOR (kt CO_2 e)	WASTE (kt CO_2 e)	AGRICULTURE (kt CO_2 e)	LAND USE (kt CO_2 e)	GRAND TOTAL (kt CO_2 e)	PER CAPITA (t CO2 e)
2019	724.0	449.4	194.1	254.2	87.7	86.9	12.7	9.6	1,818.7	5.1
2023	681.6	361.6	175.6	174.0	84.5	56.7	9.5	7.6	1,551.1	4.0
PERCENTAGE CHANGE	-5.9	-19.5	-9.5	-31.5	-3.6	-34.8	-25.2	-20.8	-14.7	-21.6

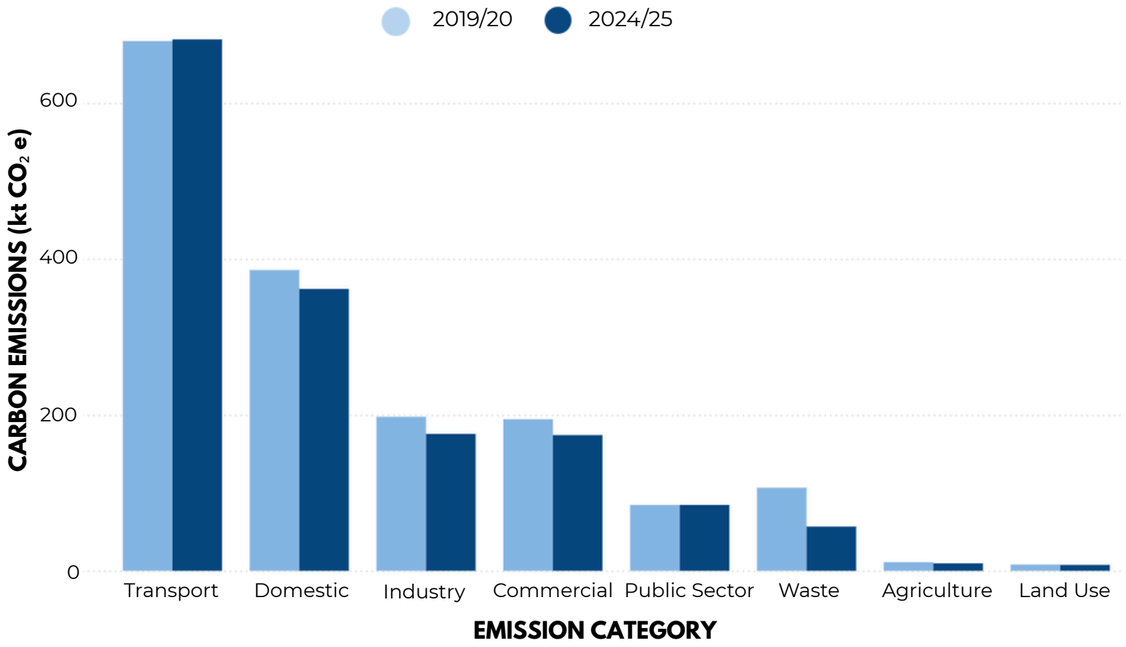
One Planet Cardiff | Our vision for a Carbon Neutral City by 2030

Headline City Data 2022 - 2023

From 2022 to 2023, emissions dropped significantly. Individual (per capita) emissions fell by 11.1%, and total (absolute) emissions fell by 7%. Transport was the largest source of Cardiff's carbon emissions for both 2022 and 2023. Waste saw the greatest percentage decrease at 46.8% between the years.

COMPARISON OF CITY-WIDE EMISSIONS BY CATEGORY (kt CO_2 e)

For Previous Year (2022) and Current Year (2023)



CITY-WIDE CHANGES IN EMISSIONS AND PERCENTAGE CHANGE IN EMISSIONS

For Baseline (2022) and Current Year (2023)

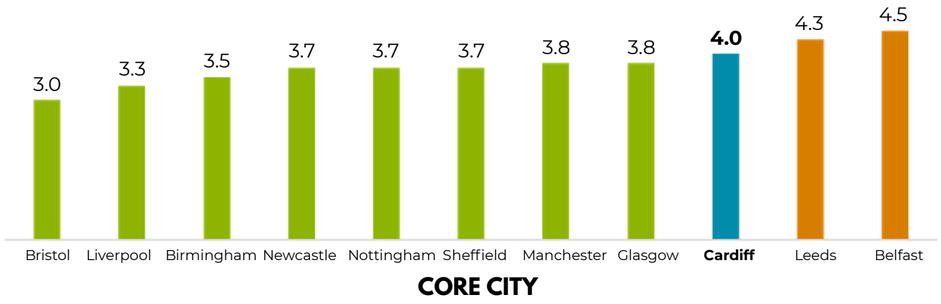
CALENDAR YEAR	TRANSPORT (kt CO_2 e)	DOMESTIC (kt CO_2 e)	COMMERCIAL (kt CO_2 e)	INDUSTRY (kt CO_2 e)	PUBLIC SECTOR (kt CO_2 e)	WASTE (kt CO_2 e)	AGRICULTURE (kt CO_2 e)	LAND USE (kt CO_2 e)	GRAND TOTAL (kt CO_2 e)	PER CAPITA (t CO_2 e)
2022	679.5	385.8	197.5	194.4	84.5	106.5	11.0	8.0	1667.2	4.5
2023	681.6	361.6	175.6	174.0	84.5	56.7	9.5	7.6	1551.1	4.0
PERCENTAGE CHANGE	0.3	-6.3	-11.1	-10.5	0.0	-46.8	-13.6	-5.0	-7.0	-11.1

Core Cities Comparison

We compared Cardiff's carbon emissions data to the other UK Core Cities data. This indicates that Cardiff's per capita emissions are the third highest of the Core Cities in 2023, but that we are mid-range in reducing our per capita emissions between 2019 to 2023. The data also indicates that Cardiff is slightly below the mid-point for reducing its absolute emissions during this period compared to other core cities.

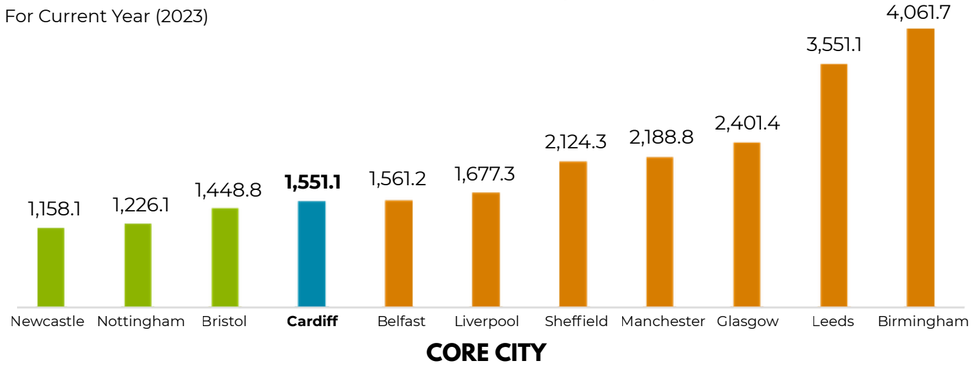
COMPARISON OF CORE CITIES PER CAPITA EMISSIONS (kt CO_2 e)

For Current Year (2023)



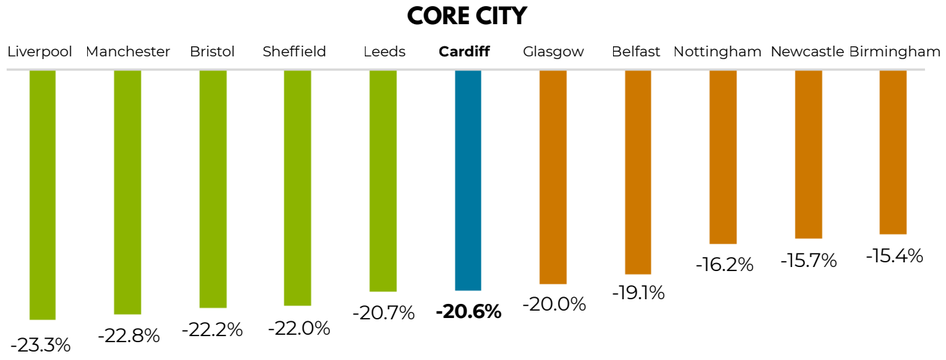
COMPARISON OF CORE CITIES ABSOLUTE EMISSIONS (kt CO_2 e)

For Current Year (2023)



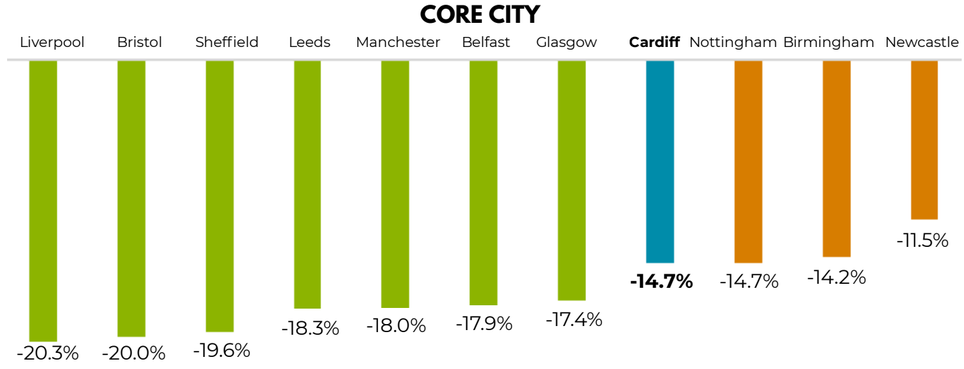
COMPARISON OF CORE CITIES PERCENTAGE CHANGE IN PER CAPITA EMISSIONS (%)

From Baseline Year (2019) to Current Year (2023)



COMPARISON OF CORE CITIES PERCENTAGE CHANGE IN ABSOLUTE EMISSIONS (%)

From Baseline Year (2019) to Current Year (2023)

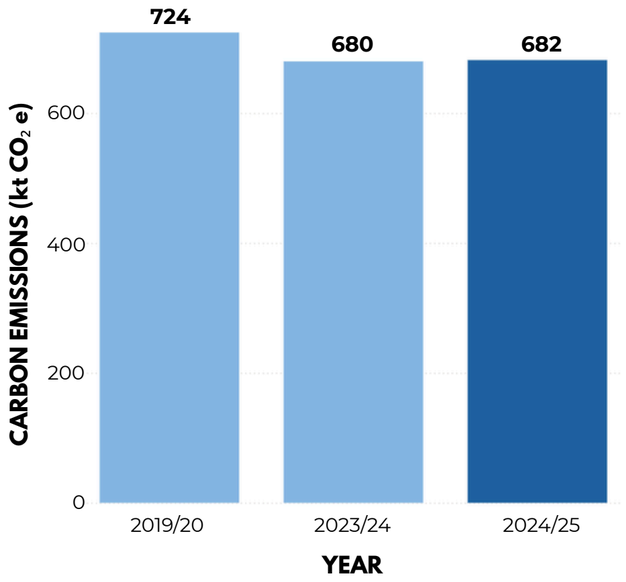


Transport

In Cardiff, transport emissions decreased by 5.9% between the baseline year of 2019 and 2023, but increased by 0.3% between 2022 and 2023.

COMPARISON OF CITY-WIDE ABSOLUTE TRANSPORT EMISSIONS (kt CO_2 e)

For Baseline (2019), Previous Year (2022) and Current Year (2023)

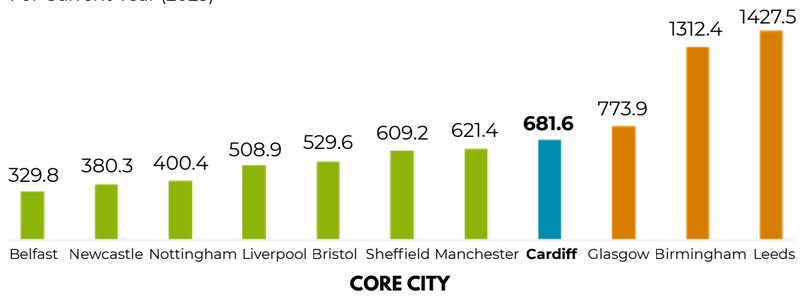


Transport remains the highest emitting sector for the city, contributing 681,600 tonnes, or 43.9% of city emissions in 2023. At a UK level, transport carbon emissions saw an increase of 2.1% in 2023 compared to 2022, continuing the rebound of travel activity since Covid restrictions were lifted. This sector remains the highest carbon emitter and one of the key target areas for focused and ongoing decarbonisation action via our Transport Strategy.

We compared Cardiff's transport emissions with other UK Core Cities and this demonstrates that Cardiff's transport related emissions are a particularly significant contributor to overall city-wide emissions. It should be noted however that the scale of investment in public transport in many core cities elsewhere in the UK has not been achieved in Wales. As a result, other cities are further ahead with the development of integrated public transport networks whilst Cardiff is still in the process of developing mass transit solutions that other core cities have had in place for many years. Cardiff is proactively introducing a range of other mechanisms to encourage transport modal shift.

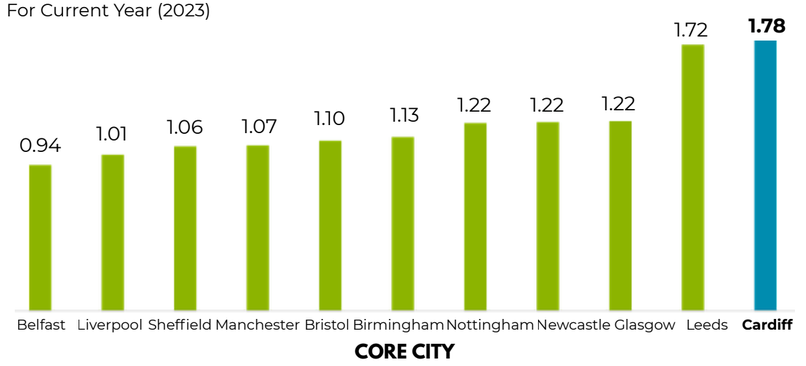
COMPARISON OF CORE CITY ABSOLUTE TRANSPORT EMISSIONS (kt CO_2 e)

For Current Year (2023)



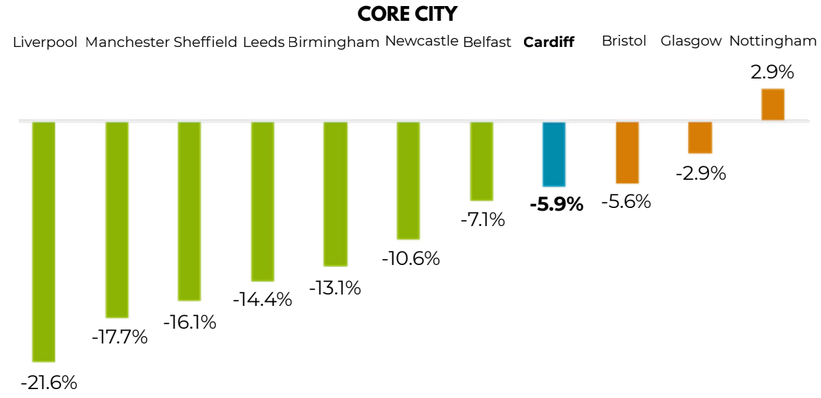
COMPARISON OF CORE CITIES PER CAPITA TRANSPORT EMISSIONS (t CO_2 e)

For Current Year (2023)



COMPARISON OF CORE CITIES PERCENTAGE CHANGE IN ABSOLUTE TRANSPORT EMISSIONS (%)

From Baseline Year (2019) to Current Year (2023)

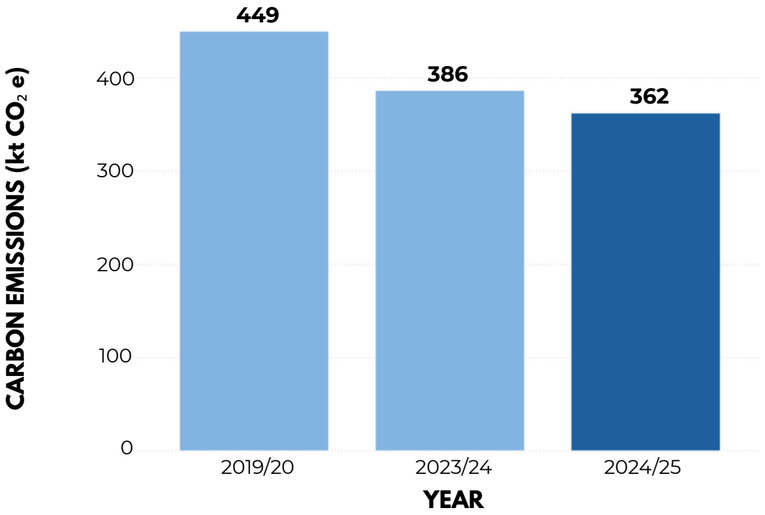


Domestic

In Cardiff domestic emissions have decreased by 19.5% between the baseline year of 2019 and 2023, and by 6.3% between 2022 and 2023.

COMPARISON OF CITY-WIDE ABSOLUTE DOMESTIC EMISSIONS (kt CO_2 e)

For Baseline (2019), Previous Year (2022) and Current Year (2023)



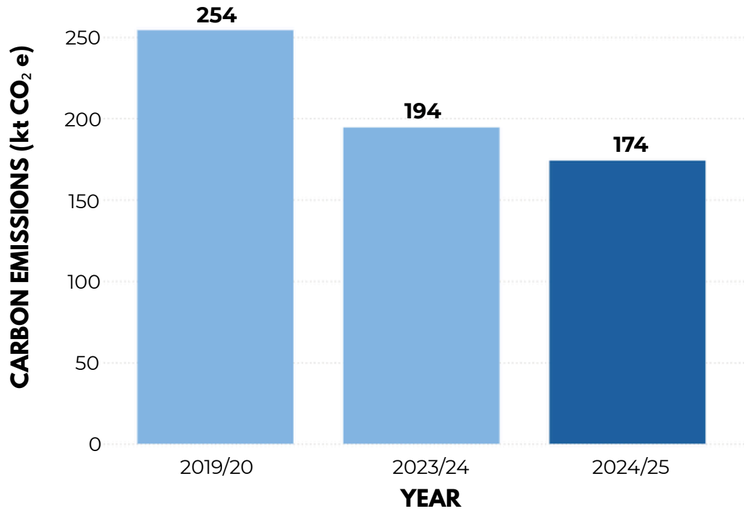
Domestic emissions were the second highest emission sector in 2023, accounting for 361,600 tonnes CO2 e, or 23.3% of our city-wide emissions. This underlines the need for intensified action, at the local, regional and national levels, to mobilise and kick start progress on this important and complex area of challenge. Domestic energy retrofit is consequently a major component of the Council's Green Growth Proposition.

Industry

In Cardiff industry emissions have decreased by 31.5% between the baseline year of 2019 and 2023, and by 10.5% between 2022 and 2023.

COMPARISON OF CITY-WIDE ABSOLUTE INDUSTRY EMISSIONS (kt CO_2 e)

For Baseline (2019), Previous Year (2022) and Current Year (2023)



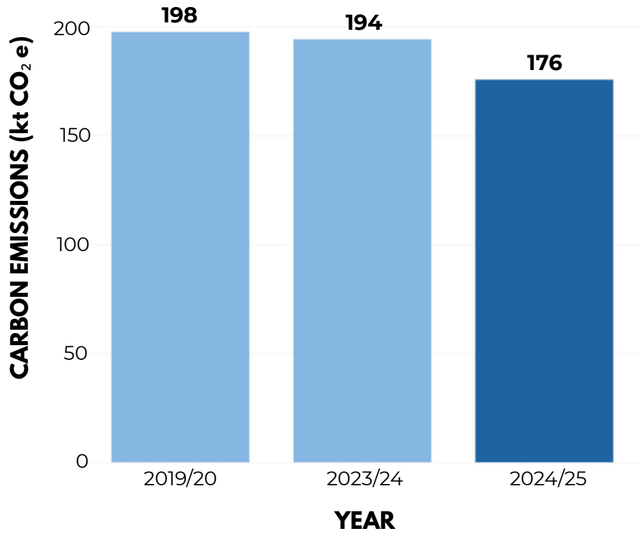
In the UK, industry emissions fell by 8% between 2022 and 2023 and decreased in 85% of local authority areas. This is due to a gradual reduction in energy intensive industrial operations reflecting UK trends of de-industrialisation and shift towards service-based economies and energy efficiency improvements in the sector. Cardiff's industry emissions account for 11% of emissions in 2023, whereas for the UK overall it is 15%.

Commercial

In Cardiff commercial emissions have decreased by 9.5% between the baseline year of 2019 and 2023, and by 11.1% between 2022 and 2023 (2022 commercial emissions were higher than 2019).

COMPARISON OF CITY-WIDE ABSOLUTE COMMERCIAL EMISSIONS (kt CO_2 e)

For Baseline (2019), Previous Year (2022) and Current Year (2023)



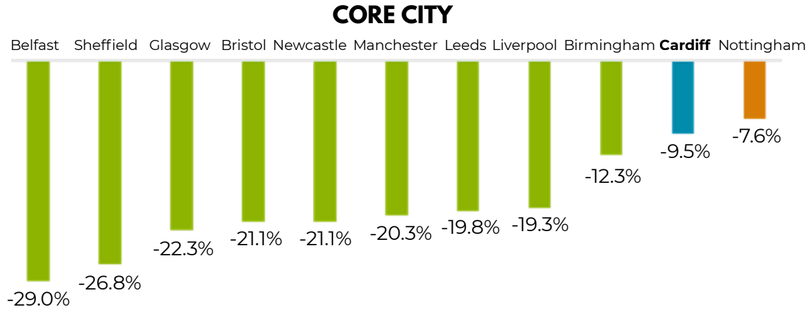
Commercial emissions predominantly arise from the use of electricity and gas by businesses. The recent decrease in commercial emissions can be attributed to higher than usual temperatures in 2023 along with high energy prices.

However, when compared with other UK Core Cities, Cardiff has made the second least progress in commercial emissions reduction. Further investigation shows that Cardiff has seen the highest percentage change in the number of active businesses reflecting a trend in overall economic activity across the city. However, Cardiff's Economic Development Team are investigating good practice elsewhere and scoping the potential for initiatives such as:

- Facilitating a city-wide business climate coalition or forum to promote low-carbon practices and share best practice.
- Exploring use of Shared Prosperity Fund (SPF) or OPC funding to support small and medium-sized enterprises (SMEs) in adopting energy efficiency or renewable technologies.
- Promoting commercial rooftop solar deployment at scale across Cardiff's business sector.
- Collaborating on smart solar solutions including PV, battery storage, and EV charging for Council-owned workshops, with plans to extend to local business parks.
- Supporting ESG-driven investment opportunities for retrofit and renewables.
- Helping shape an investment portfolio of renewable energy sites to attract private sector interest.

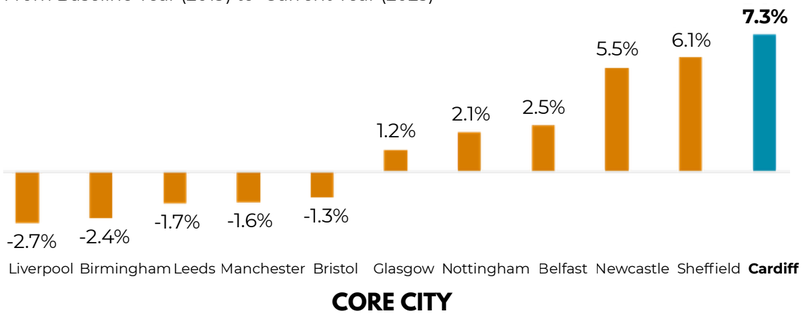
COMPARISON OF CORE CITIES PERCENTAGE CHANGE IN ABSOLUTE COMMERCIAL EMISSIONS (%)

From Baseline Year (2019) to Current Year (2023)



COMPARISON OF PERCENTAGE CHANGE IN CORE CITIES ACTIVE BUSINESSES (%)

From Baseline Year (2019) to Current Year (2023)

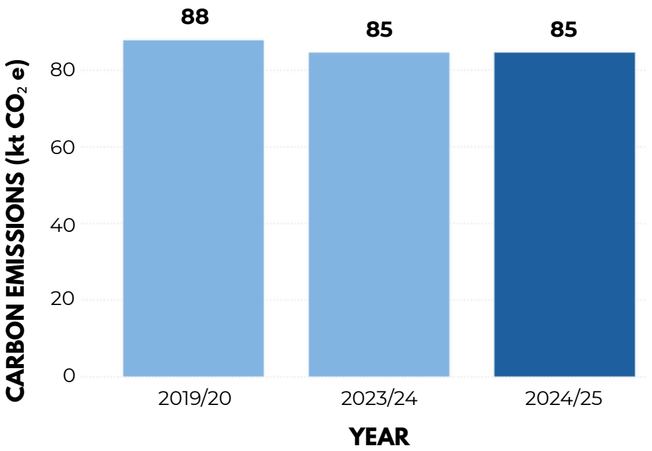


Public Sector

In Cardiff public sector emissions have decreased by 3.6% between the baseline year of 2019 and 2023, however there was no change between 2022 and 2023.

COMPARISON OF CITY-WIDE ABSOLUTE PUBLIC SECTOR EMISSIONS (kt CO_2 e)

For Baseline (2019), Previous Year (2022) and Current Year (2023)



Nearly all public sector emissions in local authority areas have seen a reduction since 2019. This reduction is largely driven by the reduced emissions from electricity use, due to decreased coal use for electricity generation and increased use of renewables. However, there was a 0% reduction in the Cardiff public sector between 2022 and 2023, whereas there was a 10% reduction in public sector emissions across the UK, largely due to reduction in emissions from electricity and gas use. As Cardiff is Wales's largest urban centre, dominated by transport, industry and domestic emissions, public-sector changes make up only a small portion of the total, meaning small absolute movements may appear as 0% change at the rounded level.

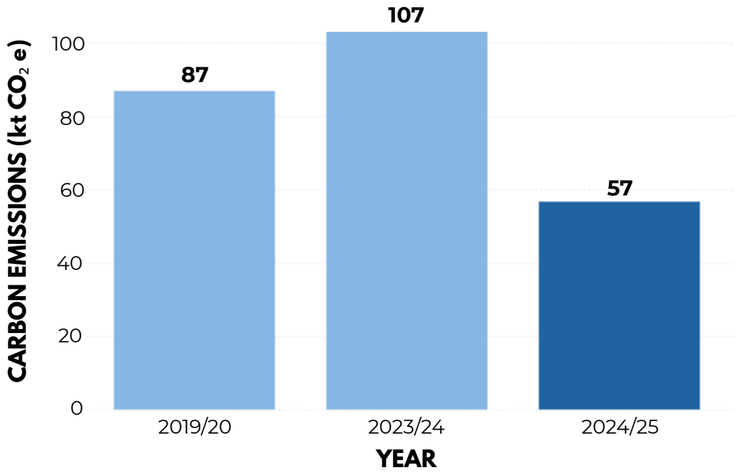
This figure encompasses all public sector organisations including Health and Local Government and Emergency Services.

Waste

In Cardiff waste emissions have decreased by 34.8% between the baseline year of 2019 and 2023, and by 46.8% between 2022 and 2023.

COMPARISON OF CITY-WIDE ABSOLUTE WASTE EMISSIONS (kt CO_2 e)

For Baseline (2019), Previous Year (2022) and Current Year (2023)



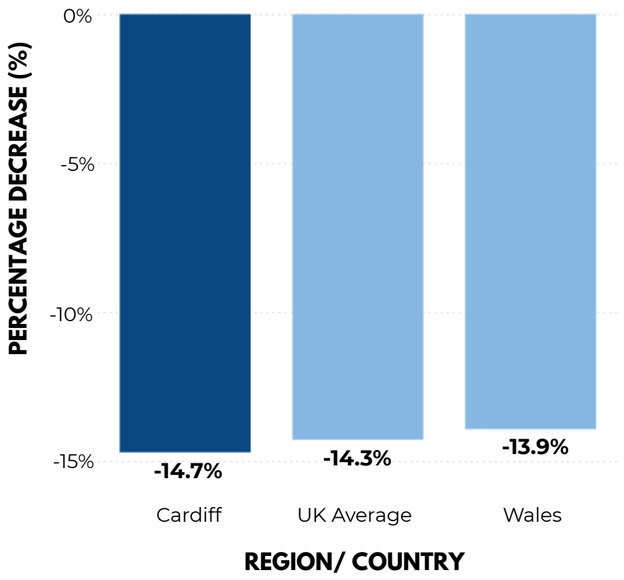
The main reasons for the reduction in waste emissions are the ongoing reduced dependency on landfill brought about by successful recycling strategies across the city. There was an anomaly in the 2022 data, with an increase in emissions which reflected a temporary closure to the Viridor 'energy from waste' facility.

Regional Comparison

The following graphs show the total emissions percentage decrease for Cardiff between 2019-2023 and 2022-2023, compared to Wales and the UK average.

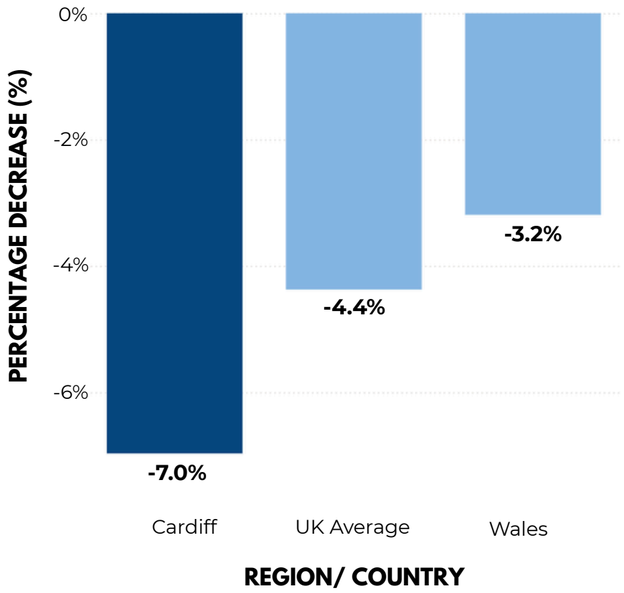
COMPARISON OF PERCENTAGE DECREASE IN ABSOLUTE EMISSIONS BY REGION/ COUNTRY (%)

For Baseline (2019) and Current Year (2023)



COMPARISON OF PERCENTAGE DECREASE IN ABSOLUTE EMISSIONS BY REGION/COUNTRY (%)

For Previous Year (2022) and Current Year (2023)



Conclusion

We remain committed to reducing our operational and city-wide carbon emissions and the analysis throughout this report shows good progress in this, with a considerable amount of positive action clearly visible and impacting in many positive ways.

However, we recognise that more needs be done, and that this needs to be achieved in a constrained financial environment and with other competing pressures at large.