



Gwasanaeth Ynni
Energy Service

Net Zero Reporting

Welsh Public Sector 2023 Carbon Emissions

March 2024

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behalf of Welsh Government



Llywodraeth Cymru
Welsh Government

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Executive Summary

This document provides a summary of 2023 Welsh Public Sector carbon emissions at the national, sub-sector and individual public body level. These accounts are based on data submitted by 71 public bodies between April and September 2023. This covers the financial year 2022-23.

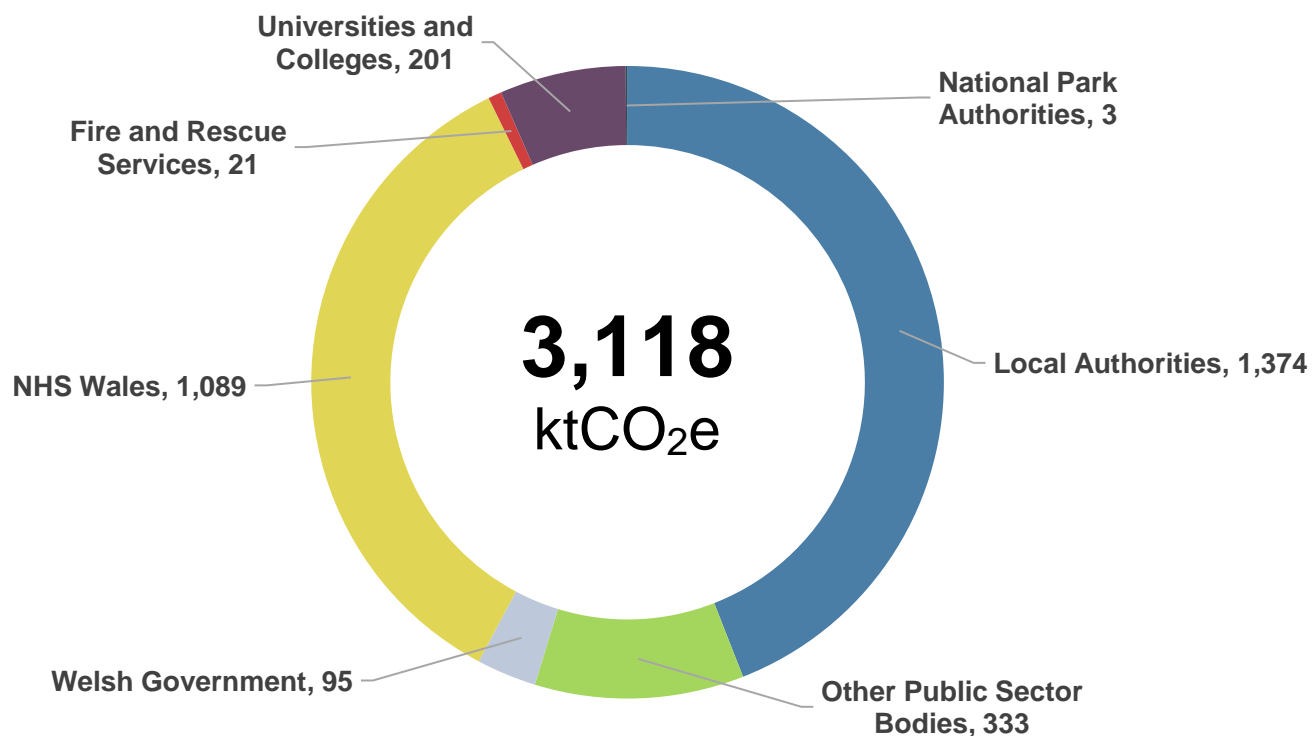
The document also provides year-on-year trends of carbon emissions, presenting the three previous annual accounts alongside the 2023 data (2020-2023). Results related to key emissions categories across sub sectors and for individual public bodies are presented for:

- Supply Chain Emissions
- Building Emissions
- Transport Emissions
- Homeworking Emissions
- Waste Emissions
- Land Emissions and Removals

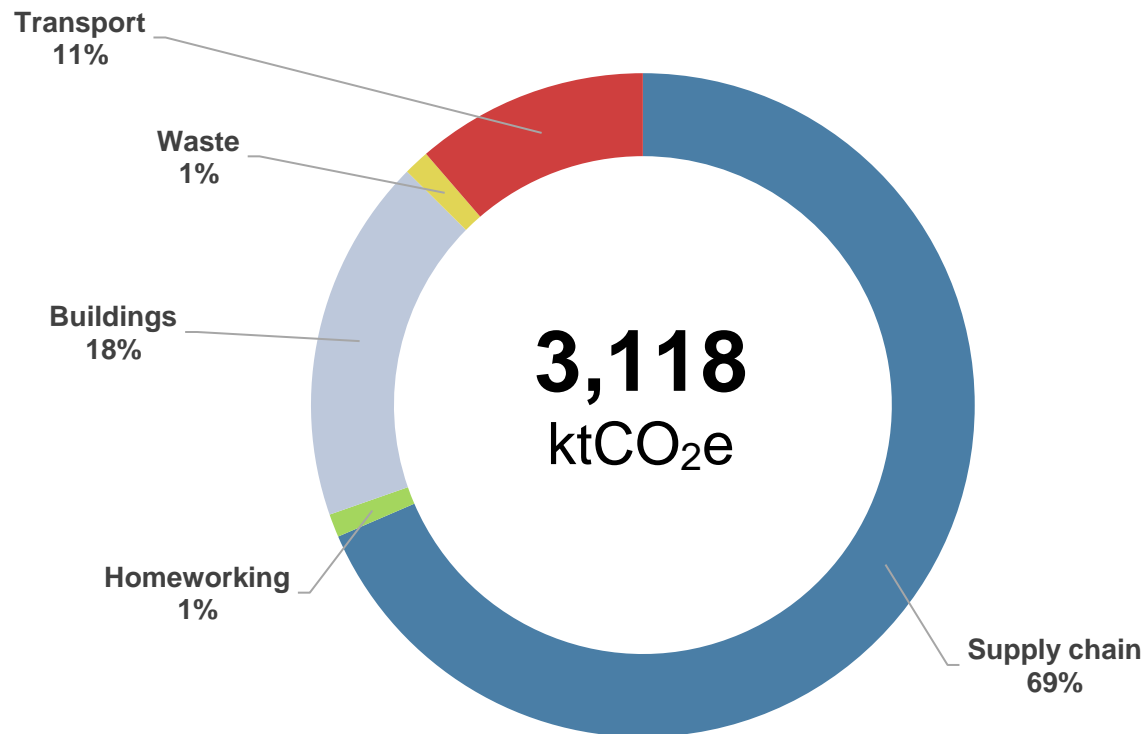
Year-on-year trends are also presented across the key emissions categories. It should be noted that a changing boundary of emission sources, and a growing number of reporting bodies affects comparability across all 4 years. Reported public sector renewable energy generation figures are also provided within this document.

The executive summary (this section) provides headline results at the total public sector body level only. For results by sub-sector (i.e., [Local Authorities](#), [NHS Wales](#), [Universities and Colleges](#), [Welsh Government](#), [Fire and Rescue Services](#), [National Park Authorities](#) and [Other Public Sector Bodies](#)), and by individual public bodies, please navigate to the relevant section via the links above, or using the [table of contents](#).

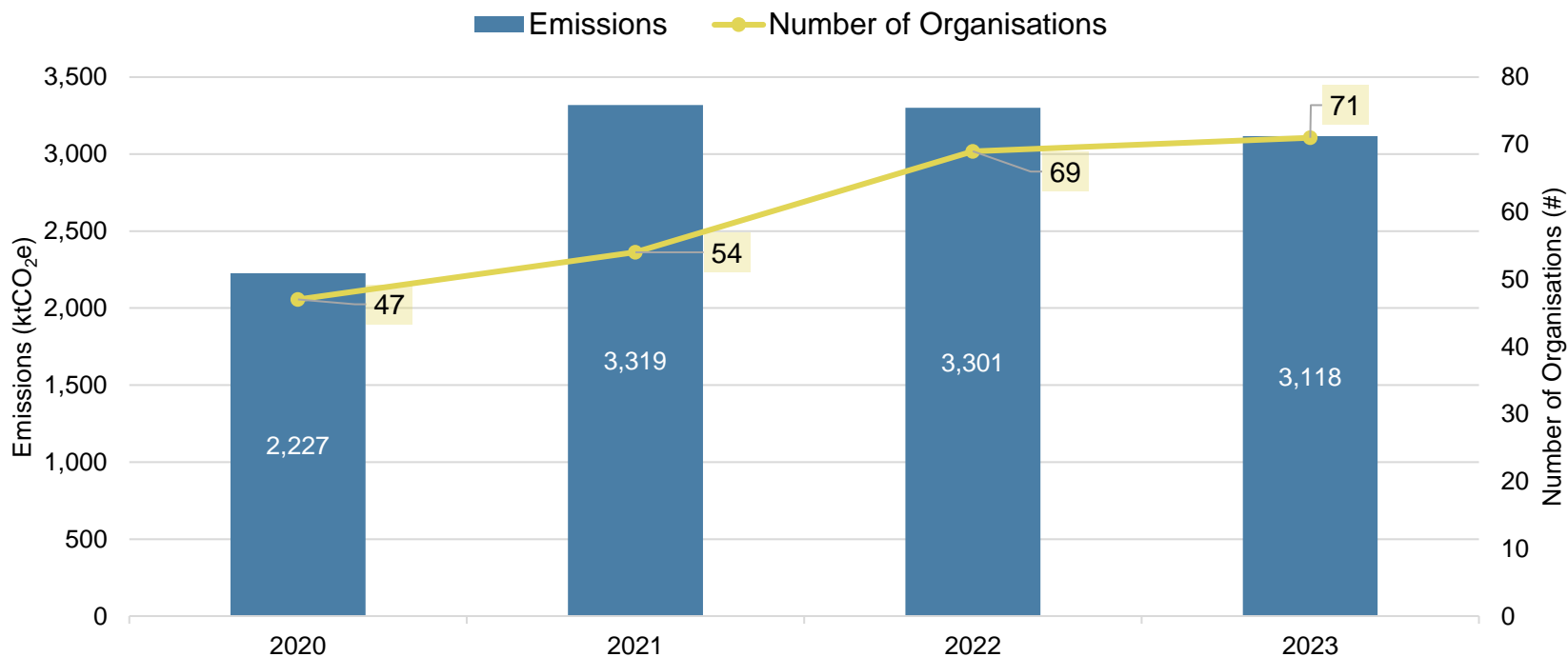
The total 2023 emissions for all Welsh Public Sector Bodies are estimated to be 3,118 ktCO₂e as shown below. *Local Authorities* contribute most emissions to the total footprint (44%). *NHS Wales* contributed the next highest amount (35%). This is followed by the highly diverse group of *Other Public Sector Bodies* (11%). *Universities & Colleges, Welsh Government, Fire and Rescue Services* and *National Park Authorities* contribute the remaining 10%. Corresponding ktCO₂e values are shown below.



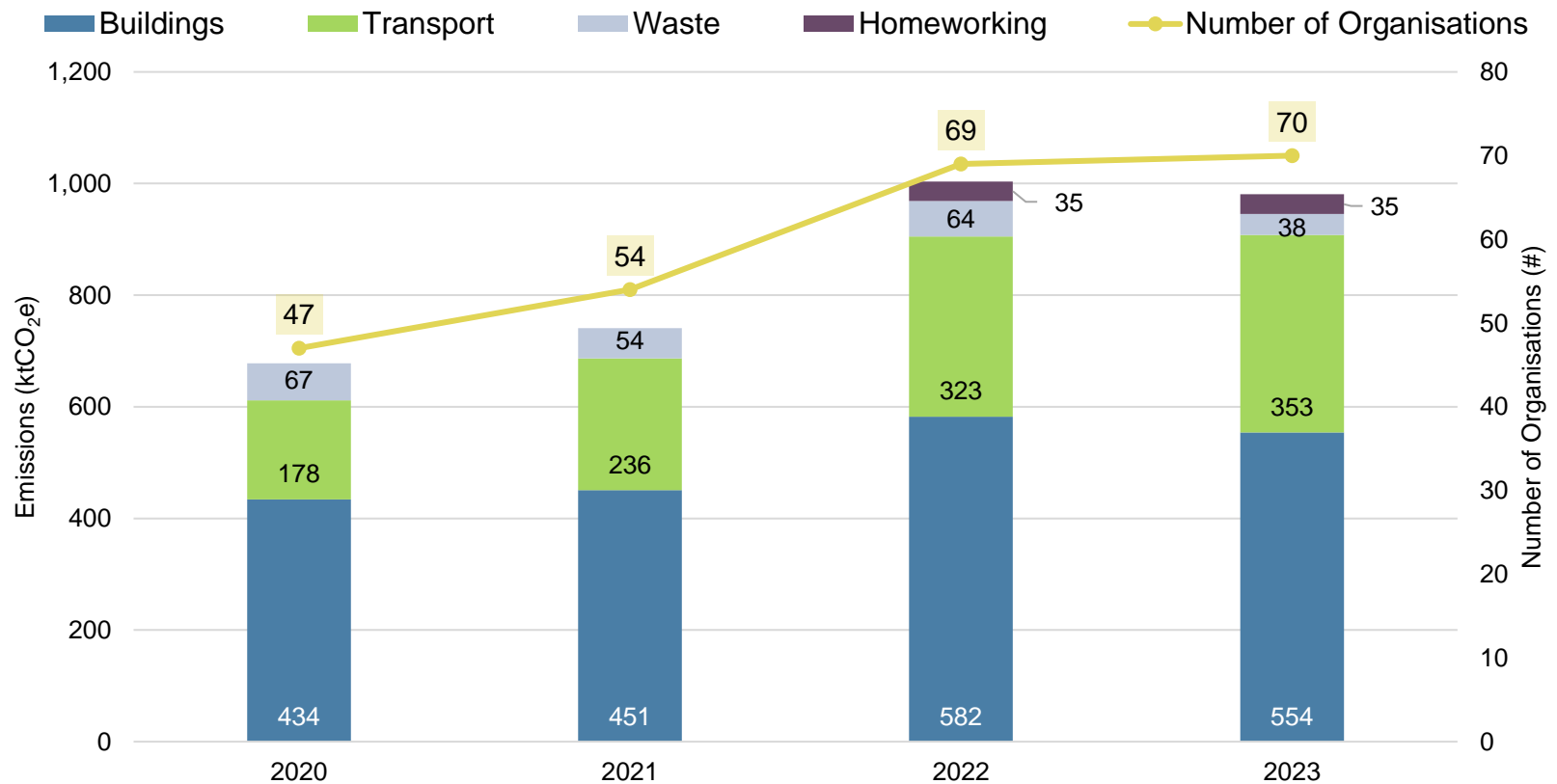
The majority of public sector wide emissions are estimated to arise from the *Supply Chain*. This equates to 2,137 ktCO₂e and 69% of total emissions. *Building* related emissions are estimated to contribute 554 ktCO₂e and 18% of the total. *Transport* emissions are estimated to contribute 354 ktCO₂e and 11% of the total. *Waste* emissions are estimated to contribute 38 ktCO₂e and ~1% of the total. *Homeworking* emissions are estimated to contribute 35 ktCO₂e and a further ~1% of the total.



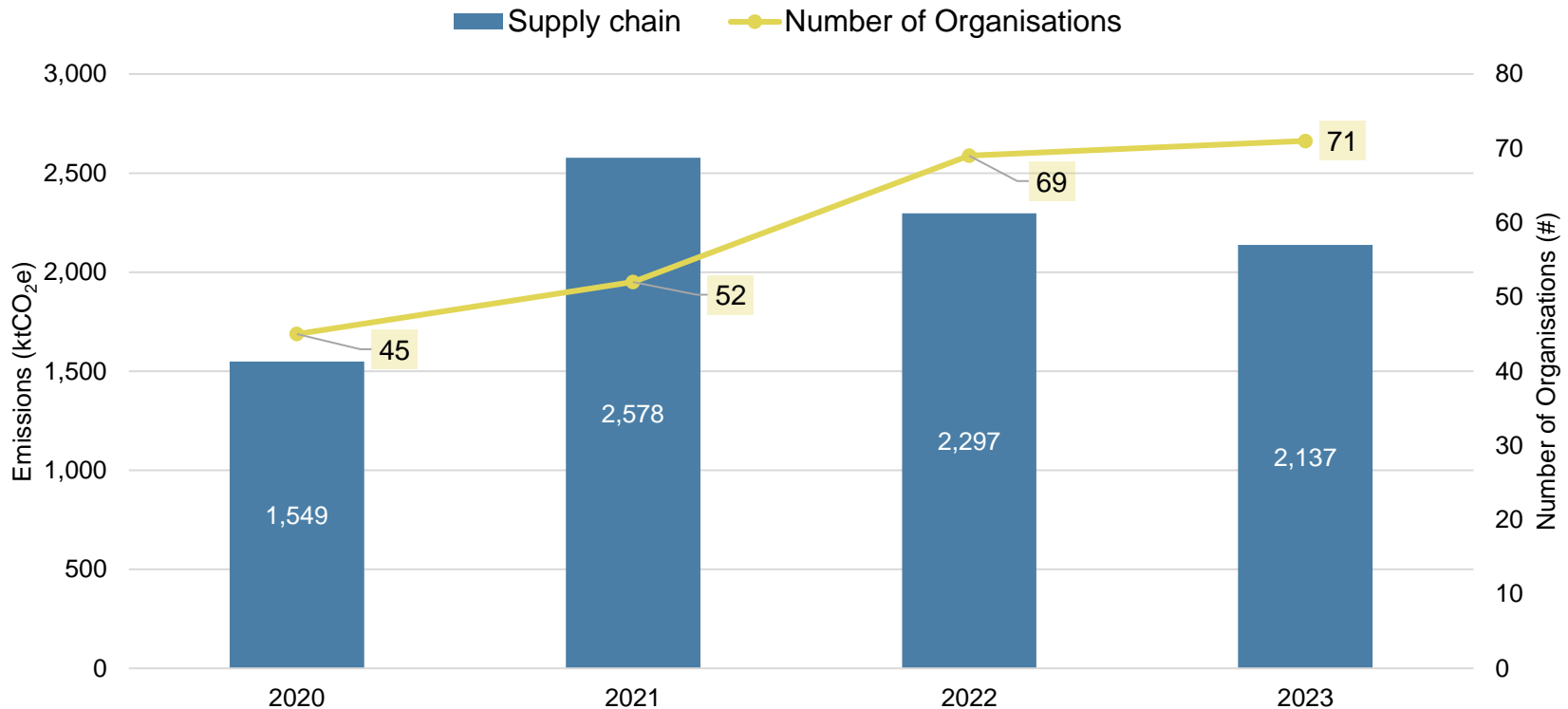
A -6% reduction in total emissions between 2022 and 2023 has been observed. Since the first year of reporting, emissions have increased by 40% however. The full time series change in the total public sector footprint is largely driven by the increase in reporting organisations. The number of reporting organisations in 2023 was 71 (the full list can be found in [Appendix A1](#)). This represents an increase of 24 organisations against the first reporting year in 2020.



Building related emissions have decreased since 2022, driven by a reduction in gas consumption and national electricity grid decarbonisation. Transport emissions have increased since 2022, due to increases in fleet, business travel and commuting emissions. Waste emissions have fluctuated across all four reporting periods but have reduced substantially since 2022. Homeworking emissions have only been reported from 2022 onwards. These emissions have remained static between 2022 and 2023.



Reportable supply chain emissions have decreased by -7% between 2022 and 2023. Supply chain activity (expenditure) has concurrently increased by 46%. This contradiction is a result of an update to the emissions intensity of the proxy factors used. These factors have reduced by more than -50% for some categories. As such, this seemingly positive trend doesn't necessarily reflect a genuine reduction in emissions (see further info [here](#)).



Key drivers of change between 2022 and 2023

At the whole public sector level, a key driver to the overall -6% decrease is the -160 ktCO_{2e} reduction in estimated emissions associated with the supply chain. Additional reductions in building and waste related emissions are also key contributors (-28 ktCO_{2e} and -26 ktCO_{2e} respectively). Transport-related emissions have increased, counteracting this trend by +30 ktCO_{2e}.

The underlying reasons for reported changes are multifaceted, but broadly fall into two key categories. These are changes related to the accounting methods or changes in demand at the sub-sector and organisational level.

The change in reported supply chain emissions is driven by a major update to the emissions intensity of the proxy factors used. The average emission intensity change across all factors (between 2022 and 2023), was a -15% reduction. However, for some specific categories (relevant to public bodies) the reduction in emissions intensity is much greater. Further information on this can be found [here](#).

The identification of a genuine change in relation to supply chain emissions will only be distinguishable using supplier specific data (and not economic proxy-based approaches currently used). The same can be said for homeworking and commuting estimates currently. These proxy-based estimation methods (and results) are not suited for year-on-year tracking of emissions and therefore drawing conclusions on drivers of change.

The majority of building related emissions estimates are derived in a way that makes them more suitable for year-on-year tracking and the provision of commentary on the drivers of change. There are nonetheless still limitations on what can be concluded. The richest insight that can be gained on the drivers of change should be derived at the individual public body level. This will require data that isn't currently collected as part of the net zero reporting process.

Natural gas consumption reduced from 1,544 GWh to 1,464 GWh between 2022 and 2023. Associated emissions decreased by -16 ktCO_{2e}. However, it is not possible to confirm the principal drivers behind this with the data collected as part of the net zero reporting process. For example, if changes are related to energy efficiency investment or demand reduction (that is weather-related, or otherwise¹).

Electricity consumption increased from 694 GWh to 710 GWh between 2022 and 2023. Associated emissions nonetheless decreased by 10 ktCO_{2e} due to a lower emissions intensity associated with electricity. Again, the reasons behind the increase in electricity consumption are not clear from the data collected as part of the net zero reporting process. For example, if changes are related to demand increases associated with the electrification of heat, or demand increases associated with additional occupancy, new buildings, new equipment etc.

Fleet emissions make up roughly 50% of transport-based emissions. The related energy use increased from 641 GWh in 2022, to 686 GWh in 2023². The associated +30 ktCO_{2e} between 2022 and 2023 is a result of increases in fuel consumption and distances traveled. The principal drivers behind this are not known. A key driver behind the -26 ktCO_{2e} reduction in waste emissions between 2022 and 2023, is a large reduction in waste reported to have been sent to landfill.

Further commentary on additional drivers behind the 2022 to 2023 changes at the sub sector level are listed out at the start of each appointed section ([Local Authorities](#), [NHS Wales](#), [Universities and Colleges](#), [Welsh Government](#), [Fire and Rescue Services](#), [National Park Authorities](#) and [Other Public Sector Bodies](#)).

¹ Normalisation via degree data analysis is not currently within scope.

² Results arise from a mix of data sources such as fuel consumption, distance travelled etc. so are normalised into kWh/GWh for ease of comparison.

Contents

- Executive Summary 2**
- Introduction..... 18**
- Welsh Public Sector Carbon Emissions..... 21**
- Local Authorities 27**
- NHS Wales..... 43**
- Universities and Colleges 60**
- Welsh Government..... 76**
- Fire and Rescue Services 90**
- National Park Authorities..... 103**
- Other Public Sector Bodies 118**
- Appendices 134**

Figures & Tables

Figure 1 - Total public sector emissions (ktCO ₂ e) by emissions category for 2023	22
Figure 2 - Total public sector emissions (ktCO ₂ e) by organisation type for 2023	23
Figure 3 - Annual total public sector emissions (ktCO ₂ e) and number of reporting organisations.	24
Figure 4 - Total public sector emissions (ktCO ₂ e) by category (excluding supply chain), overlaid with number of organisations reporting those categories (note some organisations only report supply chain emissions).	25
Figure 5 - Annual public sector supply chains emissions (ktCO ₂ e).....	26
Figure 6 - Total Local Authority emissions (ktCO ₂ e) for 2023 by emissions category	29
Figure 7 – Annual emissions (ktCO ₂ e) for Local Authorities by supply chain and non-supply chain split	30
Figure 8 - 2023 emissions (ktCO ₂ e) by Local Authority and emissions category.....	31
Figure 9 - 2023 Building related emissions (ktCO ₂ e) for Local Authorities by emissions sub-category	32
Figure 10 - Time Series of Local Authority building emissions (ktCO ₂ e) by scope	33
Figure 11 - 2023 Transport related emissions (ktCO ₂ e) by Local Authority and emissions sub-category.....	34
Figure 12 - Annual transport related emissions (ktCO ₂ e) for all Local Authorities by emissions scope	35
Figure 13 - 2023 Waste related emissions (ktCO ₂ e) by Local Authority and emissions sub-category.....	36
Figure 14 - Annual waste related emissions (ktCO ₂ e) for all Local Authorities	37
Figure 15 - Annual Local Authority supply chain spend (£) and emissions (ktCO ₂ e).....	38
Figure 16 - Annual Local Authority supply chain emissions (ktCO ₂ e) by top emitting categories of 2023	39
Figure 17 – Local Authority 2023 emissions (ktCO ₂ e) from land use	40
Figure 18 - Annual Local Authority emissions (ktCO ₂ e) from land use change	41
Figure 19 – Local Authority renewable electricity and heat generation (kWh) in 2023	42
Figure 20 - Total NHS Wales emissions (ktCO ₂ e) for 2023 by emissions category.....	45
Figure 21 – Annual emissions (ktCO ₂ e) for NHS Wales organisations by supply chain and non-supply chain split.....	46
Figure 22 - 2023 emissions (ktCO ₂ e) by NHS Wales organisation and emissions category	47

Figure 23 - 2023 Building related emissions (ktCO ₂ e) for NHS Wales organisations by emissions sub-category.....	48
Figure 24 - Annual building related emissions (ktCO ₂ e) for all NHS Wales organisations by emissions scope.....	49
Figure 25 - 2023 Transport related emissions (ktCO ₂ e) by NHS Wales organisation and emissions sub-category	50
Figure 26 - Annual transport related emissions (ktCO ₂ e) for all NHS Wales organisations by emissions scope.....	51
Figure 27 - 2023 Waste related emissions (ktCO ₂ e) by NHS Wales organisation and emissions sub-category	52
Figure 28 - Annual waste related emissions (ktCO ₂ e) for all NHS Wales organisations.....	53
Figure 29 - Annual NHS Wales supply chain emissions (ktCO ₂ e) and spend (£)	54
Figure 30 - Annual NHS Wales supply chain emissions (ktCO ₂ e) by top emitting categories of 2023	55
Figure 31 - NHS Wales 2023 emissions (ktCO ₂ e) from land use	56
Figure 32 - Annual NHS Wales emissions (ktCO ₂ e) from land use change.....	57
Figure 33 - NHS Wales renewable electricity and heat generation (kWh) in 2023	58
Figure 34 - NHS Wales 2023 emissions (ktCO ₂ e) from medical gases	59
Figure 35 - Total University/College emissions (ktCO ₂ e) for 2023 by emissions category	62
Figure 36 - Annual emissions (ktCO ₂ e) for Universities and Colleges by supply chain and non-supply chain split.....	63
Figure 37 - 2023 emissions (ktCO ₂ e) by University/College and emissions category	64
Figure 38 - 2023 Building related emissions (ktCO ₂ e) for University/College by emissions sub-category.....	65
Figure 39 - Time Series of University/College building emissions (ktCO ₂ e) by scope	66
Figure 40 - 2023 Transport related emissions (ktCO ₂ e) by University/College and emissions sub-category	67
Figure 41 - Annual transport related emissions (ktCO ₂ e) for all Universities/Colleges by emissions category	68
Figure 42 - 2023 Waste related emissions (ktCO ₂ e) by University/College and emissions sub-category.....	69
Figure 43 - Annual waste related emissions (ktCO ₂ e) for all Universities/Colleges	70
Figure 44 - Annual University/College supply chain spend (£) and emissions (ktCO ₂ e).....	71
Figure 45 - Annual Universities/Colleges supply chain emissions (ktCO ₂ e) by top emitting categories of 2023.....	72
Figure 46 – University/College 2023 emissions (ktCO ₂ e) from land use	73
Figure 47 - Annual Universities/Colleges emissions (ktCO ₂ e) from land use change.....	74
Figure 48 – University/College renewable electricity and heat generation (kWh) in 2023	75
Figure 49 - Total Welsh Government emissions (ktCO ₂ e) for 2023 by emissions category.....	78

Figure 50 - Annual emissions (ktCO _{2e}) for Welsh Government by supply chain and non-supply chain split.....	79
Figure 51 - 2023 emissions (ktCO _{2e}) for Welsh Government and emissions category	80
Figure 52 - 2023 Building related emissions (ktCO _{2e}) for Welsh Government by emissions sub-category	81
Figure 53 - Annual building related emissions (ktCO _{2e}) for Welsh Government by emissions scope	82
Figure 54 - 2023 Transport related emissions (ktCO _{2e}) for Welsh Government and emissions sub-category	83
Figure 55 - Annual transport related emissions (ktCO _{2e}) for Welsh Government by emissions scope	84
Figure 56 - Annual waste related emissions (ktCO _{2e}) for Welsh Government	85
Figure 57 - Annual Welsh Government supply chain spend (£) and emissions (ktCO _{2e}).....	86
Figure 58 - Annual Welsh Government supply chain emissions (ktCO _{2e}) by top emitting categories of 2023	87
Figure 59 - Annual Welsh Government emissions (ktCO _{2e}) from land use change	88
Figure 60 - Total Fire & Rescue Service emissions (ktCO _{2e}) for 2023 by emission category	92
Figure 61 - Annual emissions (ktCO _{2e}) for Fire & Rescue Services by supply chain and non-supply chain split.....	93
Figure 62 - 2023 emissions (ktCO _{2e}) by Fire & Rescue Services and emissions category.....	94
Figure 63 - 2023 Building related emissions (ktCO _{2e}) for Fire & Rescue Services by emissions sub-category	95
Figure 64 - Time Series of Fire & Rescue Services building emissions (ktCO _{2e}) by sub-category	96
Figure 65 - 2023 Transport related emissions (ktCO _{2e}) by Fire & Rescue Services and emissions sub-category.....	97
Figure 66 - Annual transport related emissions (ktCO _{2e}) for Fire and Rescue Services by emissions sub-category.....	98
Figure 67 - Annual waste related emissions (ktCO _{2e}) for all Fire & Rescue Services	99
Figure 68 - Annual Fire & Rescue Service supply chain spend (£) and emissions (ktCO _{2e}).....	100
Figure 69 - Annual Fire & Rescue Service supply chain emissions (ktCO _{2e}) by top emitting categories of 2023	101
Figure 70 - Total National Park Authority emissions (ktCO _{2e}) for 2023 by emissions category.....	105
Figure 71 - Annual emissions (ktCO _{2e}) for National Park Authorities by supply chain and non-supply chain split.....	106
Figure 72 - 2023 emissions (ktCO _{2e}) by National Park Authority and emissions category.....	107
Figure 73 - 2023 Building related emissions (ktCO _{2e}) for National Park Authorities by emissions sub-category	108
Figure 74 - Time Series of National Park Authorities building emissions (ktCO _{2e}) by sub-category	109
Figure 75 - 2023 Transport related emissions (ktCO _{2e}) by National Park Authority and emissions sub-category.....	110
Figure 76 - Annual transport related emissions (ktCO _{2e}) for all National Park Authorities by emissions sub-category ..	111

Figure 77 – 2023 National Park Authority waste emissions (tCO ₂ e).....	112
Figure 78 - Annual National Park Authority supply chain spend (£) and emissions (ktCO ₂ e).....	113
Figure 79 - Annual National Park Authority supply chain emissions (ktCO ₂ e) by top emitting categories of 2023	114
Figure 80 – National Park Authority 2023 emissions (ktCO ₂ e) from land use.....	115
Figure 81 - Annual National Park Authorities emissions (ktCO ₂ e) from land use change.....	116
Figure 82 – National Park Authority renewable electricity and heat generation (kWh) in 2023	117
Figure 83 - Total Other Public Sector Bodies emissions (ktCO ₂ e) for 2023 by emissions category	120
Figure 84 - Annual emissions (ktCO ₂ e) for Other Public Sector Bodies by supply chain and non-supply chain split	121
Figure 85 - 2023 emissions (ktCO ₂ e) by Other Public Sector Body and emissions category (note different axis scales).....	122
Figure 86 - 2023 Building related emissions (ktCO ₂ e) for Other Public Sector Bodies by emissions sub-category.....	123
Figure 87 - Time Series of Other Public Sector Bodies building emissions (ktCO ₂ e) by emissions scope	124
Figure 88 - 2023 Transport related emissions (ktCO ₂ e) by Other Public Sector Body and emissions sub-category (note different axis scales).....	125
Figure 89 - Annual transport related emissions (ktCO ₂ e) for all Other Public Sector Bodies by emissions sub-category.....	126
Figure 90 - 2023 Waste related emissions by Other Public Sector Body and emissions sub-category	127
Figure 91 - Annual waste related emissions (ktCO ₂ e) for all Other Public Sector Bodies.....	128
Figure 92 – Other Public Sector Body supply chain spend (£) and emissions (ktCO ₂ e).....	129
Figure 93 - Annual Other Public Sector Body supply chain emissions (ktCO ₂ e) by top emitting categories of 2023.....	130
Figure 94 – Other Public Sector Body 2023 emissions (ktCO ₂ e) from land use	131
Figure 95 - Annual Other Public Sector Body emissions (ktCO ₂ e) from land use change.....	132
Figure 96 – Other Public Sector Body renewable electricity and heat generation (kWh) in 2023.....	133

About the Welsh Government Energy Service

The Welsh Government Energy Service can help progress energy efficiency, renewable energy, and low-emission vehicle projects.

The Energy Service supports organisations in Wales to develop energy efficiency, renewable energy and low-emission vehicle projects that will lower carbon emissions and provide cost savings, income generation and wider community benefits. The Energy Service's aim is to make energy and carbon reduction projects happen in Wales.

We offer technical, commercial and procurement support through a team of experts with extensive experience in developing energy and decarbonisation projects in Wales.

The energy service is open to public sector bodies and community enterprises, including Welsh Government, local authorities, NHS Wales, universities, colleges and schools, national parks, fire and rescue services, national museums and libraries, arts and sports councils, community councils and community enterprises.

Between July 2018 and May 2023, the Welsh Government Energy Service successfully supported investment of £169.8m of energy efficiency, renewable energy and zero emission fleet projects across Wales. This equates to an estimated 695,000 tons of CO₂e. Further information can be found in the annual report published by the Welsh Government Energy Service found [here](#).

Glossary of Terms

Abbreviation	Meaning	Abbreviation	Meaning
WGES	Welsh Government Energy Service	PPA	Power Purchase Agreement
LA	Local Authority	REGO	Renewable Energy Guarantee of Origin
NHS	National Health Service	PV	Photovoltaic
GHG	Greenhouse Gas	GWh	Gigawatt-hour
kWh	Kilowatt-hours (10 ³)	F-gas	Fluorinated Gases
MWh	Megawatt-hours (10 ⁶)	SIC	Standard Industrial Classification
GWh	Gigawatt-hours (10 ⁹)	PS	Public Sector
FTE	Full Time Employee	HVO	Hydrotreated Vegetable Oil
PG&S	Purchased Goods and Services	LPG	Liquefied Petroleum Gas
ktCO ₂ e	Kilotonnes of Carbon Dioxide Equivalent	UHB	University Health Board
tCO ₂ e	Tonnes of Carbon Dioxide Equivalent		
NWSSP	NHS Wales Shared Service Partnership		
WAST	Welsh Ambulance Service Trust		
FRS	Fire and Rescue Service		

Navigating this Report

This document has been prepared to cover the emissions from the whole Welsh public sector. It also provides a breakdown of emissions by organisation type and individual public bodies for local authorities, NHS Wales, universities and colleges, Welsh Government, fire and rescue services, national park authorities, and other public sector bodies.

To support navigation within this document, the reader can return to the main contents page by clicking 'Return to table of contents', which is present at the top left-hand side of each page. From there you can navigate to the relevant section.

[Return to table of contents](#)



Navigating this Report

This report has been prepared to cover the emissions

It is also possible to navigate back to the start of any section. To do this, please click 'Return to start of section', found on the bottom left-hand side of each page.

[Return to start of section](#)



Welsh Government Energy Service | Introduction | Page 14

Introduction

Background

In March 2021 following advice from the Climate Change Committee, Welsh Government set a target to achieve Net Zero by 2050. In addition, interim targets were set, and a series of 5-yearly carbon budgets established. The next interim target has been set as a 63% reduction in emissions by 2030 against a 1990 baseline. To complement this, Welsh ministers subsequently confirmed an ambition for the public sector to lead the way and achieve Net Zero by 2030.

By mitigating the impacts of climate change, Welsh public bodies can have a positive local impact by reducing energy costs and nurturing investment opportunities for a low

carbon economy. In addition, related benefits such as improved air quality and public health can be realised.

Welsh Government recognise that the public sector is distinctly positioned to encourage emission reductions beyond its immediate sphere of influence. The annual reporting of carbon emissions is a fundamental process required to take informed action on climate change and monitor progress towards Net Zero.

Carbon reporting has been completed by Welsh public bodies over the last four years (reporting cycles). However, the number of organisations that have reported has increased substantially since 2020³. The data compiled as part of the

reporting process can be used by individual organisations and across the wider Welsh public sector to identify areas where action should be focused. Data should also be used for monitoring progress towards Net Zero.

³ 71 organisations in 2023, compared to 47 in 2020

Outline of this report

This report provides a summary of 2023 Welsh Public Sector carbon emission accounts at the national, sub-sector and individual public body level. This covers the financial year 2022-23. These accounts are based on data submitted between April and September 2023. All outputs are based on data provided through the standardised data collection process. Year-on-year trends are provided based on a comparison of the 2023 data with the previous reporting rounds. Where possible, narrative related to identified changes is included.

Commentary on the coverage of reporting can be found in appendix [\(A1\)](#). This is accompanied by comments related to areas for improvements in reporting [\(A2\)](#) and a summary of the data processing methods used to compile the carbon accounts [\(A3\)](#).

Key considerations

There was a high level of engagement from Welsh public bodies in the fourth round of submissions. Praise should be given to all organisations that participated. Overall, an improvement in the completeness and punctuality of reporting in 2023 was observed (in comparison to previous cycles).

Although improvements have been made, it should be acknowledged that advances in completeness and measurement precision are an enduring feature of any carbon reporting regime.

There is an ongoing need to evolve measurement approaches and to refine data collection methods in future reporting years. For example, improvements required in measurement accuracy related to purchased goods and services, land use emissions and removals, commuting and homeworking.

It should be noted that differences in emissions sources and an increasing number of reporting bodies affects the comparability between reporting cycles across all 4 years (e.g. additional emission sources such as F-gases added, and the number of organisations increasing from 47 to 71 between 2020 and 2023). It should also be noted that previous reporting cycles were also affected by the COVID-19 pandemic. Namely, 2020 and 2021. Conclusions based on year-on-year trends should be carefully considered within this context.

In addition, it should be noted that all organisations involved in Net Zero reporting conduct a wide variety of public services. As such, any comparisons between organisations are naturally sensitive to their specific operations and should not be considered in isolation.

Supply Chain Emissions

Economic proxies provide a rapid assessment of upstream supply chain emissions and allow public bodies to identify hotspots (using £/CO₂e). The Net Zero reporting process uses [Standard Industrial Classification](#) (SIC) based proxies in the absence of supplier specific data. However, there are several limitations to the continued use of such economic proxies. Among these has been the use of outdated emission factors.

Any set of emission factors should be updated on an annual basis where possible. This is to ensure accuracy, relevance, comparability, and transparency. However, the emission factor data set used for supply chain reporting for 2020-2022 relied on the same set of 2011 emissions factors (for all years). The emission factors supplied in the most recent version of the reporting

template utilise an updated set of factors (based on 2019 data).

The adjustment of the SIC based proxies accounts for changes in emissions efficiency. For example, related to grid decarbonisation, and the impact of moving towards a lower carbon service-based economy, as opposed to a manufacturing-based economy. Updates also include adjustments for inflation. The consequence of these updates is a general reduction in emissions intensity of the proxies, over time.

The average emission intensity change across all factors (between 2011 and 2019), was a -15% reduction. However, for some specific categories (relevant to public bodies) the reduction in emission intensity is much greater. For example, a -36% reduction for *Construction Activities* and -41% reduction for *Professional, Scientific*

and Technical Activities. The consequence being if a reporting body was to spend the same amount on *Construction Activities* between 2022 and 2023, for example, the associated emissions estimate would show a -36% reduction. This “reduction” in reported emissions is therefore only a result of a methodological update, rather than a genuine emissions reduction. Any efforts to reduce supply chain emissions will only be genuinely distinguishable by using supplier specific data (replacing the cost proxy method).

Public bodies are encouraged to address this issue by moving away from the use of cost proxies as soon as practicable. N.B. proxy emission factors will be updated annually going forward. These factors include a 4-year lag due to availability i.e. 2023 reporting is based on 2019 factors, and 2024 reporting will be based on 2020 factors, etc.

Welsh Public Sector Carbon Emissions

This section provides an overview of the aggregated carbon emissions estimates at the whole Welsh public sector level. Figures are provided for the current reporting period alongside a comparison of figures in previous reporting cycles.

Headlines

Total Welsh public sector carbon emissions for 2023 equated to **3,118 ktCO₂e**.

The majority of emissions arise from activities within the **supply chain at 2,137 ktCO₂e** (69% of the total footprint).

Buildings and transport contribute the next largest portions of the public sector footprint, 554 ktCO₂e and 354 ktCO₂e respectively.

Local Authorities represent the largest proportion of the public sector footprint by organisational type, contributing **1,374 ktCO₂e**, or 44%.

NHS Wales and Other public sector bodies represent organisational types with the next most significant contributions to the total public sector footprint – 1,089 ktCO₂e and 333 ktCO₂e respectively.

Emissions have decreased by 6% between 2023 and 2022, equivalent to 182 ktCO₂e. Emissions have however increased by 40% between the first reporting year 2020 and 2023. This is driven by an increase in the number of organisations reporting.

The number of reporting organisations has increased each

round. 2023 represents the current peak with the inclusion of the **highest number of reporting organisations to date (71)**.

Please note that the reported figures are approximated to the nearest whole number for ease of presentation. Consequently, there may be slight discrepancies at aggregate levels when whole numbers are summed, due to the exclusion of decimal values.

Total estimates for 2023

Total emissions from all Welsh Public Sector Bodies equated to 3,118ktCO₂e in 2023.

The majority of emissions arise from activities within the supply chain. These account for 69% of total emissions. Buildings and transport contribute the next highest proportion of emissions (18% and 11% respectively). Homeworking and waste together account for the remainder.

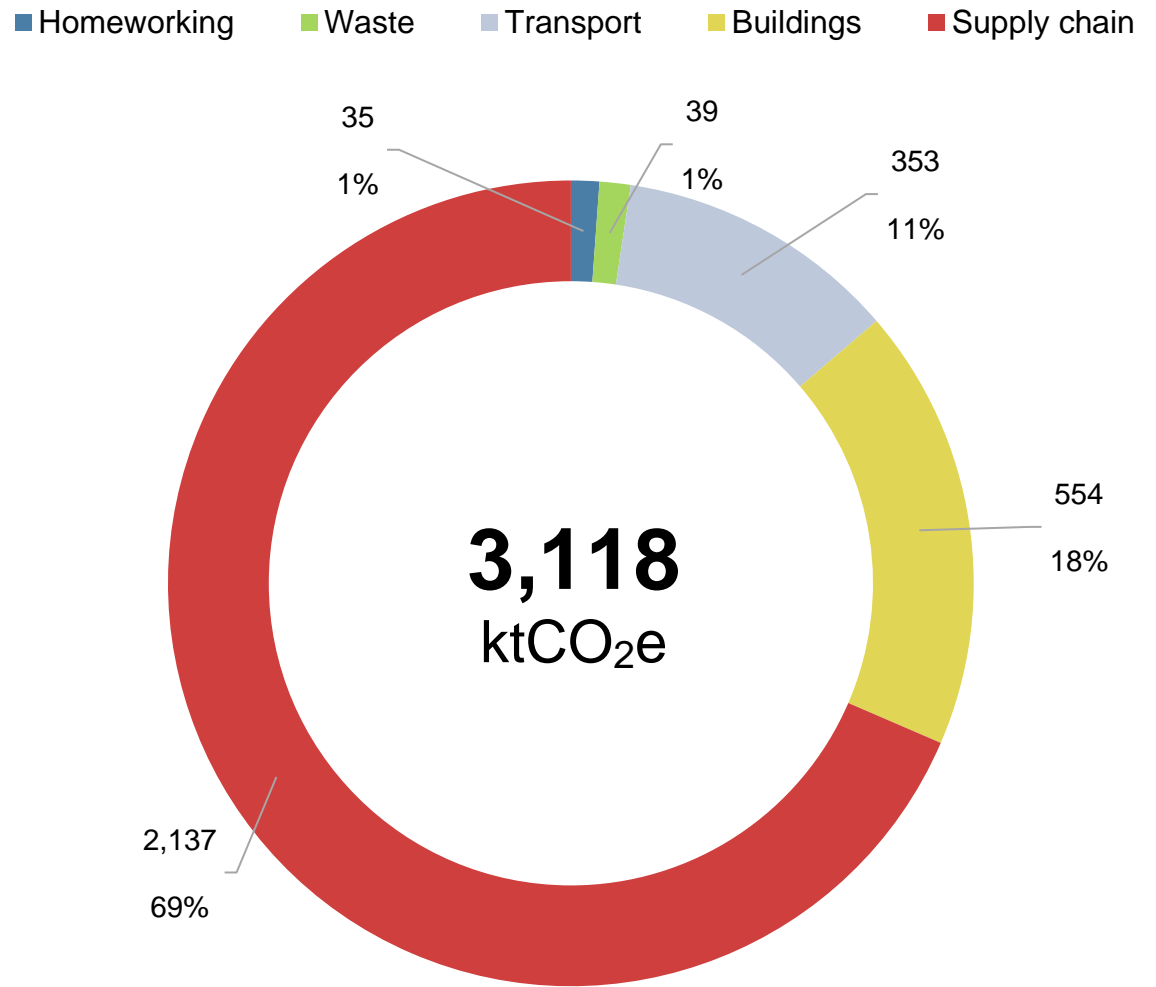


Figure 1 - Total public sector emissions (ktCO₂e) by emissions category for 2023

Local authorities contribute the most emissions to the total public sector footprint (44%), followed by NHS Wales (35%), and Other Welsh Public Bodies (11%).

Other groups (Universities/Colleges, Welsh Government, Fire and Rescue Services, and National Park Authorities) contribute the remaining 10%.

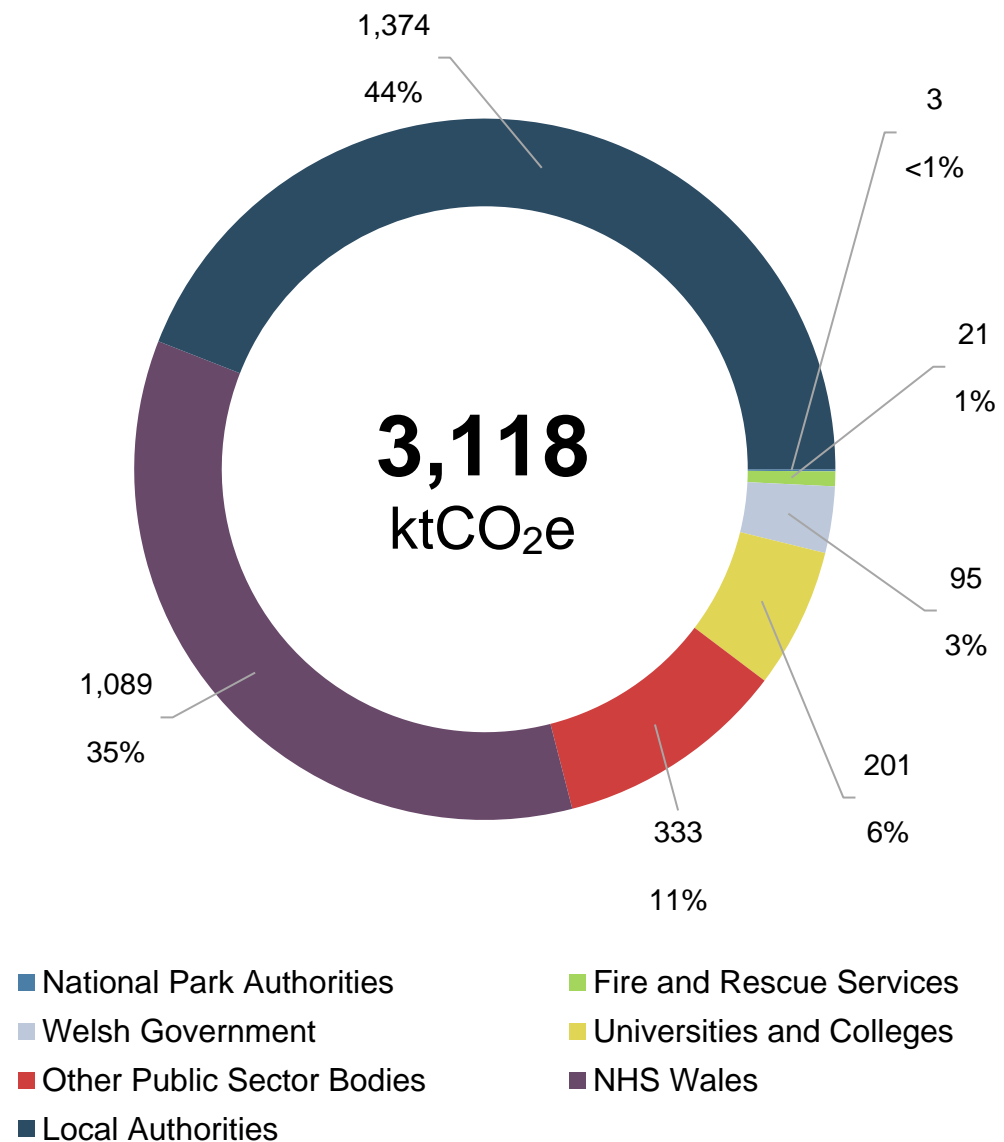


Figure 2 - Total public sector emissions (ktCO₂e) by organisation type for 2023

Annual emissions

Total public sector emissions have decreased over the previous two years of reporting. Between 2022 and 2023 a 6% decrease in total emissions has occurred. Since the first year of reporting, however, emissions have increased by 40% from 2,227 ktCO₂e.

Over this period, the number of reporting organisations has also increased. The most recent reporting year accounts for the highest number of reporting organisations (71). This is an increase of 2 organisations against 2022 and an increase of 24 organisations against 2020. The macro changes seen in the total public sector footprint are largely driven by the change in reporting organisations.

The two new reporting bodies for 2023 (National Resilience Wales and Bridgend College) cumulatively equate to 1.8 ktCO₂e.

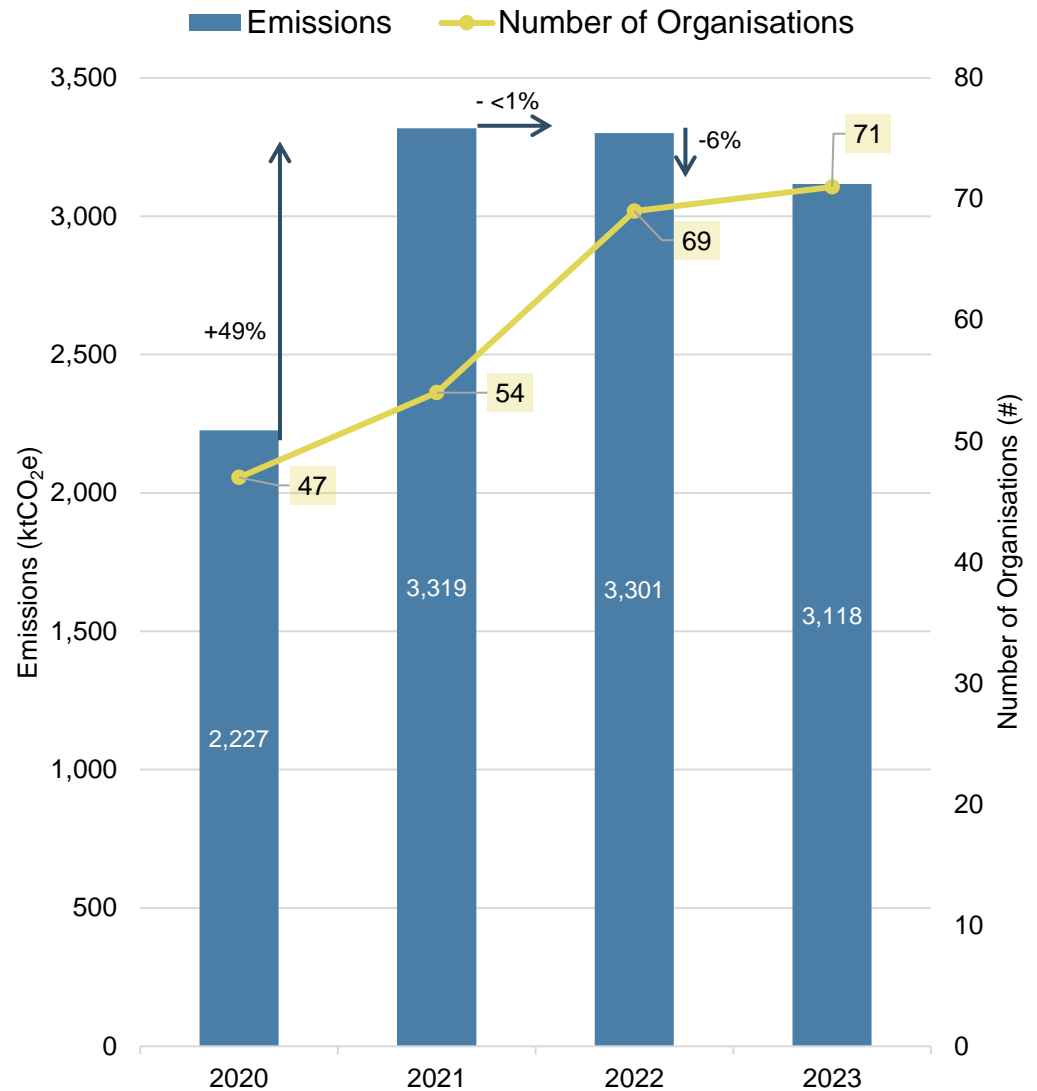


Figure 3 - Annual total public sector emissions (ktCO₂e) and number of reporting organisations.

Total public sector emissions from buildings have previously been increasing. However, between 2022 and 2023, building emissions have decreased. The trend across all four years has largely been driven by the increase in reporting organisations. However, a reduction in gas consumption alongside national electricity grid decarbonisation has driven a decrease in building emissions between 2022 and 2023.

Transport emissions have increased annually, with increases in fleet and commuting emissions behind this. Business travel emissions have decreased each year but have seen an increase between 2022 and 2023. Waste emissions have decreased since 2022 driven by lower levels of reported waste to landfill. Homeworking emissions have only been reported from 2022 and remain static compared to last year.

NB. For 2023, one organisation provided supply chain data only hence only 70 organisations are quoted for 2023 here.

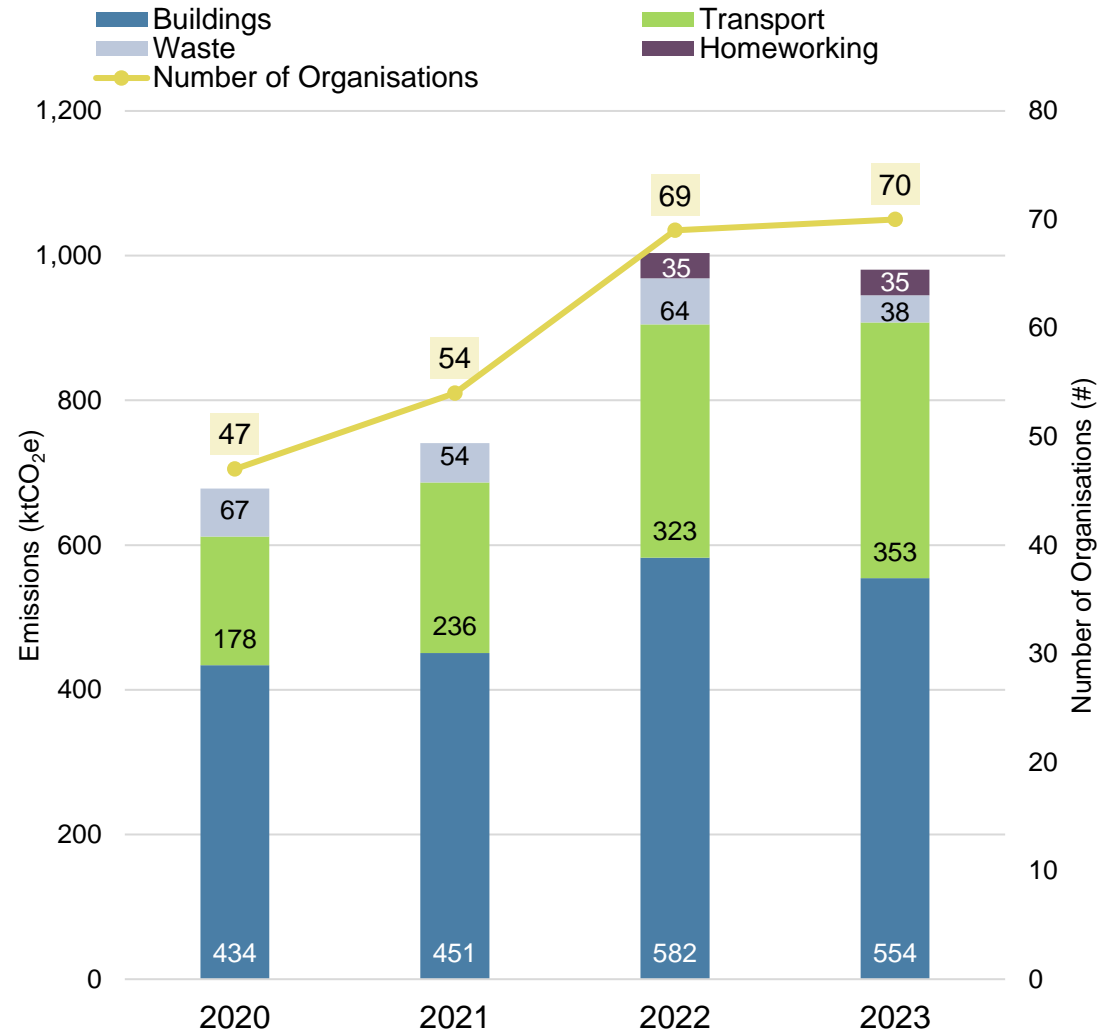


Figure 4 - Total public sector emissions (ktCO₂e) by category (excluding supply chain), overlaid with number of organisations reporting those categories (note some organisations only report supply chain emissions).

Supply chain emissions are dealt with separately here due to their significant contribution to the overall figures.

Supply chain emissions have generally mirrored the level of spend across the public sector. However, this year has seen a marked decrease in reported emissions against a backdrop of increased spend, and the number of reporting organisations. This has been driven by a change in the factors used to calculate emissions (as explained [here](#)). As a result, reported emissions have decreased by 7% despite a 46% increase in spending. This reduction in reported emissions is a result of a methodological update as such, rather than a genuine emissions reduction.

Any efforts to reduce supply chain emissions will only be genuinely distinguishable by using supplier specific data (replacing the economic proxy method).

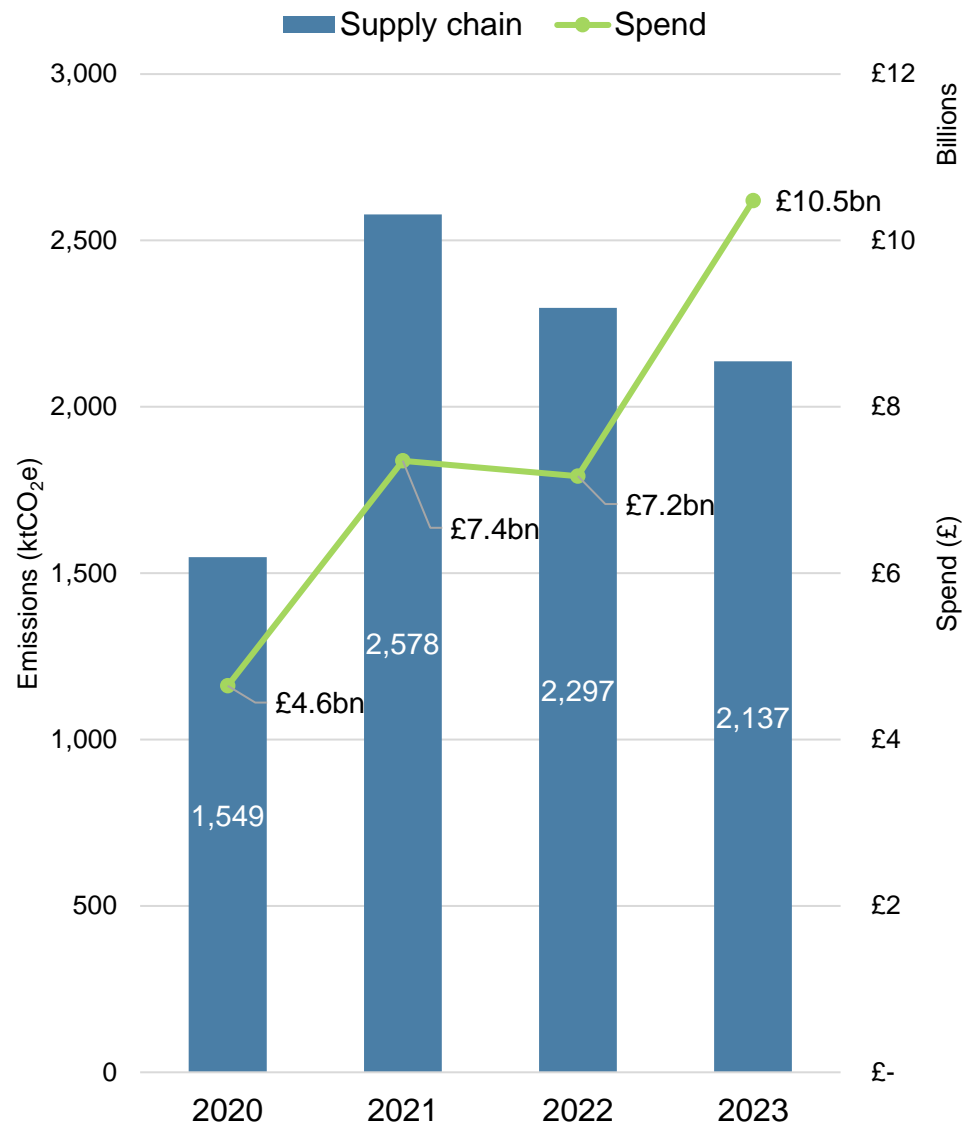


Figure 5 - Annual public sector supply chains emissions (ktCO₂e)

Local Authorities

Overview

Headlines

The total Local Authority footprint for 2023 is estimated to be 1,374 ktCO₂e. In total, twenty-two Local Authorities reported data in 2023.

Local Authority emissions have decreased by 21% since 2022, a decrease of 373 ktCO₂e (from 1,747 ktCO₂e). Since reporting commenced in 2020, emissions have decreased by 10%. The number of Local Authority organisations reporting has remained constant over the same time period (at 22).

Buildings emissions have decreased by 7% since 2022 and decreased overall by 13% since

2020. Transport (including homeworking) emissions have increased by 9% since 2022 and increased by 32% since 2020. Waste emissions have decreased by 44% since 2022 and decreased by 43% since 2020. Supply chain emissions have decreased by 27% since 2022 and by 12% since 2018.

Key contributors to the 2023 total Local Authority carbon footprint were Supply Chain (67%), Buildings (18%) and Transport (11%). These categories cumulatively contribute 96% to the 2023 local authority footprint and 42% of the total 2023 Welsh Public Sector Footprint.

The key contributors to emissions change between 2022 and 2023 for

Local Authority associated emissions were:

- Supply chain emissions reduced from 1,267 ktCO₂e to 923 ktCO₂e (-27%), driven by a reduction in emissions from spend on 'construction' and 'human health and social work activities'* and updates to emission factors.
- Emissions associated with the disposal of waste have decreased from 56 ktCO₂e to 31 ktCO₂e (-44%) driven by a reduction in reported waste going to landfill.
- Emissions associated with natural gas consumption changed from 127 ktCO₂e to

*This has not been adjusted for inflation.

120 ktCO_{2e} (-5%) driven by a reduction in consumption.

- Emissions associated with the consumption of electricity changed from 64 ktCO_{2e} to 59 ktCO_{2e} (-8%). This has been driven by grid decarbonisation as electricity consumption has increased.

About this section

The figures in this section present an overview of data submitted by Local Authorities. This includes annual accounts covering the last four reporting rounds. Further figures present data for key emission categories which includes:

- Buildings
- Transport
- Waste
- Supply Chain
- Land use
- Renewables

The presentation of portfolio level emission estimates from individual organisations is not intended as a comparative exercise. It is purely demonstrative of the available data, and a result of how public sector bodies are categorised (i.e. 22 unique organisations under the Local Authority umbrella).

Organisational size, specific operations and the make-up of emission portfolios should be respected when making any comparative deductions.

Additional commentary for drivers of emissions change between reporting years has not been included. The analysis of this should be conducted at the individual organisational level using activity data.

Commentary of Local Authority data coverage can be found within the appendices.

Please note that the reported figures are approximated to the nearest whole number for ease of presentation. Consequently, there may be slight discrepancies at aggregate levels when whole numbers are summed, due to the exclusion of decimal values.

Total emissions in 2023 equate to 1,374 ktCO₂e for Local Authorities. The majority of total emissions arise from the supply chain (67%). In previous years, supply chain emissions have accounted for 69% to 73% of the total Local Authority footprint. Buildings, which include energy consumption, water and refrigerants contributed 18% to the Local Authority total. Transport related emissions which include business travel, fleet and commuting contributed 11% to the total.

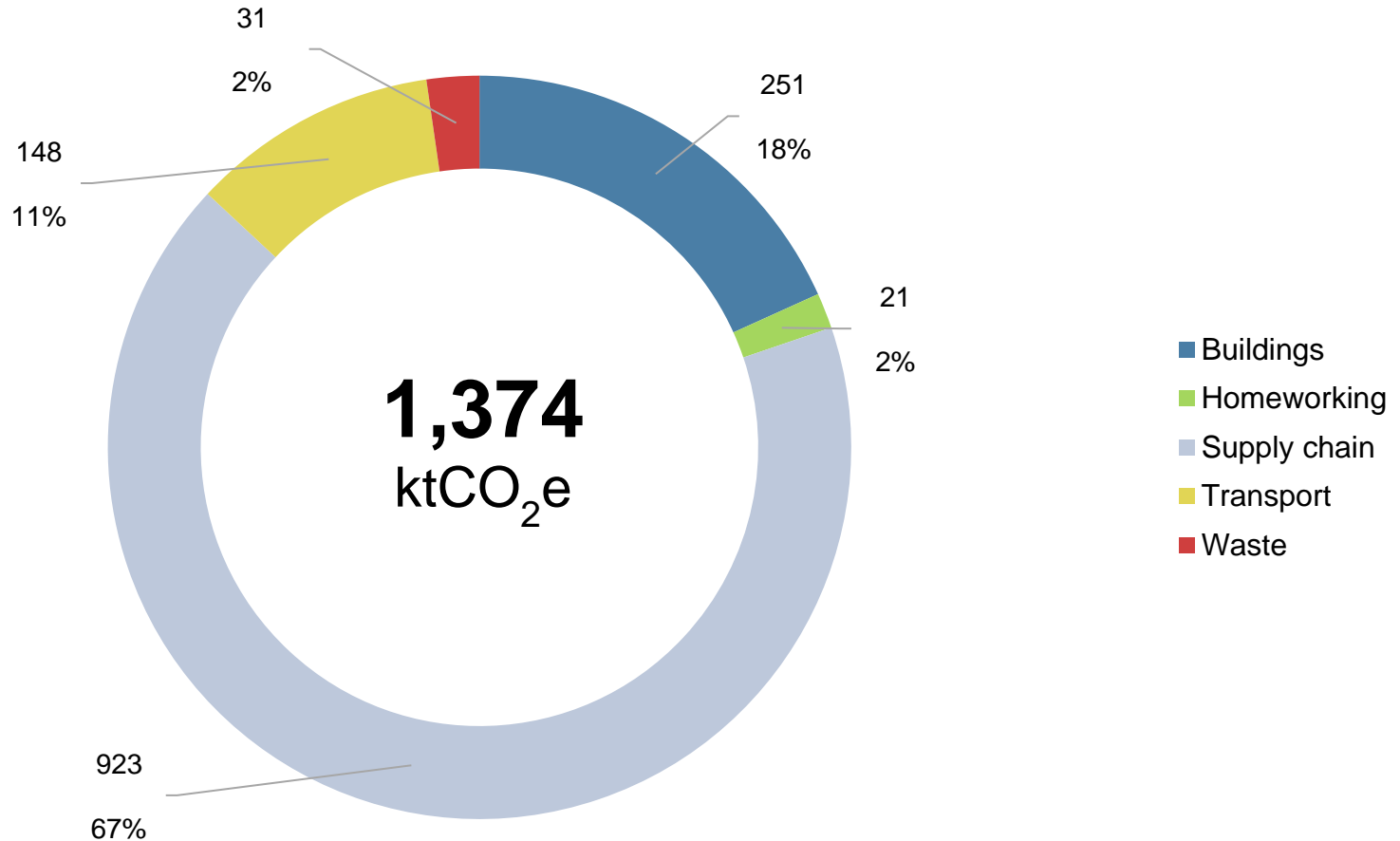


Figure 6 - Total Local Authority emissions (ktCO₂e) for 2023 by emissions category

Emissions data shown below are disaggregated by supply chain and non-supply chain (buildings, transport, homeworking, and waste). Local Authority emissions are at their lowest level since reporting began (1,347 ktCO₂e). This is driven largely by a reduction in supply chain emissions (27% reduction between 2022 and 2023). Non-supply chain emissions have also decreased since 2022 (6% decrease). The number of reporting organisations has remained static since 2020 (yellow line below).

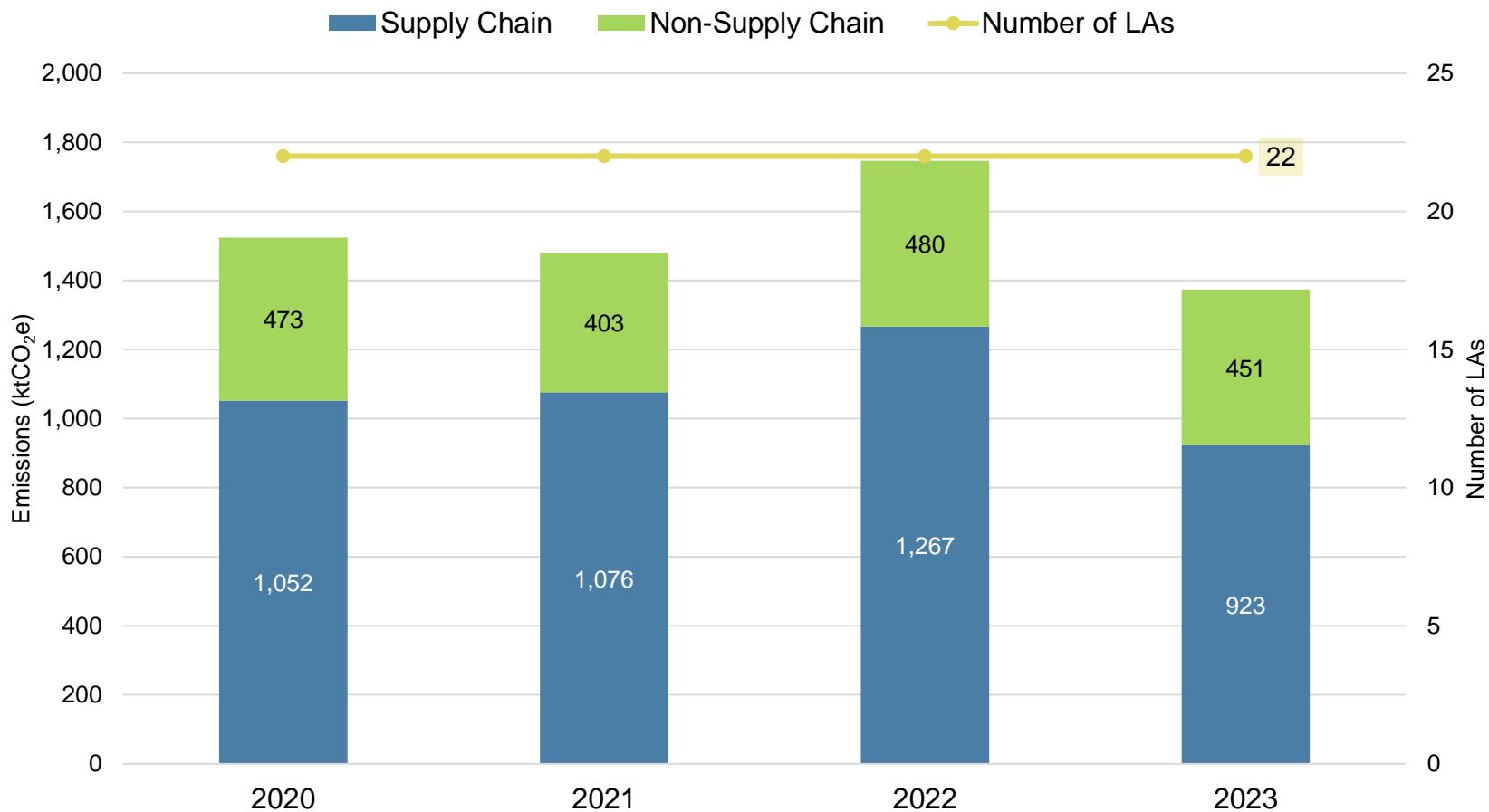


Figure 7 – Annual emissions (ktCO₂e) for Local Authorities by supply chain and non-supply chain split

Local authorities have highly varied sizes, operations, and staff numbers. This is reflected in the range of total emissions per organisation, from 9 ktCO₂e to 170 ktCO₂e. For most local authorities, supply chain emissions contribute the largest proportion of the total footprint (with two exceptions). Buildings and transport tend to make up the next largest portions of each Local authorities' footprint. Most local authorities have a similar split between the different emissions categories.

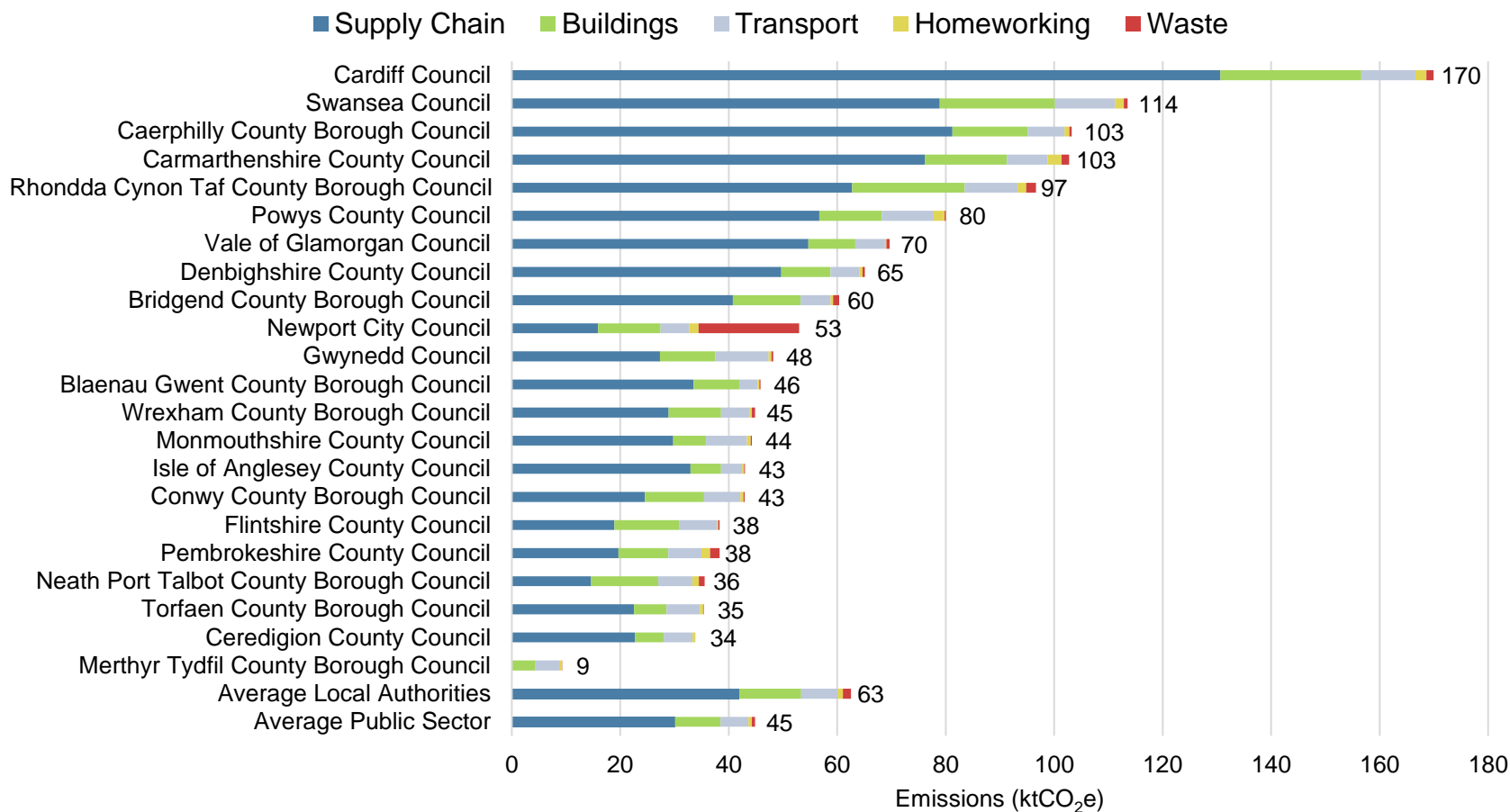


Figure 8 - 2023 emissions (ktCO₂e) by Local Authority and emissions category

Buildings

This sub-section covers emissions sources including energy consumption, water usage, refrigerants, heat and steam. The majority of building emissions arise from fossil fuel usage for heating and hot water. This is almost exclusively from natural gas use. However, all local authorities use one or more types of heavier fossil fuels (gas oil, kerosene, or LPG) in operations. Emissions from electricity tend to be the next largest source of emissions for local authorities (included here are emissions associated with electricity consumption or streetlighting and traffic signals).

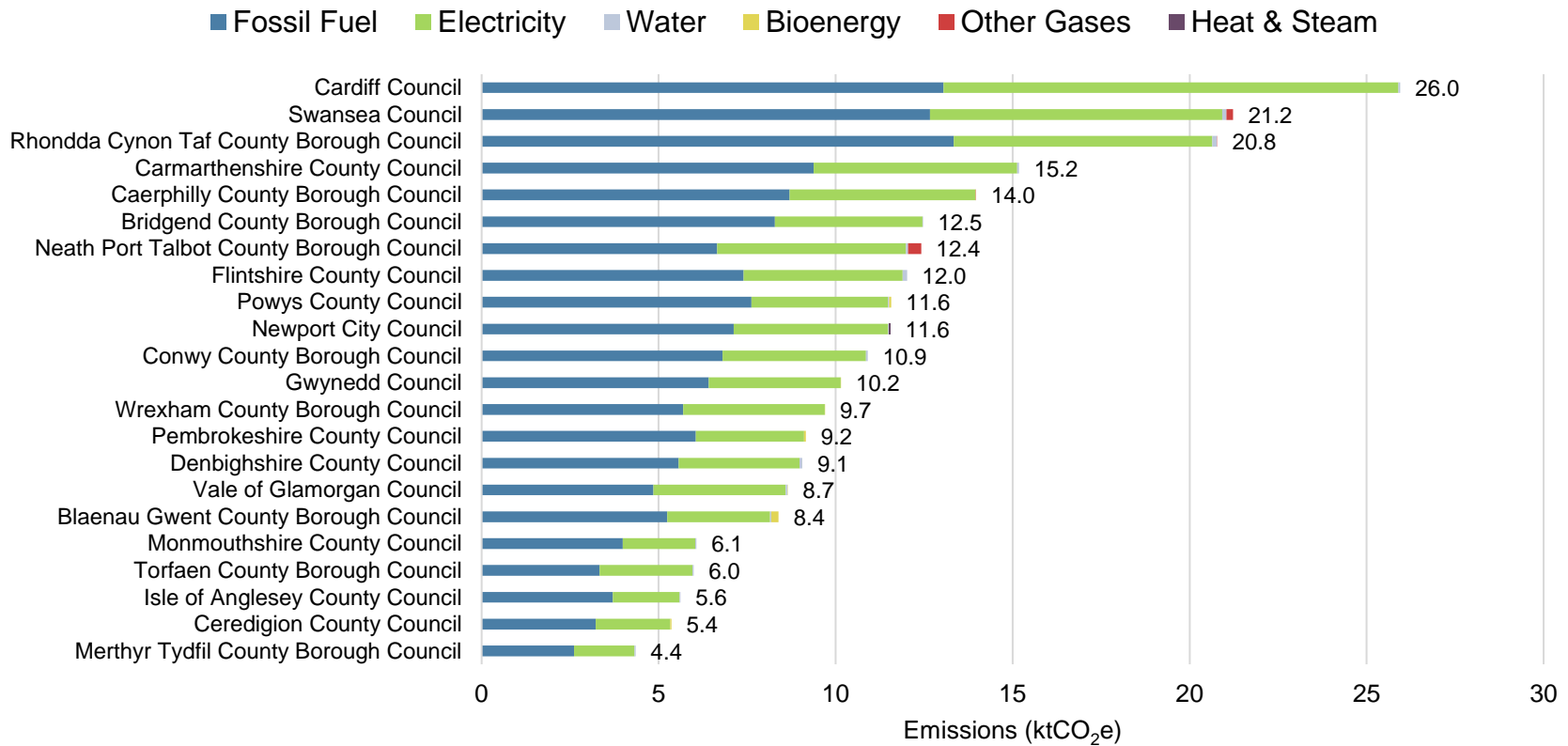


Figure 9 - 2023 Building related emissions (ktCO₂e) for Local Authorities by emissions sub-category

Building related emissions for Local Authorities have decreased between 2023 and the previous reporting year by 18 ktCO_{2e}, or -7%. This has been driven by a reduction in gas and electricity emissions, as well as associated scope 3 emissions from upstream activities linked with the production and distribution of gas and electricity. Gas emissions reduction has resulted from reduced consumption, whereas electricity based emissions have reduced from a result of grid decarbonisation as electricity consumption has increased from the previous year.

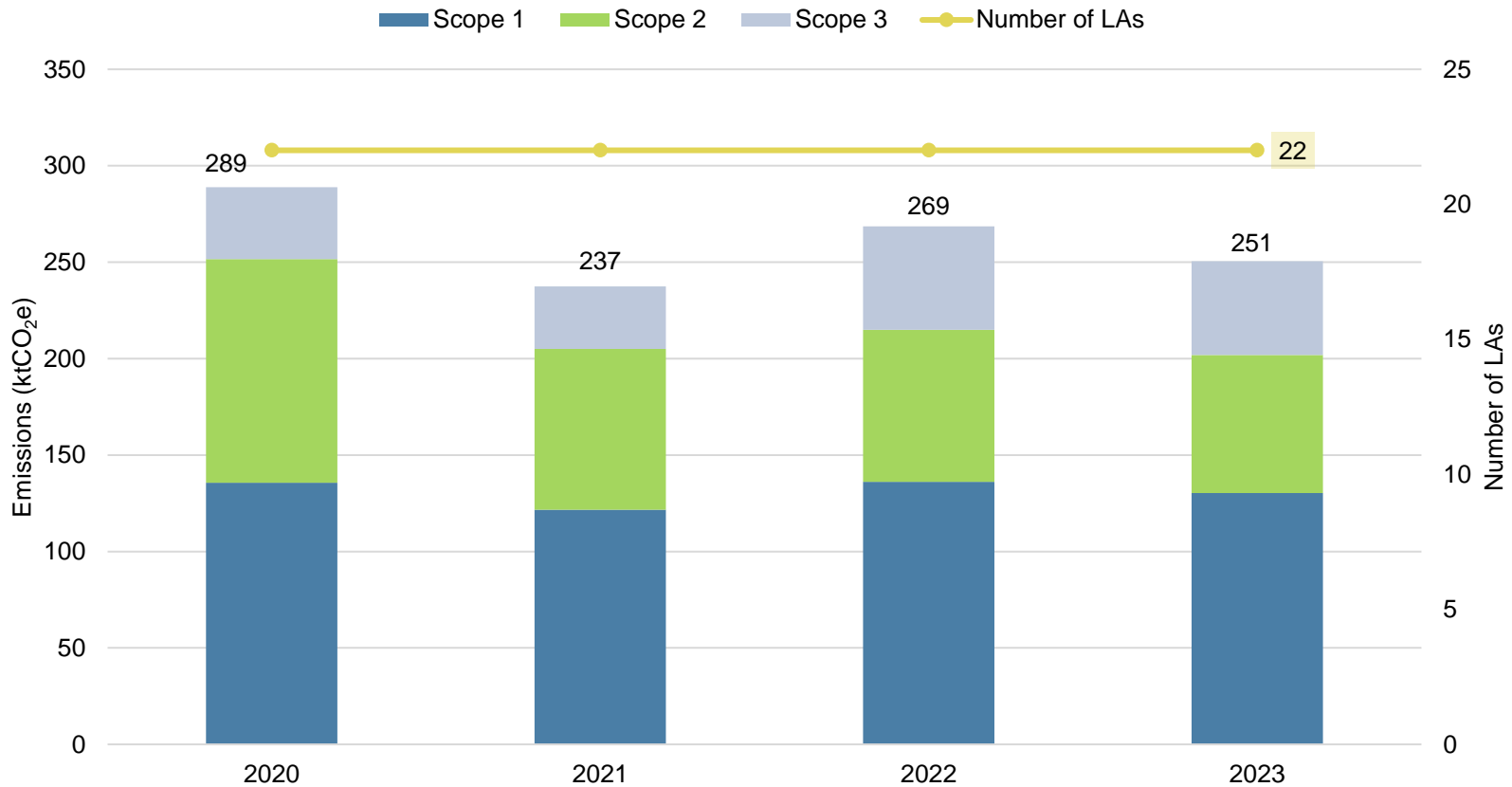


Figure 10 - Time Series of Local Authority building emissions (ktCO_{2e}) by scope

Transport

This sub-section covers emissions sources from fleet, business travel, commuting, and homeworking. The relative contribution of the different transport emissions sources varies greatly between local authorities. In some instances, there are potential gaps e.g., not all local authorities reported emissions sources such as commuting.

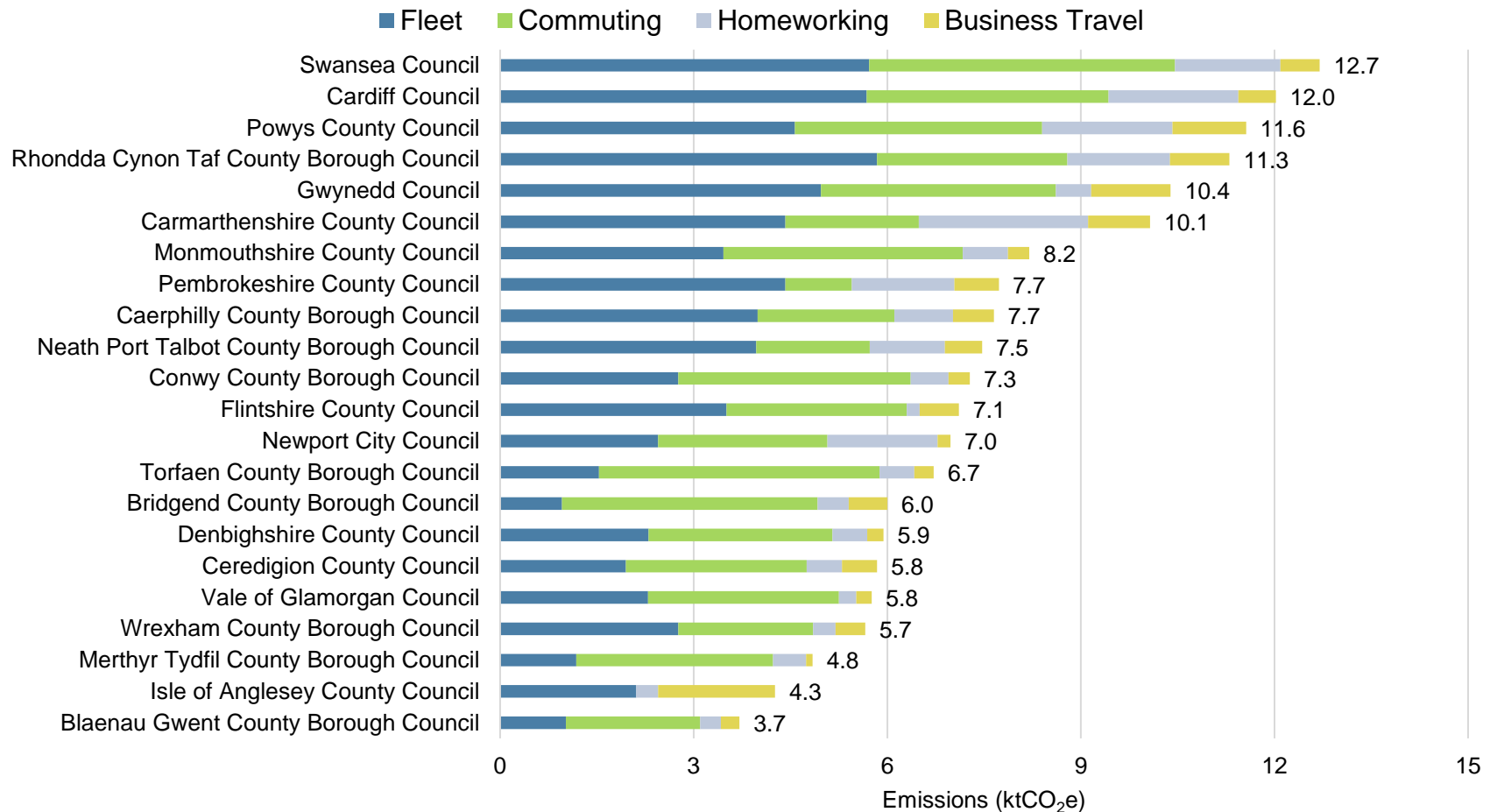


Figure 11 - 2023 Transport related emissions (ktCO₂e) by Local Authority and emissions sub-category

Transport related emissions for Local Authorities have increased between 2023 and the previous reporting year by 14 ktCO_{2e}, or +9%. This has been driven by an increase in fleet, commuting, homeworking and business travel emissions. Fleet and business travel emissions had been decreasing each year between 2020 and 2022. This trend has been reversed in 2023.

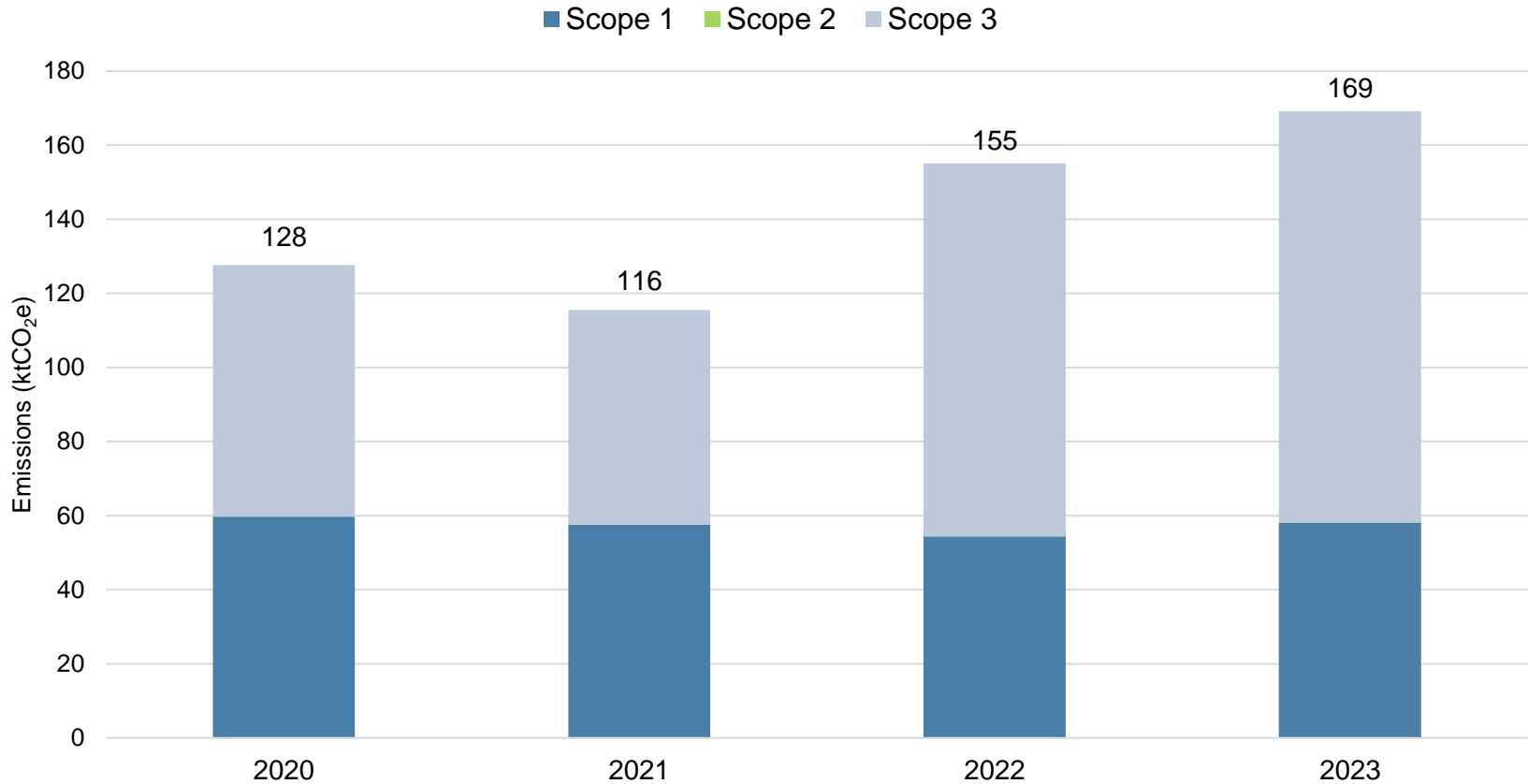


Figure 12 - Annual transport related emissions (ktCO_{2e}) for all Local Authorities by emissions scope

Waste

This sub-section covers emissions arising from waste. Waste is categorised by its source (municipal, organisational or project); by type (paper and card, glass, plastic, etc.) and by disposal method. Emissions are presented here by method of disposal, as this is the primary variable for determining the value of the emission factor. Most emissions arise from recycling, landfill or combustion (energy from waste). Recycling as a means of waste management has a relatively low emissions intensity, demonstrated by a small emissions contribution (despite 44% of waste coming from recycling). The reverse is true for landfill which covers only 1% of waste disposal.

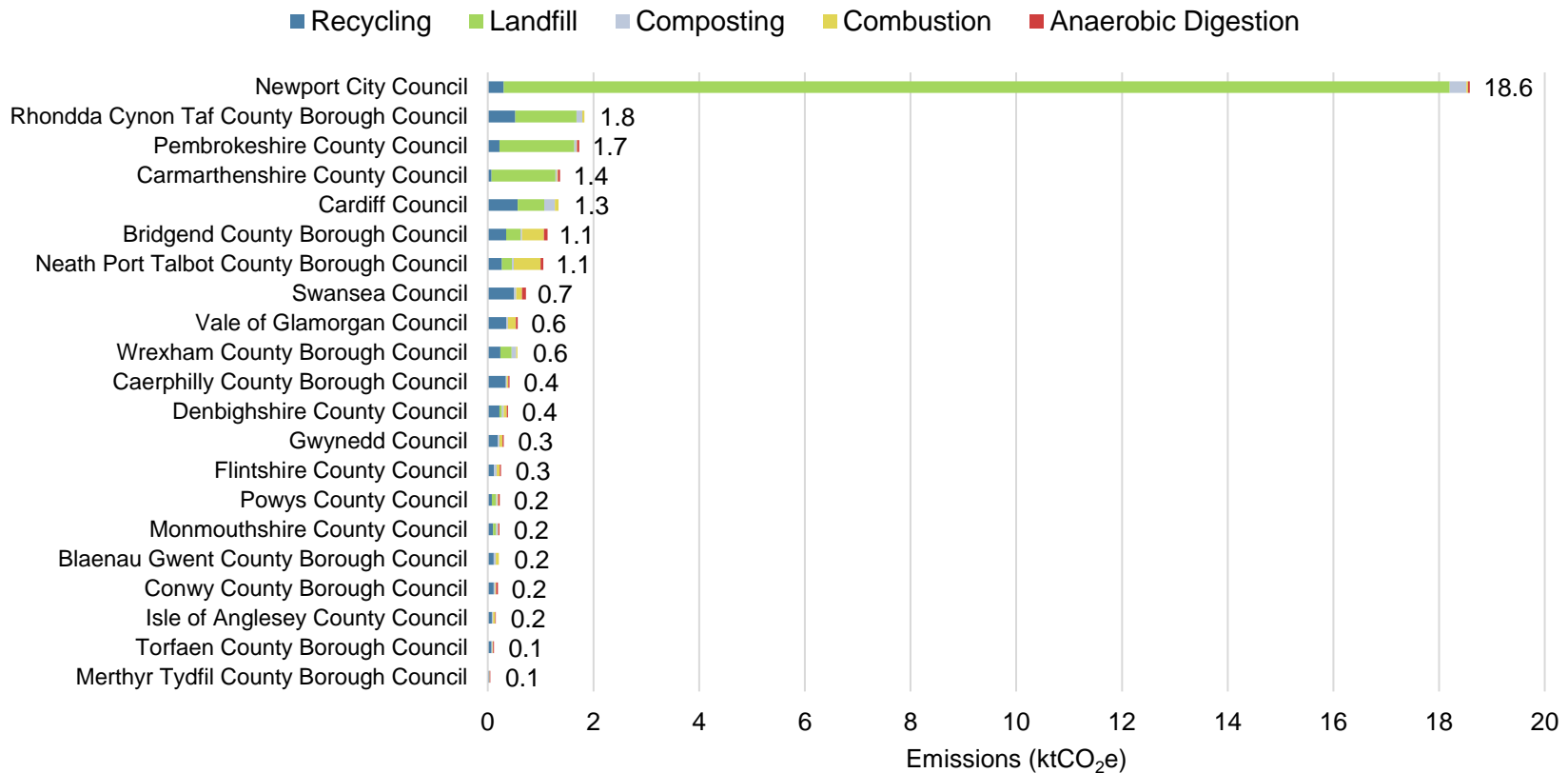


Figure 13 - 2023 Waste related emissions (ktCO₂e) by Local Authority and emissions sub-category

Emissions from waste disposal have fluctuated year to year, with 2023 seeing the lowest recorded emissions figure from waste. Between 2022 and 2023 emissions from waste disposal have decreased by 25 ktCO₂e (-45%). The number of local authorities submitting waste data has changed too, with only 21 out of 22 local authorities submitting data in 2022 and 2023. The significant reduction in emissions is being driven by a substantial reduction in the amount of waste being sent to landfill.

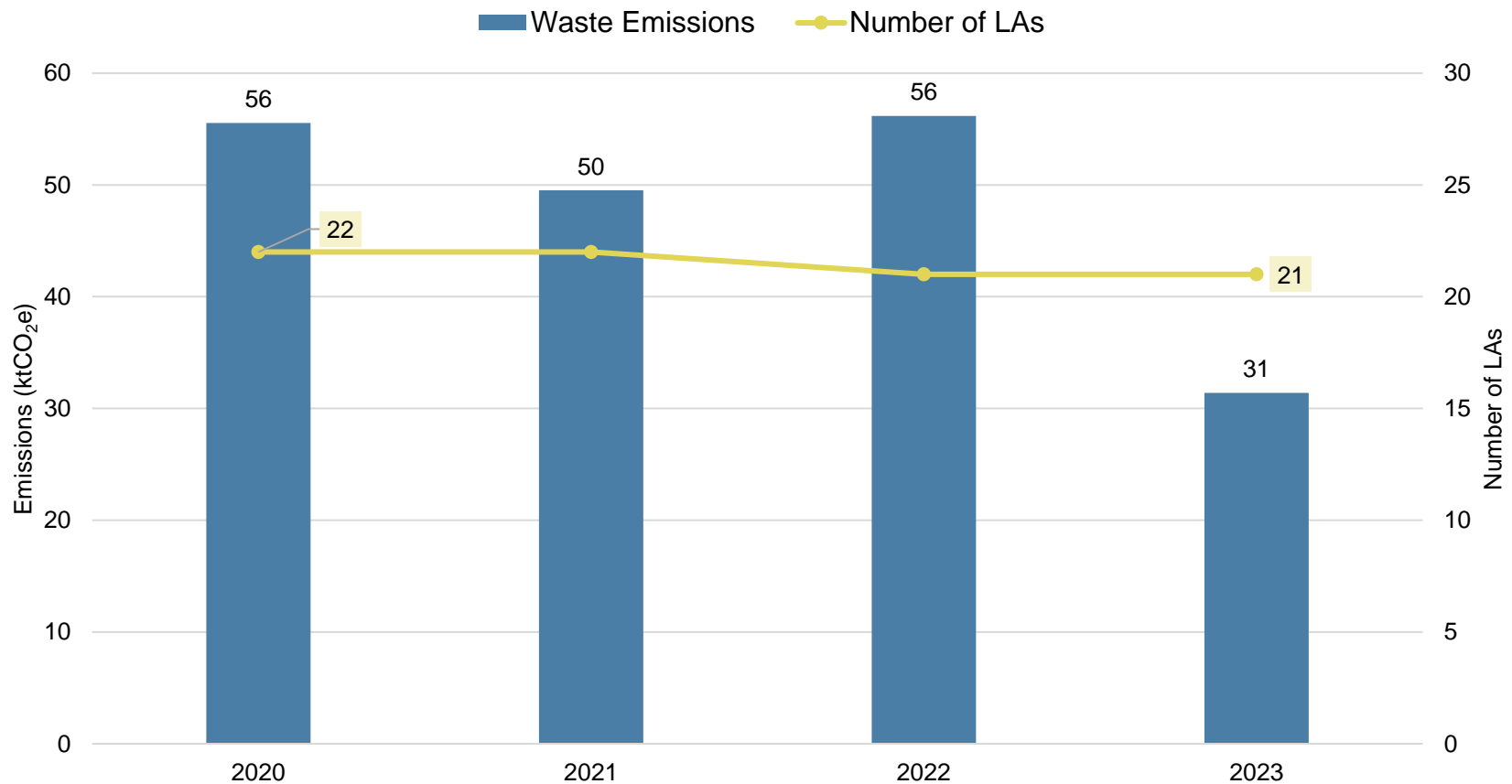


Figure 14 - Annual waste related emissions (ktCO₂e) for all Local Authorities

Supply Chain

This sub-section covers emissions arising from the supply chain. Local authority emissions have decreased significantly between 2022 to 2023, a decrease of 376 ktCO₂e (30%). Over this same period, spend on goods and services has increased by 12%. An update in emissions factors between 2022 and 2023 has resulted in a decrease in emissions whilst spend has increased.

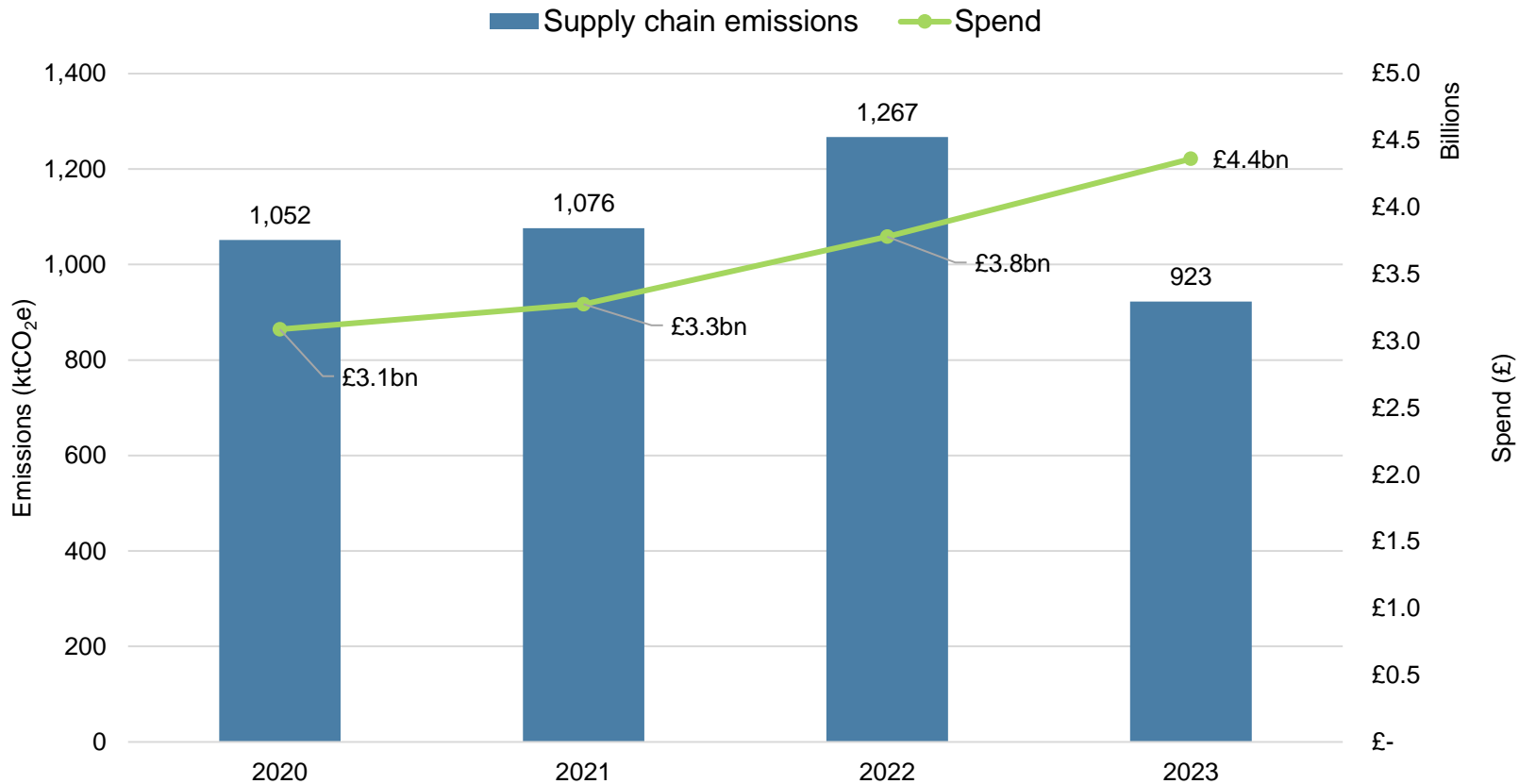


Figure 15 - Annual Local Authority supply chain spend (£) and emissions (ktCO₂e)

The chart (below) shows the top five emitting categories for Local Authority total supply chains for 2023. All other categories beyond the top five have been aggregated within the 'Remainder' category. The same top five categories from 2023 are also displayed across the previous reporting years. 'Human Health and Social Work Activities', 'Transportation and storage' and 'Construction' emissions have decreased between 2022 and 2023, while 'Manufacturing' and 'Water supply; waste management and remediation activities' emissions have increased.

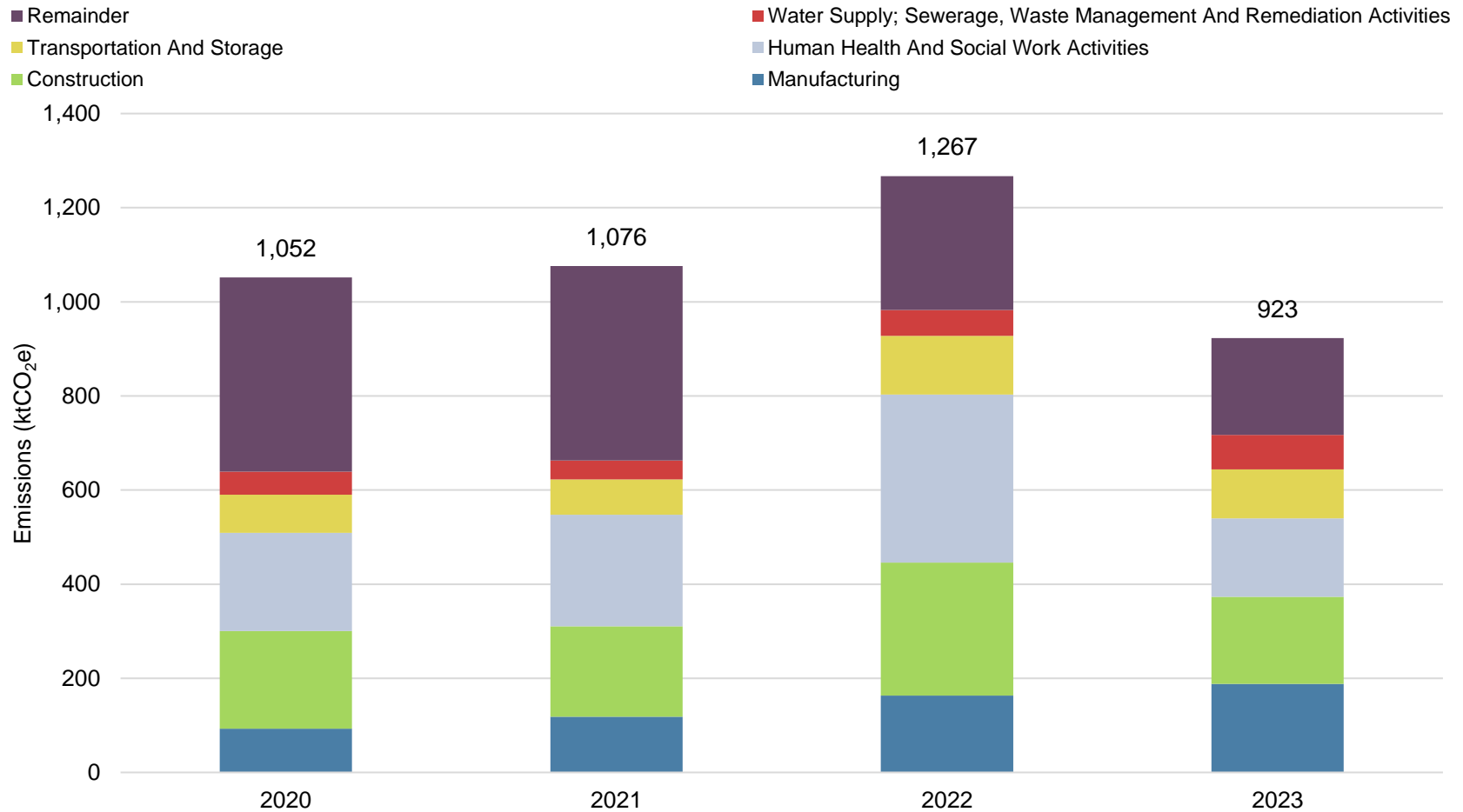


Figure 16 - Annual Local Authority supply chain emissions (ktCO₂e) by top emitting categories of 2023

Land Use

This sub-section covers emissions arising from land. Not all local authorities report land usage, those that do are shown in the chart below. For 2023, total emissions produced from land use change equated to 45.2 ktCO₂e and removals from land use equated to -50.8 ktCO₂e. This provides a net emissions removal from land use change of -5.5 ktCO₂e in 2023.

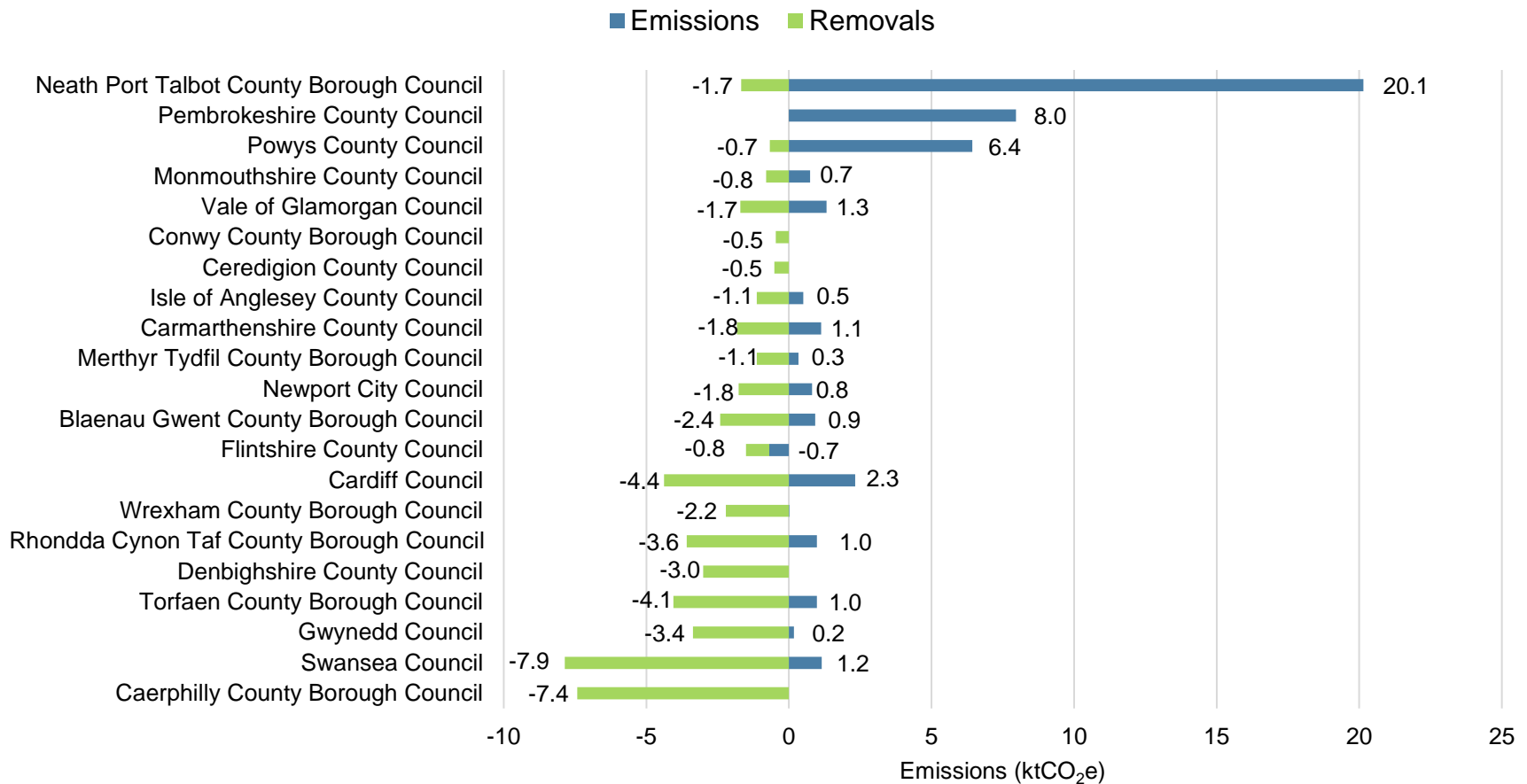


Figure 17 – Local Authority 2023 emissions (ktCO₂e) from land use

Net emissions from land use have increased since last year. This reporting year marks the point of highest net land use emissions. More emissions are removed than produced through land use change.

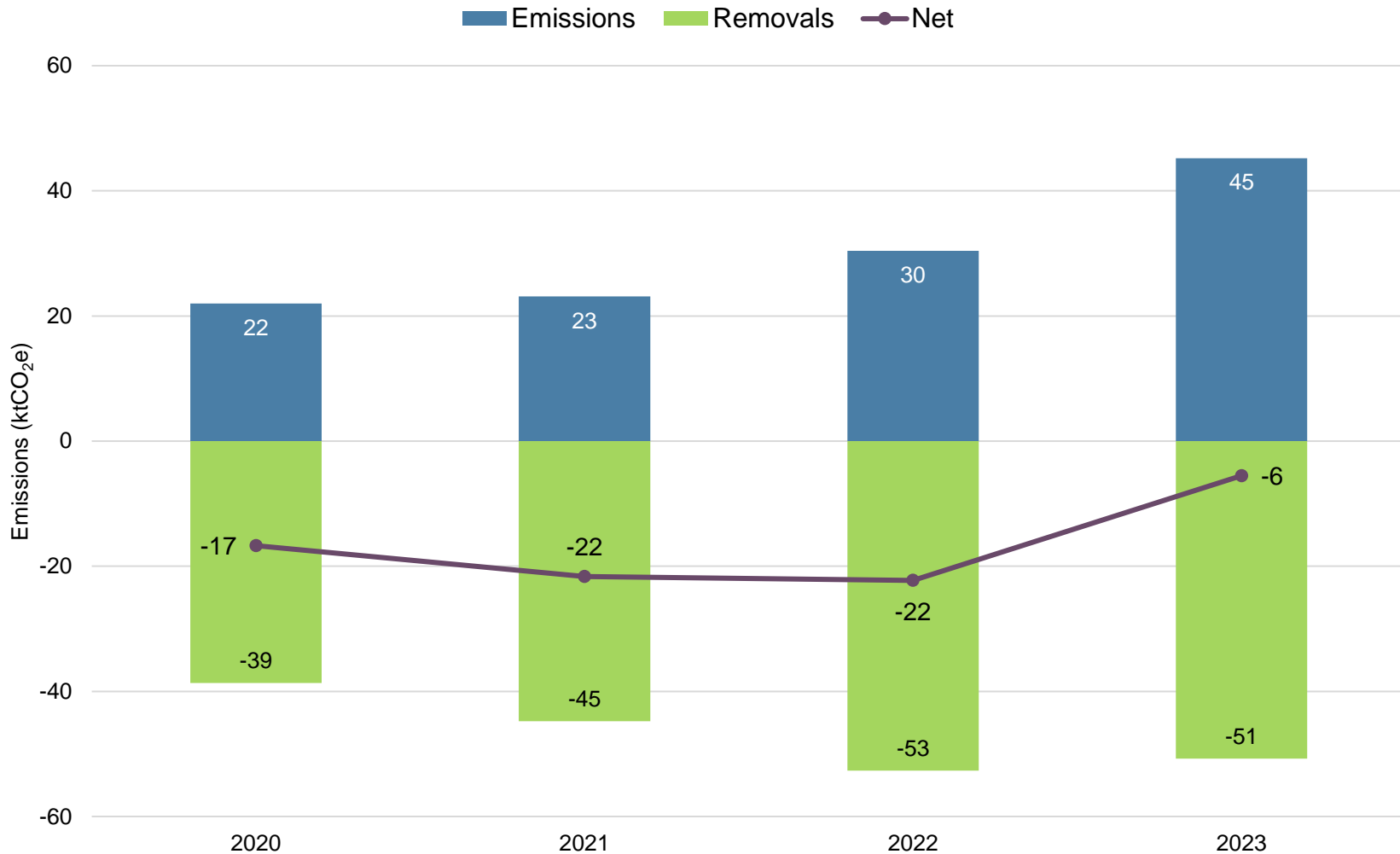


Figure 18 - Annual Local Authority emissions (ktCO₂e) from land use change

Renewables

In 2023 Local Authorities generated over 20 GWh of renewable electricity. The majority of this came from solar PV (94%). Local Authorities also generated almost 1.5 GWh of low carbon heat, thanks to a large biomass boiler facility at Pembrokeshire County Council. Seventeen local authorities also procure electricity through renewable procurement mechanisms, including green tariffs and REGOs. This is not shown on the graph below:

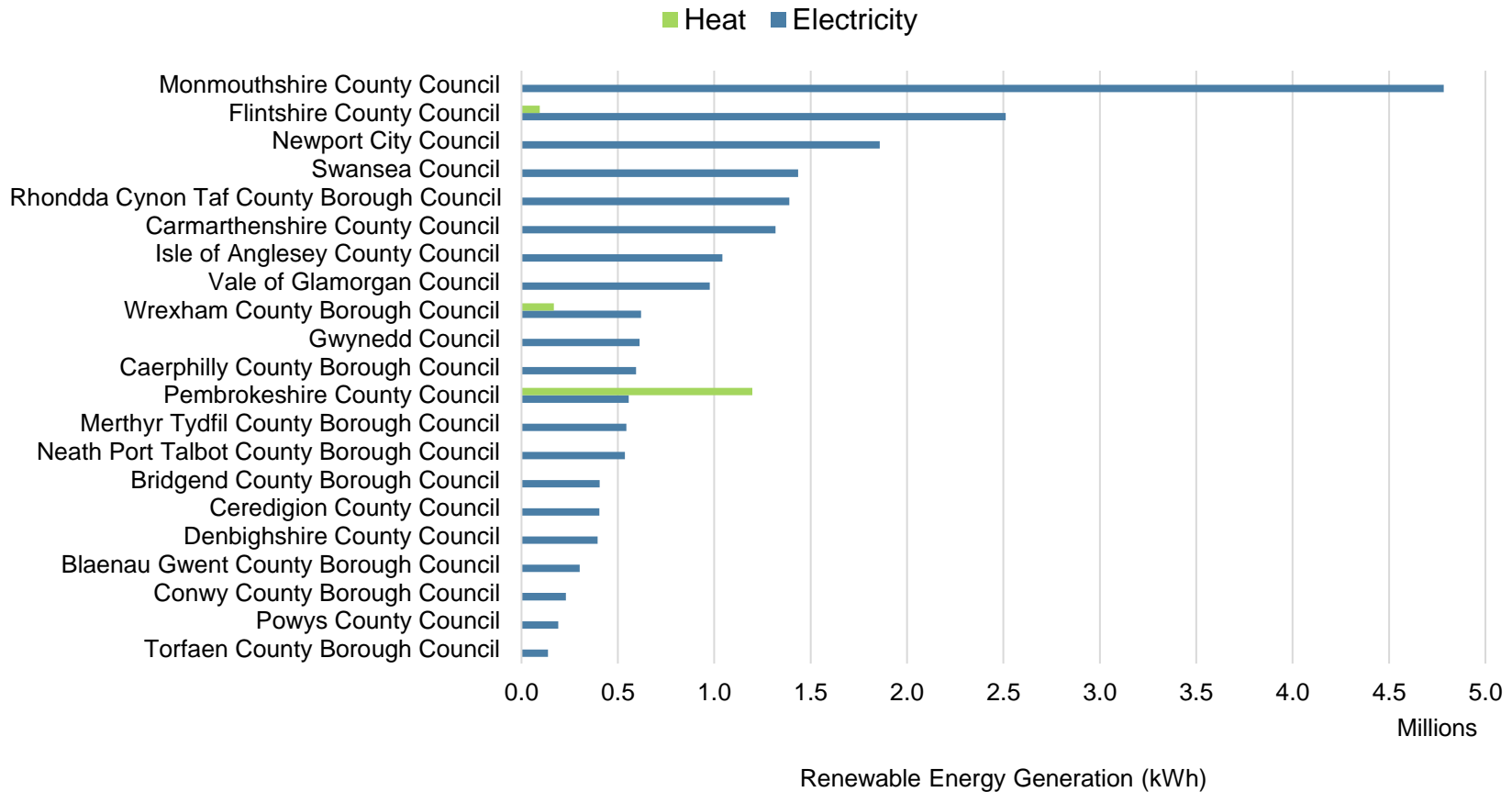


Figure 19 – Local Authority renewable electricity and heat generation (kWh) in 2023

NHS Wales

Overview

Headlines

The total NHS Wales footprint for 2023 is estimated to be 1,089 ktCO_{2e}. In total 13 NHS Wales organisations reported data in 2023 (the same as 2022). NHS Wales emissions have increased by 18% since 2022, an increase of 169 ktCO_{2e} (from 920 ktCO_{2e}). Since reporting commenced in 2018, emissions have increased by 9%. However, the number of NHS Wales organisations reporting has increased from 10 to 13 over the same time period.

Buildings emissions have decreased by 5% since 2022 and decreased by 8% since 2018.

Transport (including homeworking) emissions have decreased by 4% since 2022 and decreased 57% since 2018. Waste emissions have increased by 8% since 2022 and increased nearly tenfold since 2018. Supply chain emissions have increased 29% since 2022 and 31% since 2018.

Key contributors to the 2023 NHS Wales carbon footprint were Supply Chain (75%), Buildings (18%) and Transport (6%). These categories cumulatively contribute 99% to the 2023 NHS Wales footprint and 35% of the total 2023 Welsh Public Sector Footprint. The key contributors to emissions change between 2022 and 2023 for NHS Wales associated emissions were:

- Supply chain emissions changed from 637 ktCO_{2e} to 820 ktCO_{2e} (+29%), driven by a doubling in spend (of the spend data provided)*.
- Emissions associated with natural gas consumption changed from 132 ktCO_{2e} to 122 ktCO_{2e} (-8%) driving by a reduction in consumption.
- Emissions associated with the consumption of electricity changed from 62 ktCO_{2e} to 55 ktCO_{2e} (-12%). This has been driven by a combination of grid decarbonisation and reduced electricity consumption.
- All other emissions sources remained relatively stable between 2022 and 2023.

* This has not been adjusted for inflation.

About this section

The figures in this section present an overview of data submitted for NHS Wales and individual NHS Wales organisations. This includes annual accounts covering the last five reporting rounds⁴. Further figures present data for key emission categories which includes:

- Buildings
- Transport
- Waste
- Supply Chain
- Land use
- Renewables
- Medical Gases

The presentation of portfolio level emission estimates from individual organisations is not intended as a comparative exercise. It is purely demonstrative of the available data, and a result of how public sector

bodies are categorised (i.e. 13 unique organisations under the NHS Wales umbrella).

Organisational size, specific operations and the make-up of emission portfolios should be respected when making any comparative deductions.

Additional commentary for drivers of emissions change between reporting years has not been included. The analysis of this should be conducted at the individual organisational level using activity data (not available or requested as part of the Net Zero reporting process currently).

Commentary of NHS Wales data coverage can be found within the appendices.

NB. the Net Zero Reporting Team is aware that most NHS Wales

organisations collect and report medical gas data in litres (where relevant). Currently the Net Zero reporting spreadsheet only allows the input of this data in kilograms. This will be adjusted to allow collection of data in litres going forward. For 2023, most organisations made the required conversion but in some instances the adjustment was not made. In these instances, the data has been removed to avoid abnormally high emission figures being reported under medical gases.

Please note that the reported figures are approximated to the nearest whole number for ease of presentation. Consequently, there may be slight discrepancies at aggregate levels when whole numbers are summed, due to the exclusion of decimal values.

⁴ NHS Wales 2019 data has been included here at special request. This estimate was undertaken by a

third-party consultancy based on centralised data (not self-reported by individual NHS Wales bodies).

Total emissions in 2023 equate to 1,089 ktCO₂e for NHS Wales. The majority of total emissions arise from the supply chain (75%). Supply chain emissions have previously accounted for 62% to 80% of the total footprint between 2019-2023. Buildings, which include energy consumption, water, and refrigerants contributed 17% to the NHS Wales total. Transport related emissions which include business travel, fleet and commuting contributed 6% to the total. Medical gases contributed 1% to the NHS Wales total.

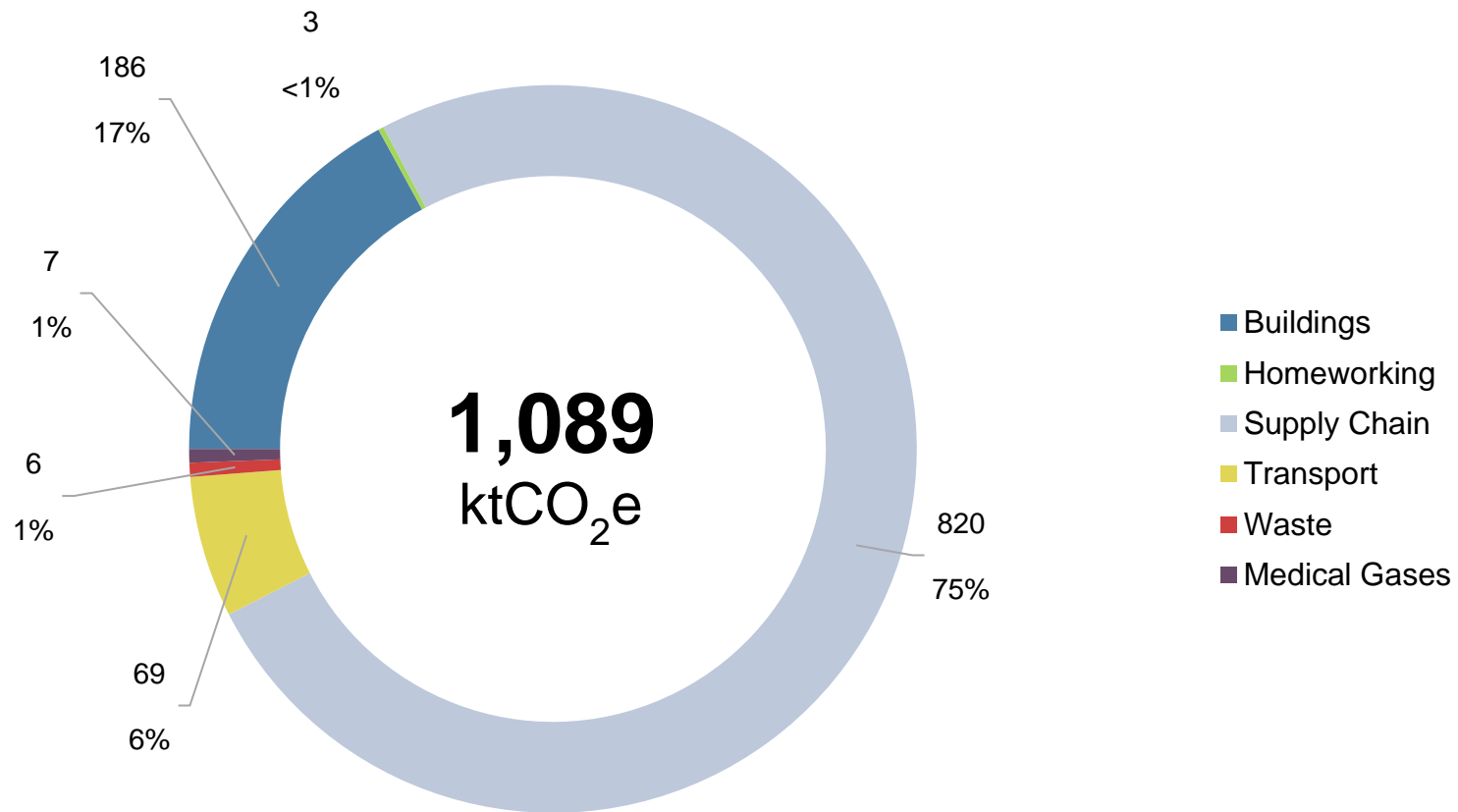


Figure 20 - Total NHS Wales emissions (ktCO₂e) for 2023 by emissions category

Emissions shown below are disaggregated by supply chain and non-supply chain (buildings, transport, homeworking and waste). NHS Wales emissions are at their highest level since reporting began (1,089 ktCO_{2e}). This is driven by a rise in supply chain emissions. Non-supply chain emissions have decreased since 2022 (-5%). The number of reporting organisations has changed each year excluding the two most recent reporting rounds in 2022 and 2023 (yellow line below). Figures are included for an additional reporting year beyond standard reporting (2019), at special request. These figures are an addendum to the NHS Wales (2018/19) baseline with the data adjusted to allow comparisons with Net Zero Reporting. Low levels of reporting in 2020 are related to the decision for NHS Wales to undertake its own data collection exercise in 2017/18 and 2018/19 with a policy decision to move to Net Zero Reporting driving higher coverage. Covid-19 impacts were also a contributing factor to lower reporting levels.

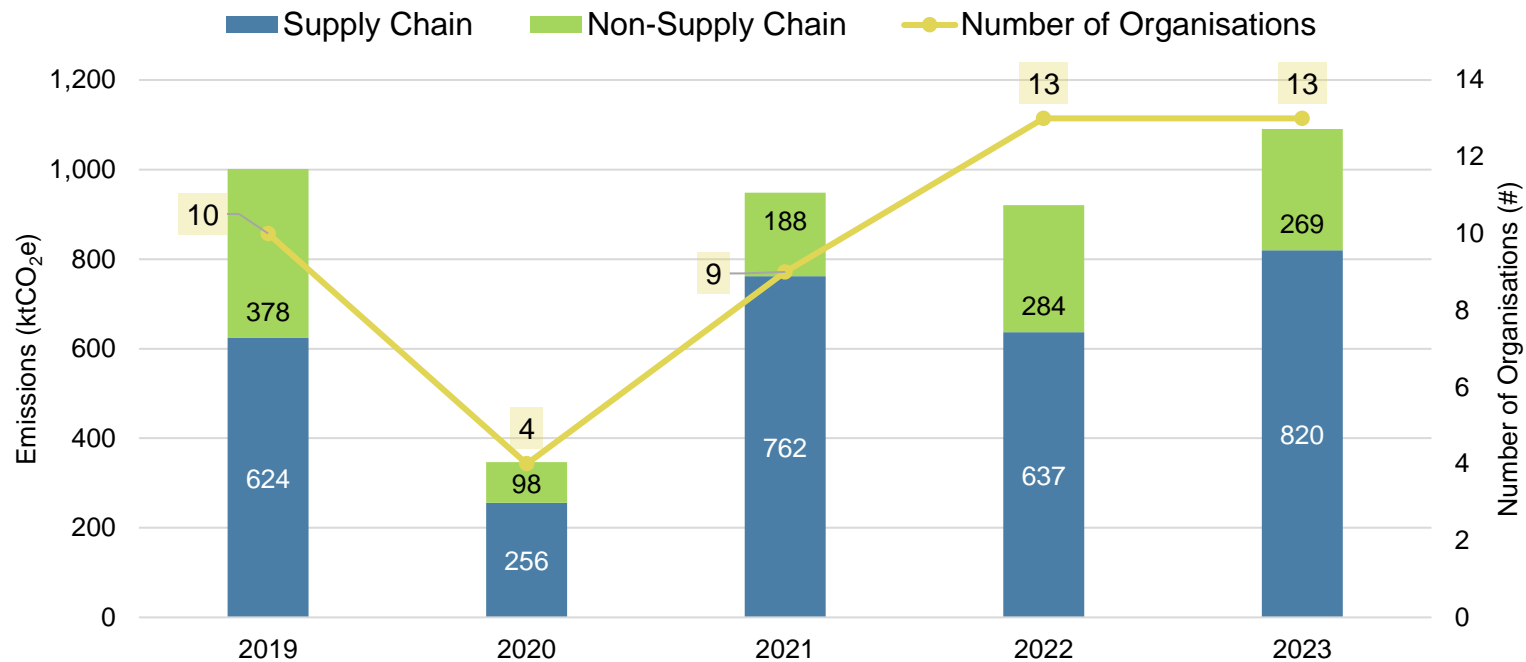


Figure 21 – Annual emissions (ktCO_{2e}) for NHS Wales organisations by supply chain and non-supply chain split

NHS Wales organisations have highly varied operations and staff numbers. This is reflected in the range of total emissions per organisation, from 6 ktCO₂e to 217 ktCO₂e. For most organisations, supply chain emissions contribute the largest proportion of the total footprint (with the exception being NWSSP). Health boards have a larger share of emissions from buildings compared to the NHS Wales average. Organisations such as WAST and NWSSP see a greater proportion of their emissions arise from transport compared to the NHS Wales average.

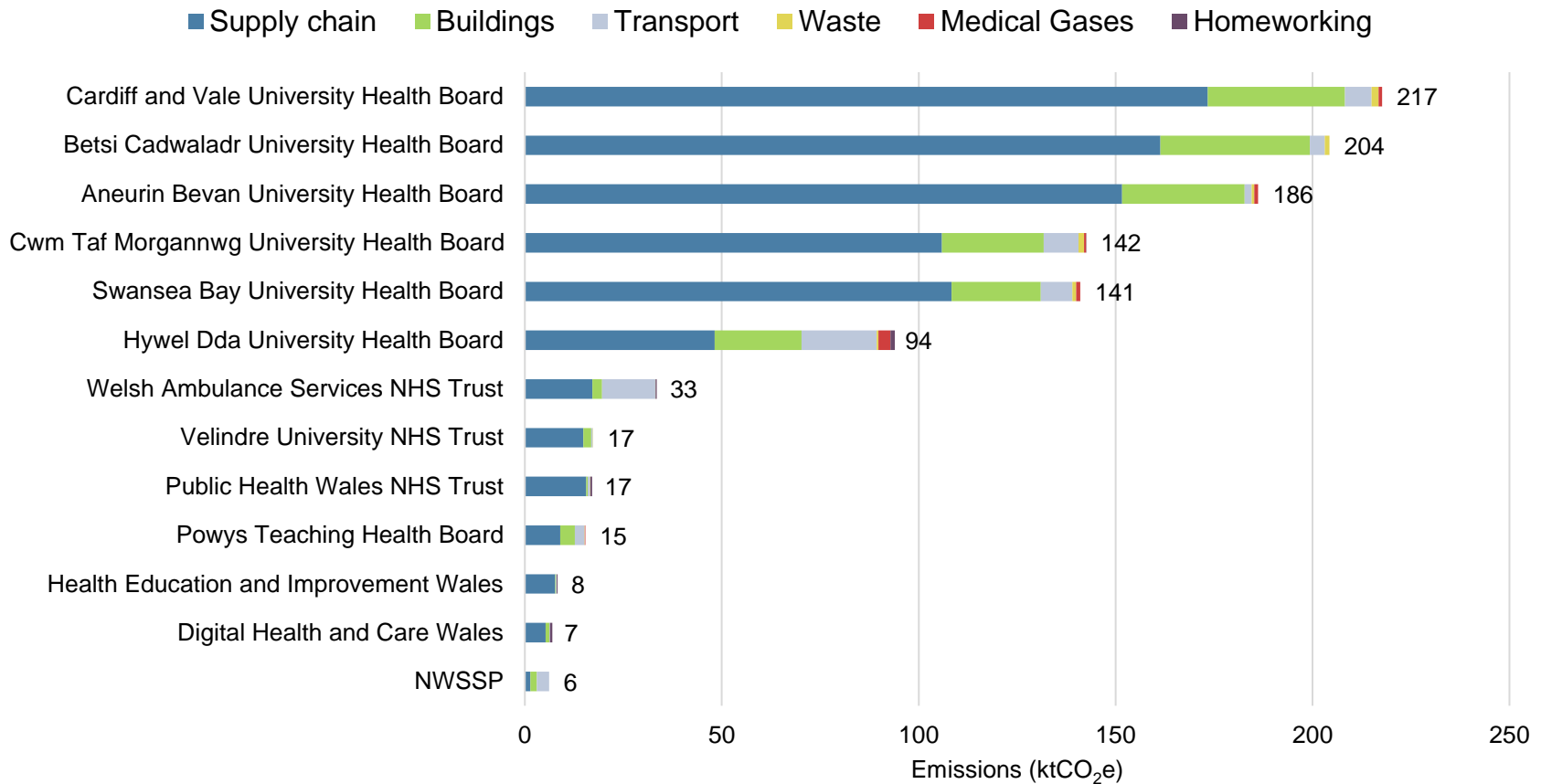


Figure 22 - 2023 emissions (ktCO₂e) by NHS Wales organisation and emissions category

Buildings

This sub-section covers emissions sources including energy consumption, water usage, and refrigerants. The majority of building emissions for large health boards arise from fossil fuel usage for heating and hot water. This is mostly from natural gas use. However, seven organisations use gas oil, kerosene, or LPG in operations. Organisations with a relatively smaller emissions footprint are more likely to have a greater proportion of emissions from electricity usage.

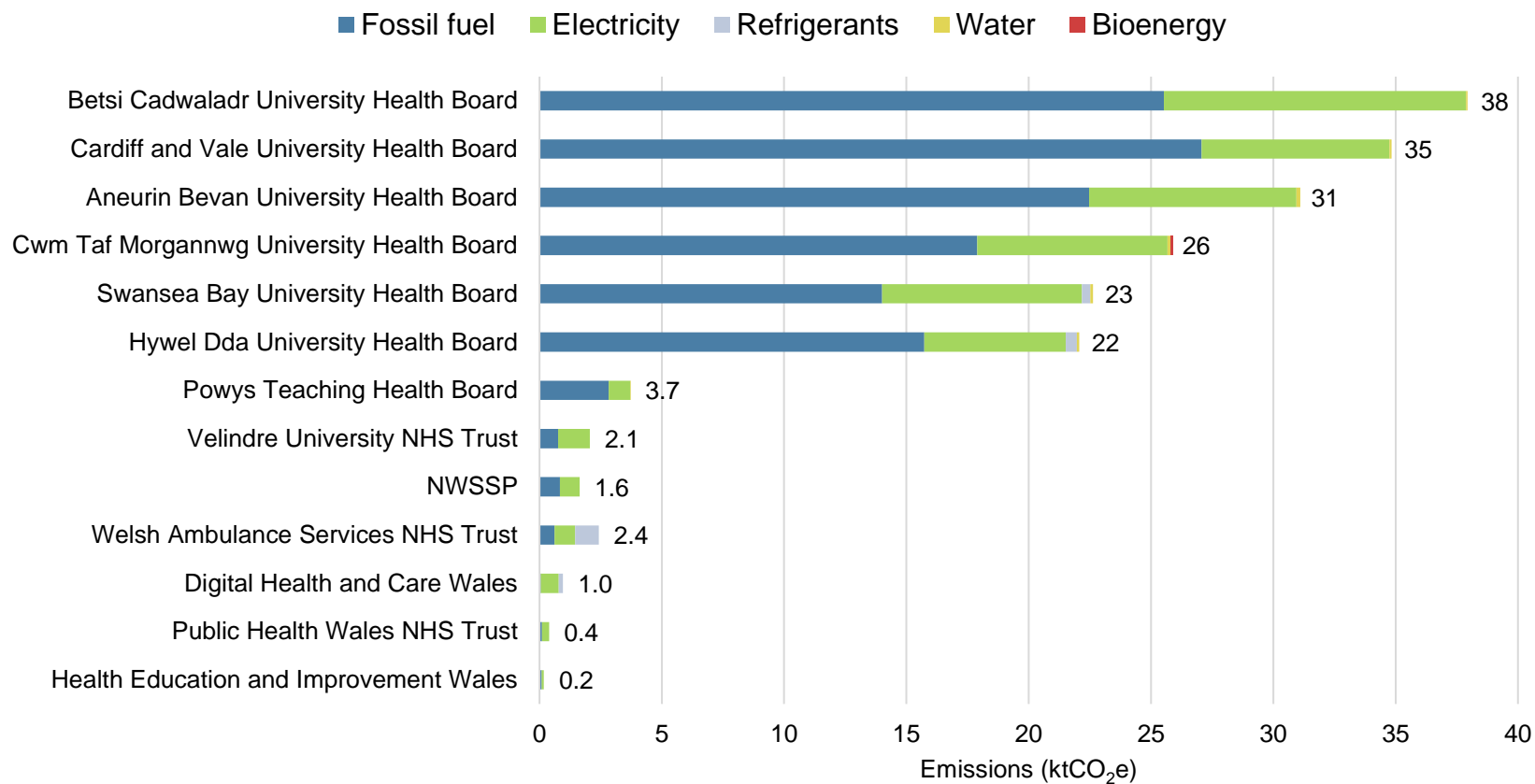


Figure 23 - 2023 Building related emissions (ktCO₂e) for NHS Wales organisations by emissions sub-category

Building related emissions for NHS Wales have decreased between 2023 and the previous reporting year by 11 ktCO₂e, or -5%. This has been driven by a reduction in scope 2 and 3 emissions predominantly. Associated scope 3 emissions arise from upstream activities linked with the production and distribution of natural gas and electricity. A full explanation of “scopes” can be found on page 15 of the [Welsh Public Sector Net Zero Reporting Guide](#).

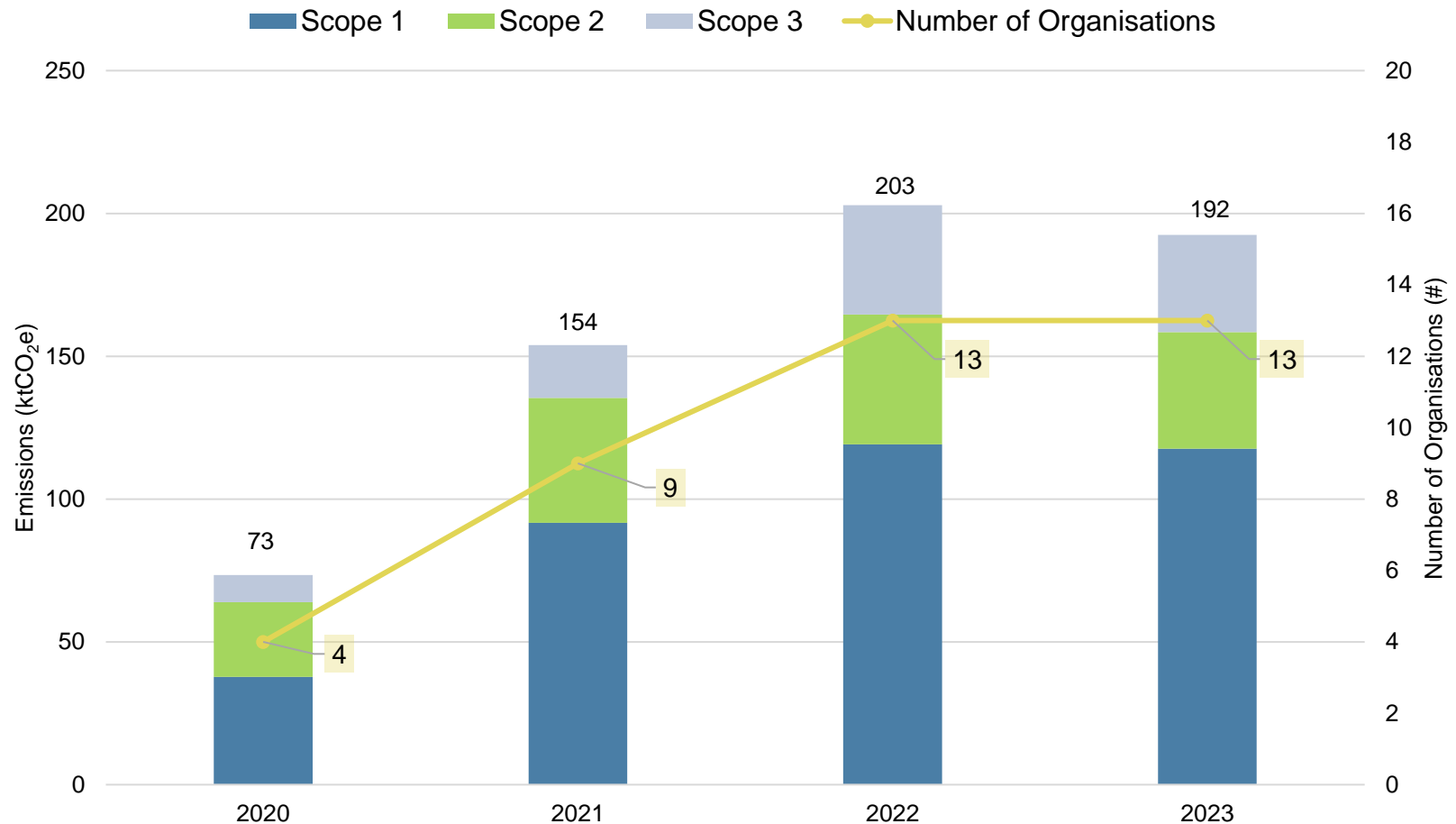


Figure 24 - Annual building related emissions (ktCO₂e) for all NHS Wales organisations by emissions scope

Transport

This sub-section covers emissions sources from fleet, business travel, commuting and homeworking. The relative contribution of the different transport emissions sources varies greatly between organisations. In some instances, there are potential gaps e.g. not all organisations report emissions sources such as homeworking and business travel. A list of reporting organisations by source can be found in Appendix [A1](#).

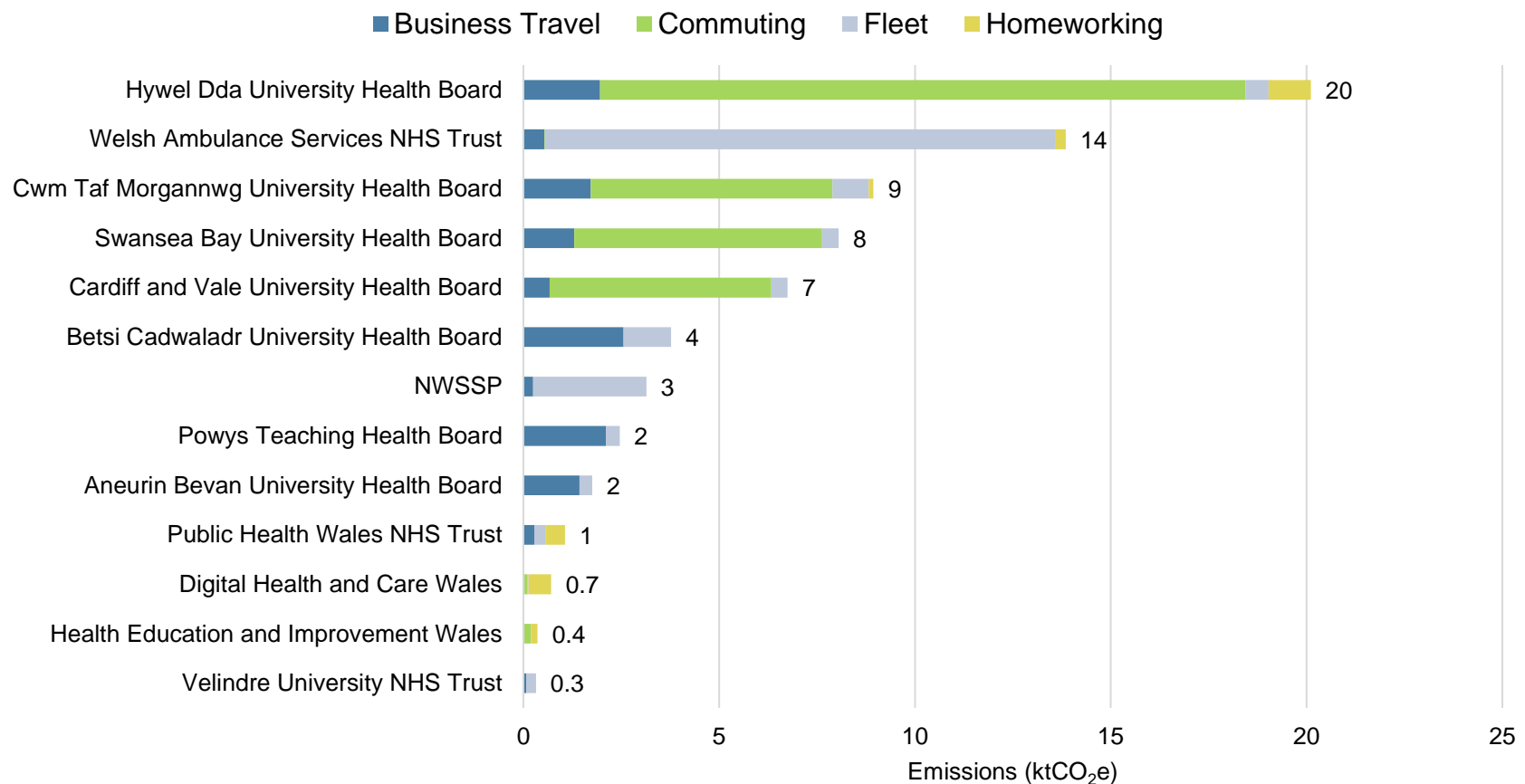


Figure 25 - 2023 Transport related emissions (ktCO₂e) by NHS Wales organisation and emissions sub-category

Transport related emissions for NHS Wales have decreased between 2023 and the previous reporting year by 4 ktCO_{2e}, or -5%. This has been driven by a reduction in scope 3 emissions mainly from commuting and homeworking. Fleet and business travel observed increases in emissions between 2022 and 2023.

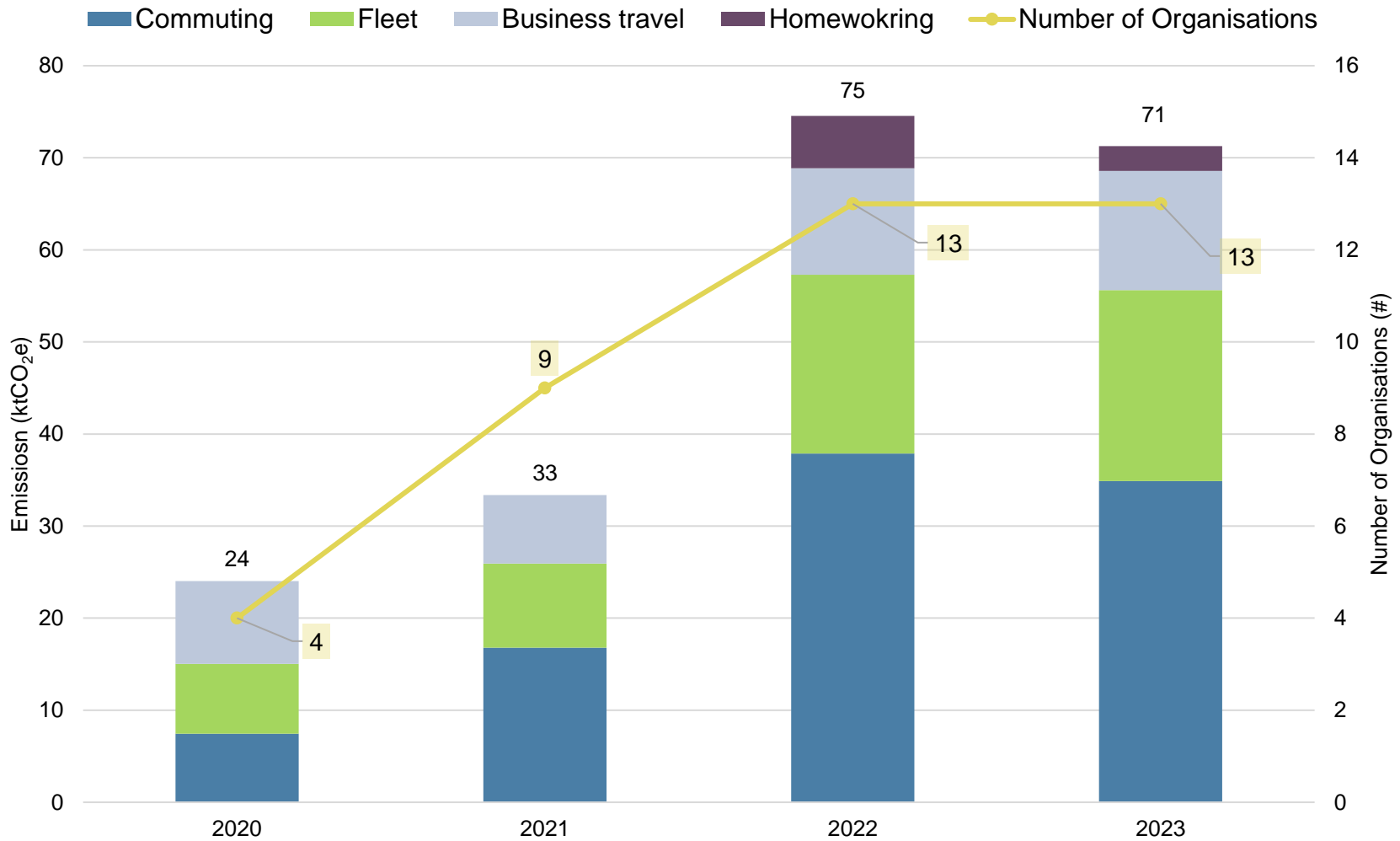


Figure 26 - Annual transport related emissions (ktCO_{2e}) for all NHS Wales organisations by emissions scope

Waste

This sub-section covers emissions arising from waste. Waste has been categorised into ‘Project’, ‘Organisational’ and ‘Municipal’. This is presented as waste treatment methods as opposed to its type or source. Most emissions arising from waste lie within the disposal routes of energy from waste (combustion) or through autoclave treatment. Recycling as a means of disposal has a relatively low emissions intensity, demonstrated by a minimal contribution (2% of waste emissions, despite 25% of waste going to recycling by mass). The reverse is true for landfill which covers only 4% of waste disposal by mass but also contributes 2% towards total waste emissions.

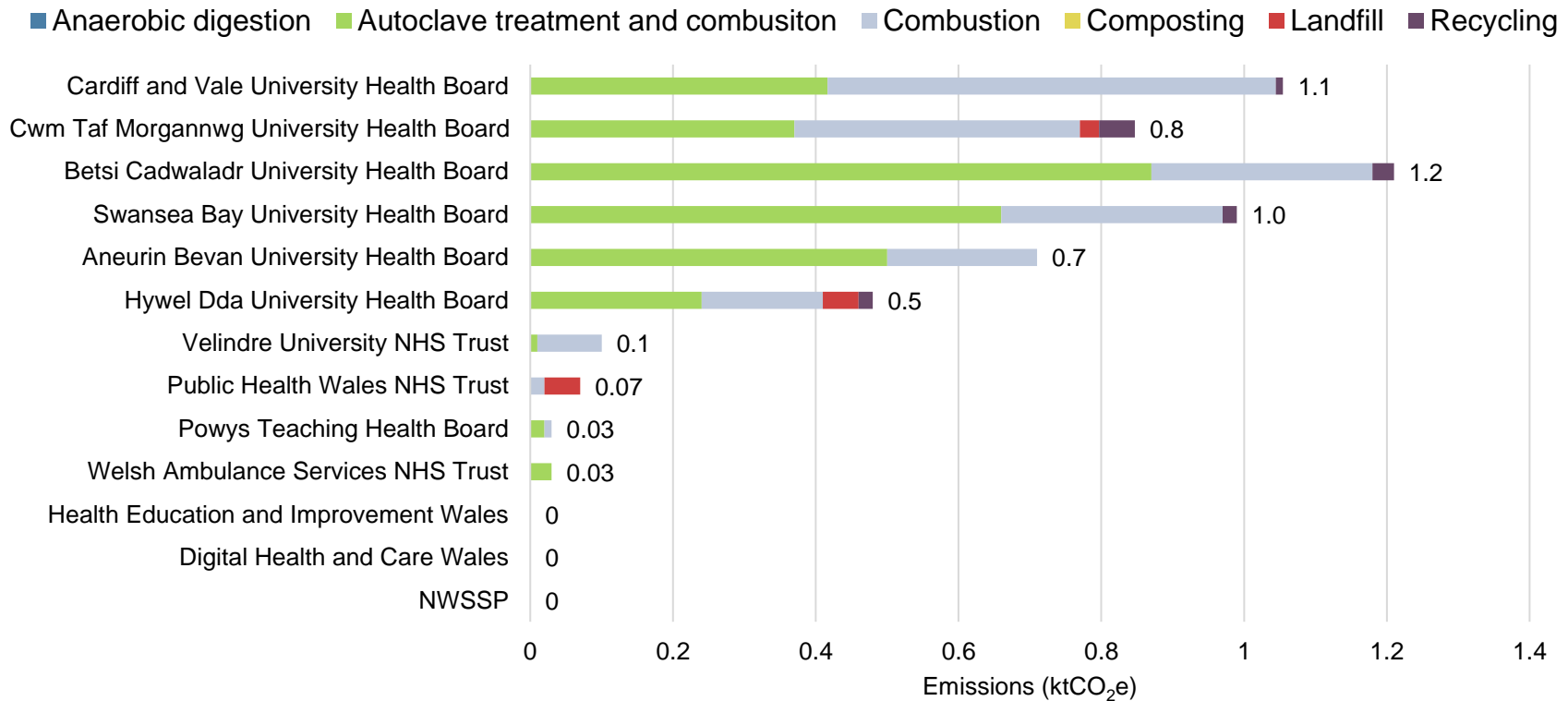


Figure 27 - 2023 Waste related emissions (ktCO₂e) by NHS Wales organisation and emissions sub-category

NHS Wales waste related emissions have decreased between 2023 and the previous reporting year by 0.8 ktCO₂e, or -13%.

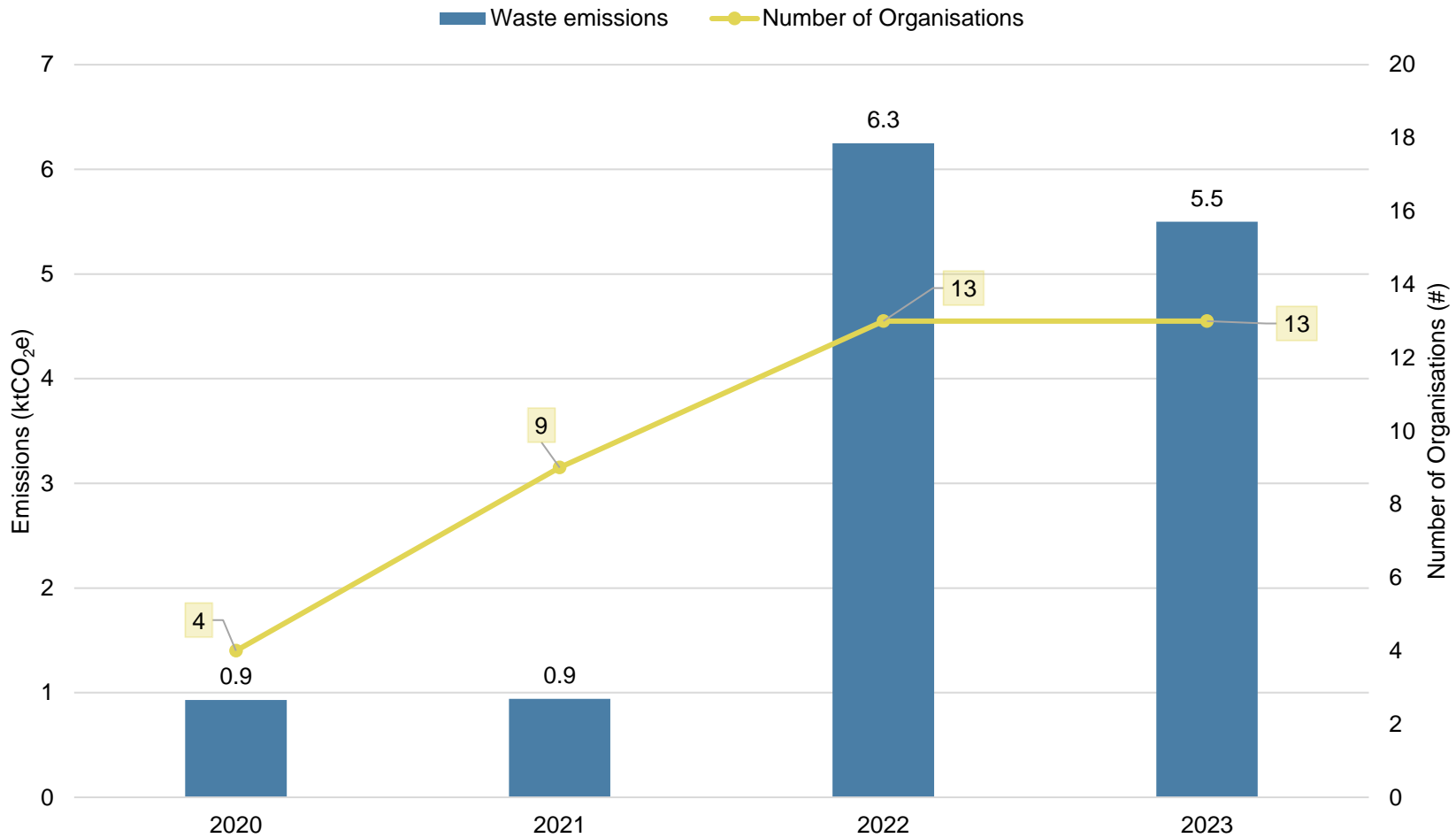


Figure 28 - Annual waste related emissions (ktCO₂e) for all NHS Wales organisations

Supply Chain

This following sub-section covers emissions arising from the supply chain. NHS Wales emissions have increased between 2022 to 2023, an increase of 183 ktCO₂e (29%). Over this same period, spend on goods and services has more than doubled. An update in emissions factors between 2022 and 2023 has resulted in the increase being less than would otherwise be expected.

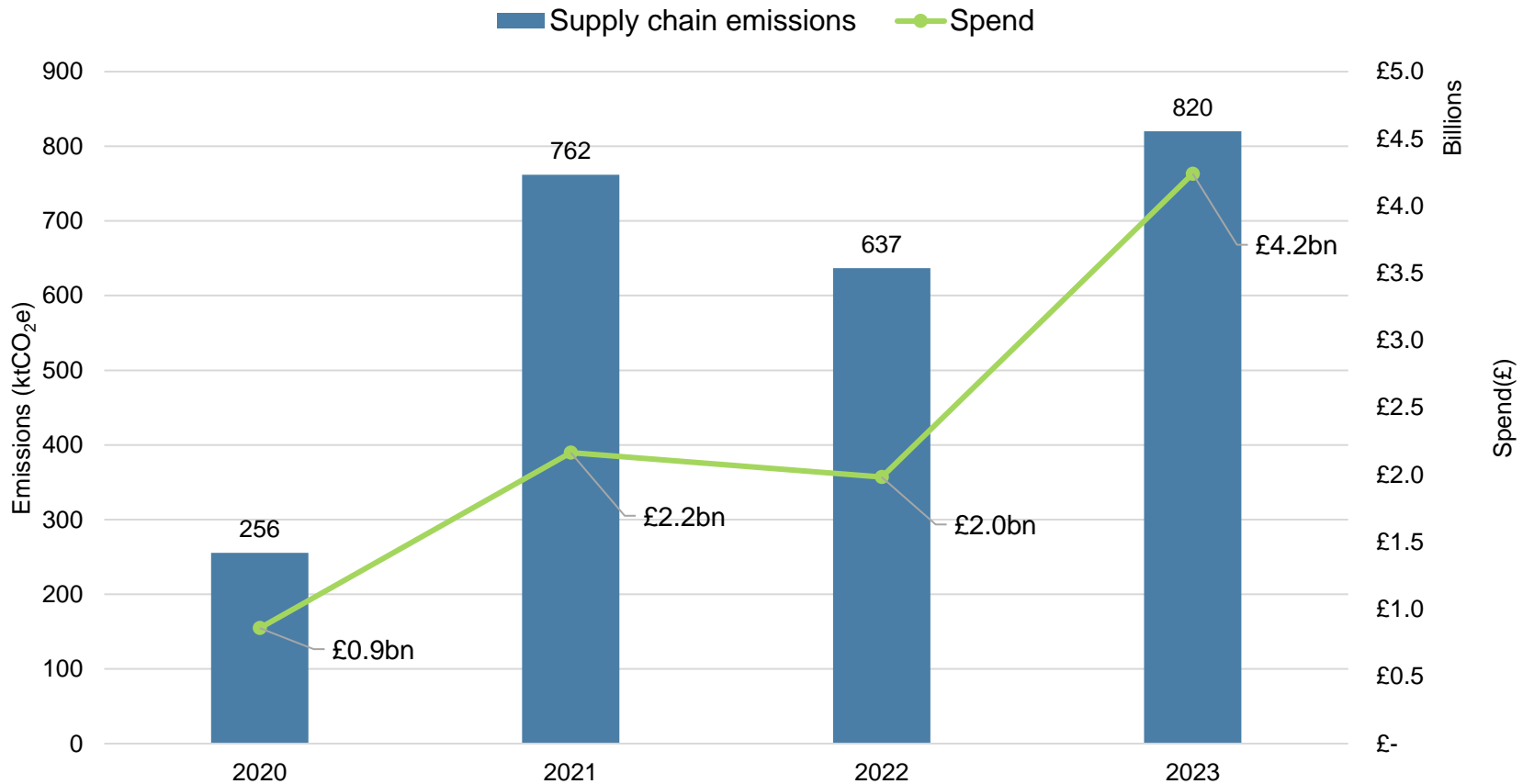


Figure 29 - Annual NHS Wales supply chain emissions (ktCO₂e) and spend (£)

The chart (below) shows the top five emitting categories within the NHS Wales supply chain for 2023. All other categories beyond the top five have been aggregated within the 'Remainder' category. The same top five categories from 2023 are also displayed across the previous reporting years. 'Manufacturing' and 'Administrative and Support Service Activities' emissions have decreased between 2022 and 2023, while 'Human Health and Social Work Activities' and 'Wholesale and Retail Trade' emissions have increased.

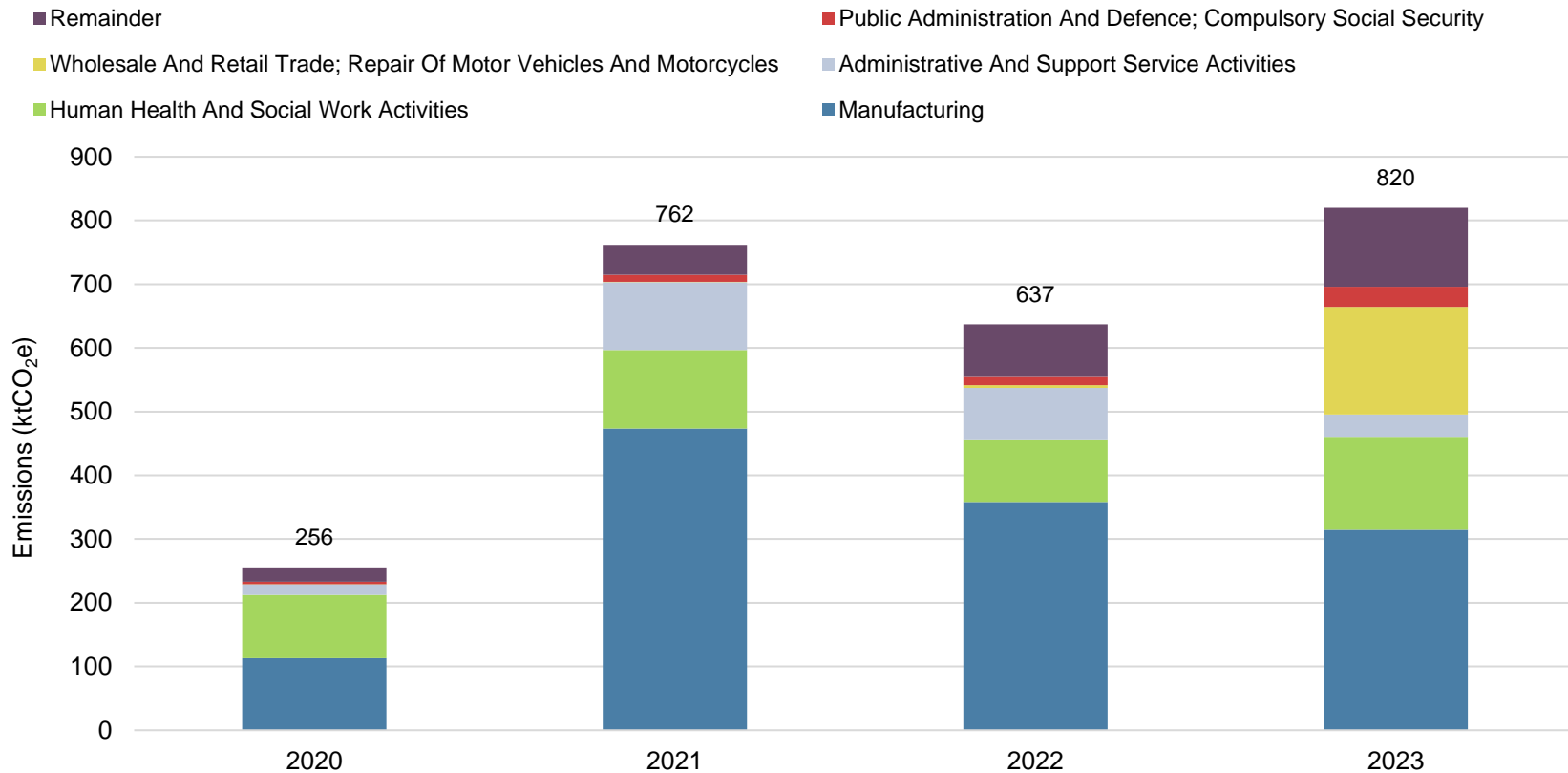


Figure 30 - Annual NHS Wales supply chain emissions (ktCO₂e) by top emitting categories of 2023

Land Use

This sub-section covers emissions arising from land. Not all NHS Wales organisations report land usage. Those that do are shown in the chart below. For 2023, total emissions produced from land use change equated to 0.1 ktCO₂e and removals from land use equated to -0.4 ktCO₂e. This provides a net emissions removal from land use change of -0.3 ktCO₂e in 2023.

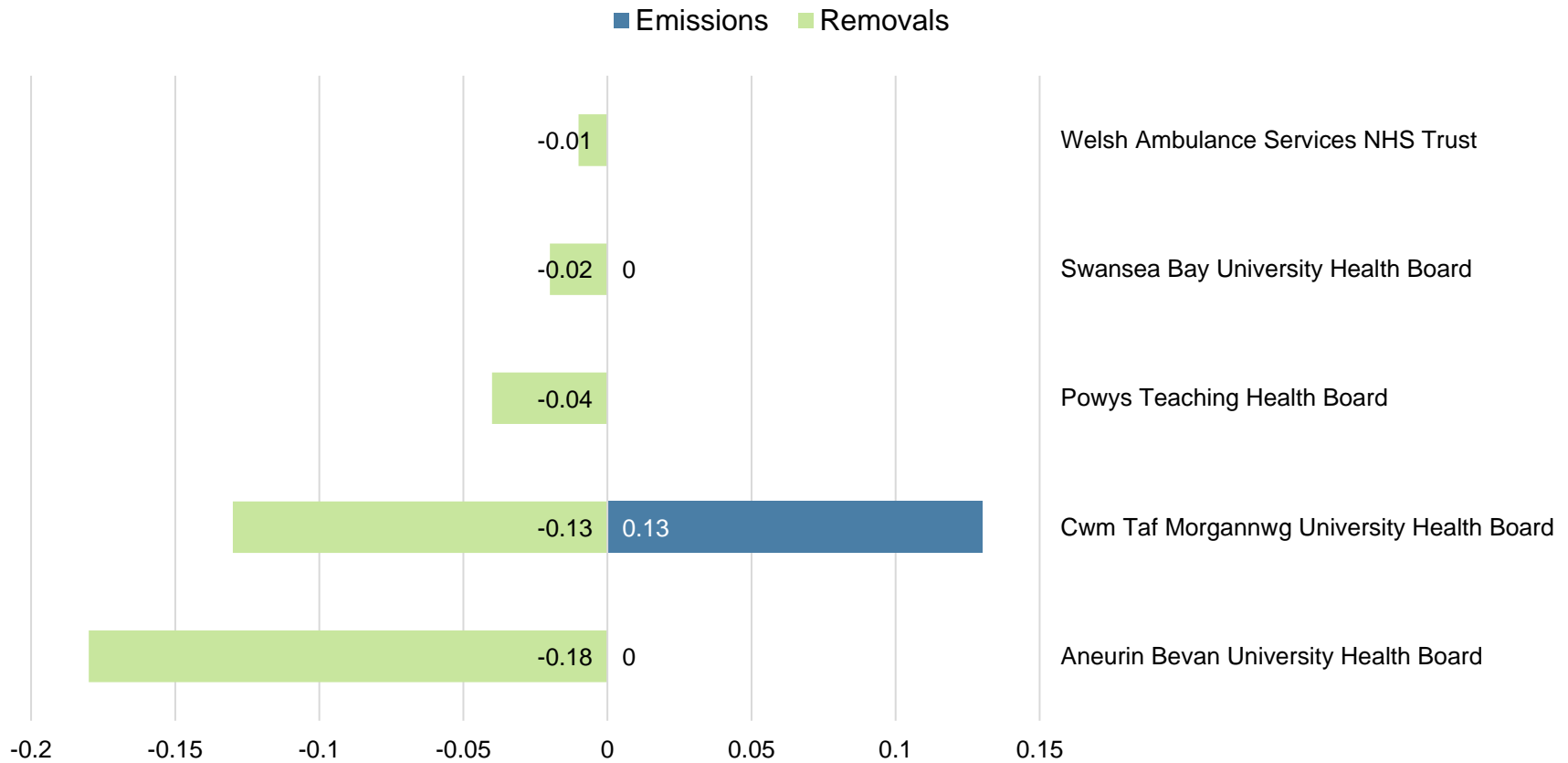


Figure 31 - NHS Wales 2023 emissions (ktCO₂e) from land use

Net emissions from land use have decreased. 2023 is the first year where more emissions were removed than produced from land use change.

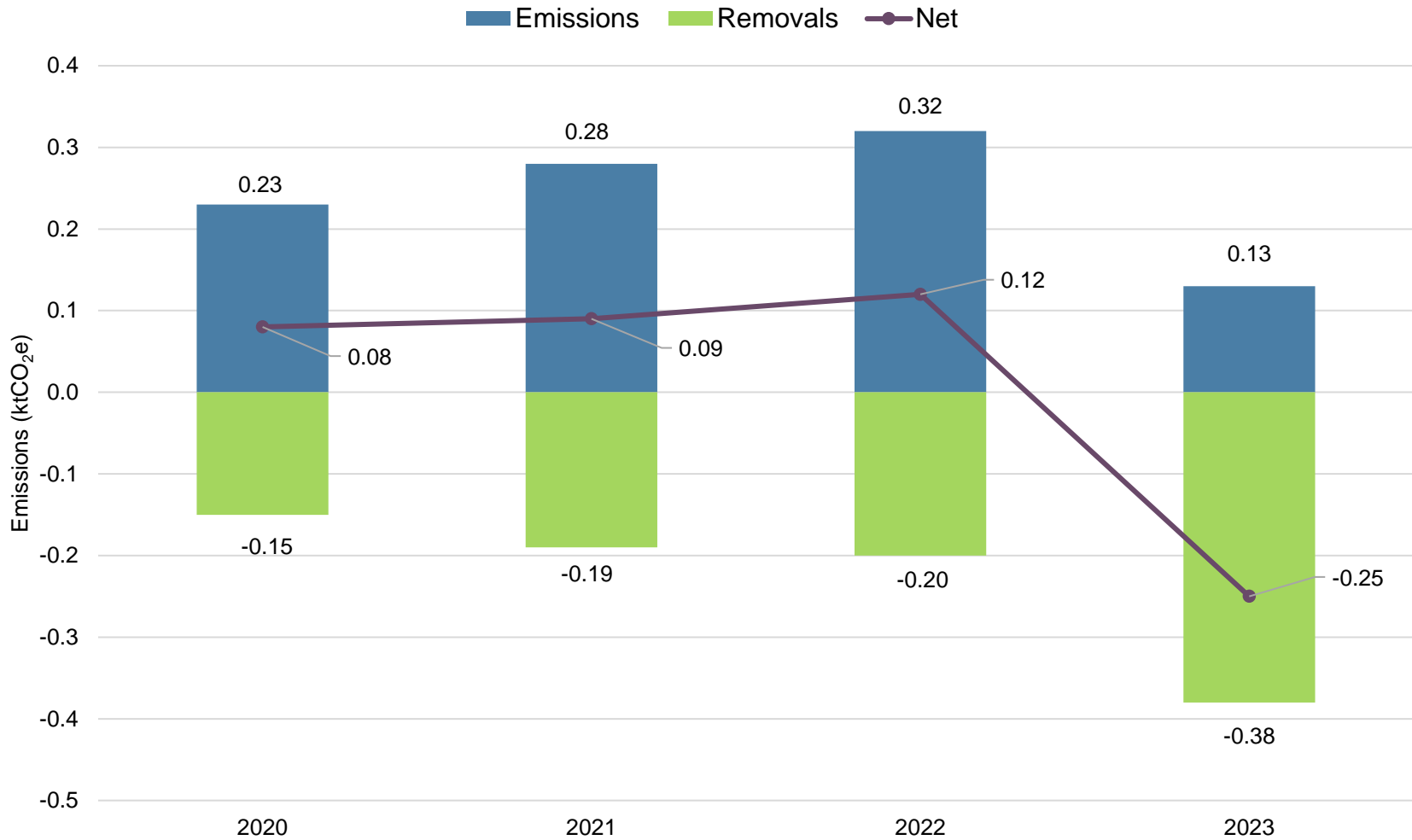


Figure 32 - Annual NHS Wales emissions (ktCO₂e) from land use change

Renewables

In 2023 NHS Wales organisations generated over 5 GWh of renewable electricity. The majority of this came from solar PV (94%). NHS Wales organisations also generated almost 3 GWh of low carbon heat, thanks to a large biomass boiler facility at Hywel Dda University Health Board. Nine NHS Wales organisations also procure electricity through renewable procurement mechanisms, including green tariffs, PPAs and REGOs. This is not shown on the graph below:

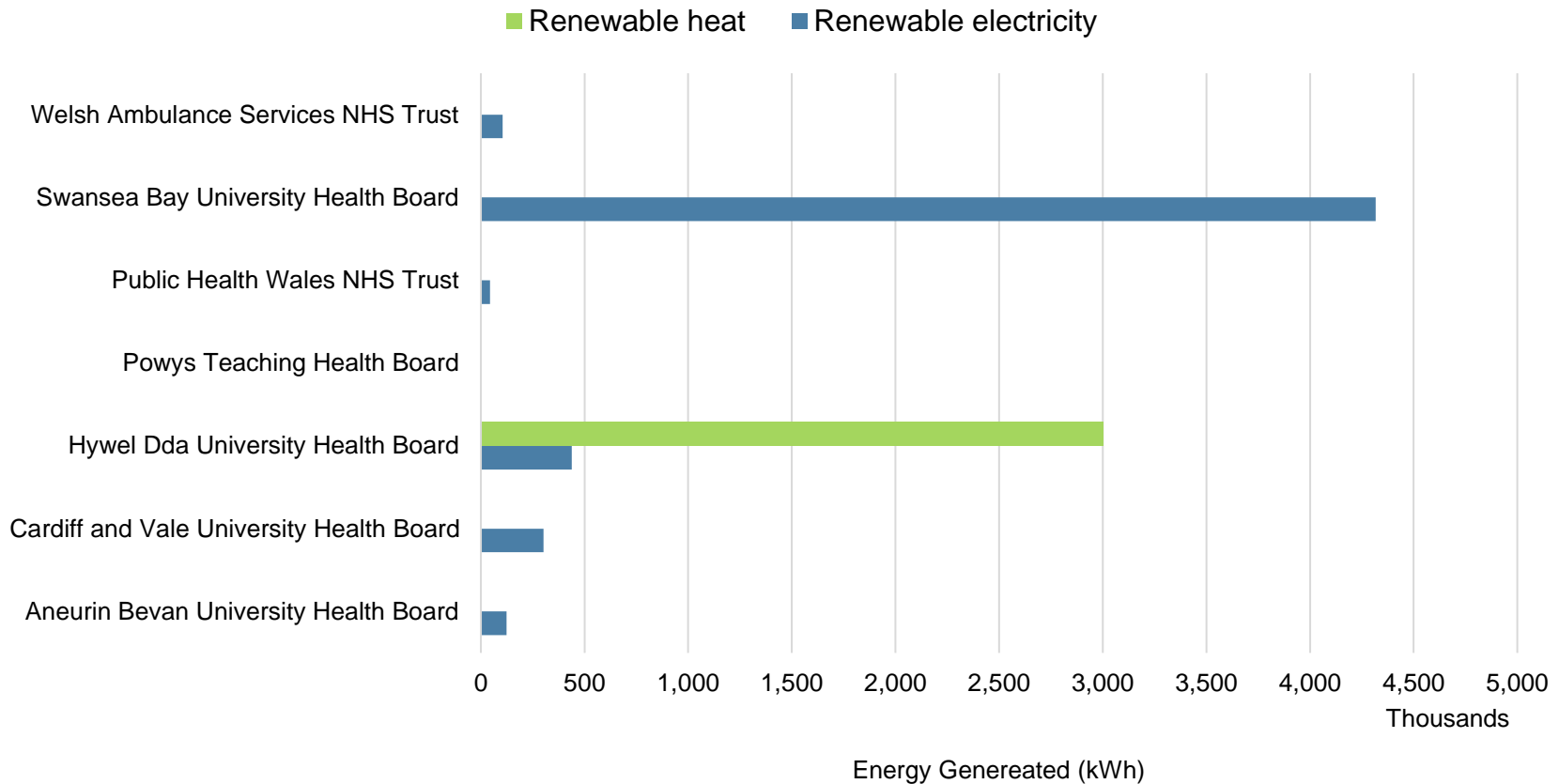


Figure 33 - NHS Wales renewable electricity and heat generation (kWh) in 2023

Medical Gases

This sub-section covers emissions arising from medical gases. Not all NHS Wales organisations report medical gas emissions. Those that do are shown in the chart below. For 2023, total emissions produced from medical gases equated to 6.6 ktCO₂e. Medical gas data is understood to be not fully represented, as stated at the start of this section found [here](#) (e.g. for Betsi Cadwaladr UHB and WAST). This will be rectified going forwards.

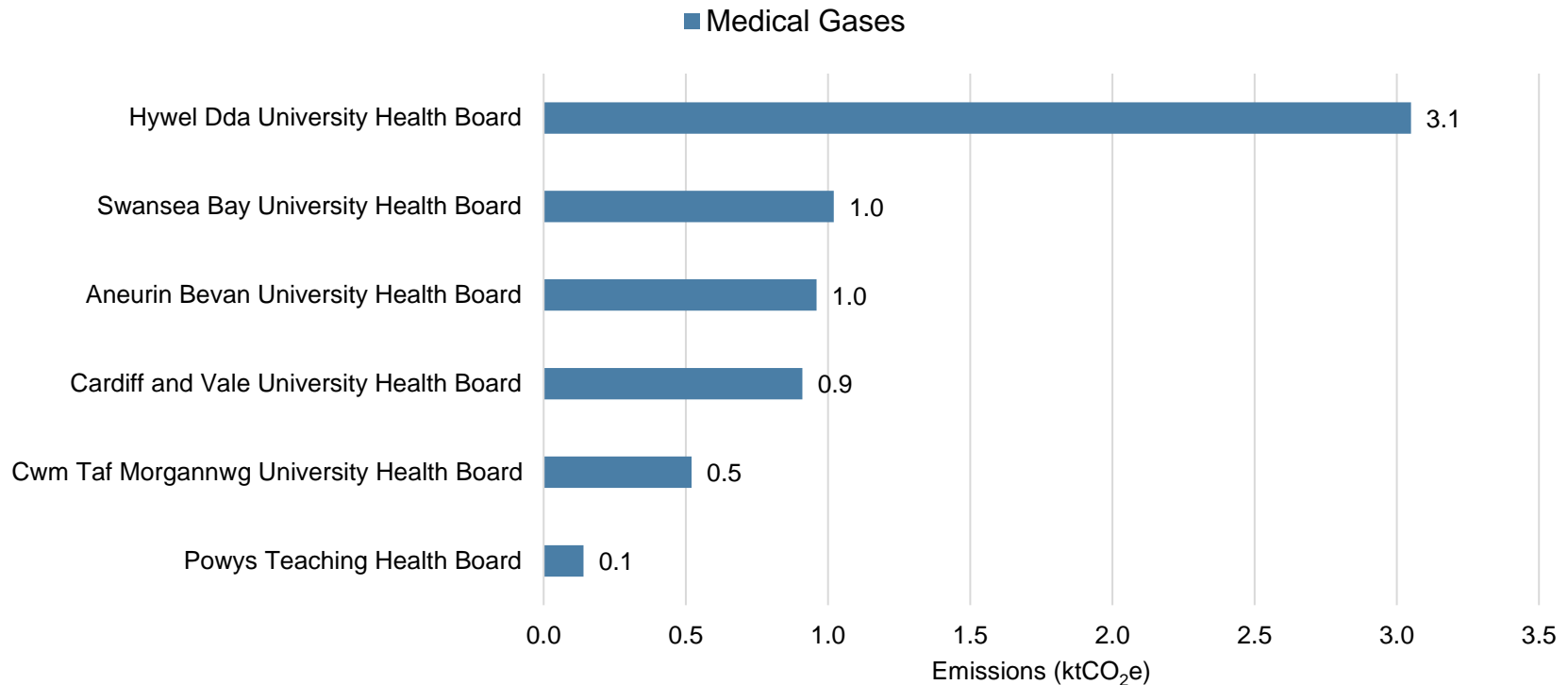


Figure 34 - NHS Wales 2023 emissions (ktCO₂e) from medical gases

Universities and Colleges

Overview

Headlines

The total Universities and Colleges footprint for 2023 is estimated as 201 ktCO₂e. In total, ten Universities and Colleges submitted data in 2023.

Emissions from Universities and Colleges have increased by 34% since 2022, an increase of 51 ktCO₂e (from 150 ktCO₂e). Since reporting commenced in 2020, emissions have increased by 41%. However, the number of Universities and Colleges reporting has increased from 6 to 10 over the same period.

Buildings emissions have increased by <1% since 2022, but

by 79% since 2020. Transport (incl. homeworking) emissions have increased by 12% since 2022 and by 83% since 2020. Waste emissions have increased by 47% since 2022 but have decreased by 97% since 2020. Supply chain emissions have increased by 84% since 2022 and by 27% since 2020.

Key contributors to the 2023 Universities and Colleges carbon footprint were Supply Chain (52%), Buildings (42%) and Transport (5%). These categories cumulatively contribute 99% to the 2023 Universities and Colleges footprint and 6% of the total 2023 Welsh Public Sector Footprint.

The key contributors to emissions change between 2022 and 2023 for

University and College associated emissions were:

- Supply chain emissions changed from 57 ktCO₂e to 104 ktCO₂e (+29%), driven by a doubling in reported spend*.
- Transport emissions increased from 8.58 ktCO₂e to 9.59 ktCO₂e (+12%).
- All other emissions sources (incl. buildings) remained relatively stable between 2022 and 2023, with increased energy use supported by the ongoing decarbonisation of the national electricity grid.

* This has not been adjusted for inflation.

About this section

The figures in this section present an overview of the 2023 data submitted for Universities and Colleges in Wales. This includes annual accounts covering the last three reporting rounds. Further figures present data for key emission categories which includes:

- Buildings
- Transport
- Waste
- Supply Chain
- Land use
- Renewables

The presentation of portfolio level emission estimates from individual organisations is not intended as a comparative exercise. It is purely demonstrative of the available data, and a result of how public sector bodies are categorised.

Organisational size, specific operations and the make-up of

emission portfolios should be respected when making any comparative deductions.

Additional commentary for drivers of emissions change between reporting years has not been included. The analysis of this should be conducted at the individual organisational level using activity data (not available or requested as part of the Net Zero reporting process currently).

Commentary of University and College data coverage can be found within the appendices.

N.B. Due to misalignment with data availability timeframes, figures reported for some Universities and Colleges use source data from the academic year 2021/22. However, all associated data and emissions figures are reported as 2023.

Please note that the reported figures are approximated to the nearest whole number for ease of presentation. Consequently, there may be slight discrepancies at aggregate levels when whole numbers are summed, due to the exclusion of decimal values.

Total emissions in 2023 equate to 201 ktCO₂e for Universities and Colleges. 52% of total emissions arise from the supply chain. In previous years, supply chain emissions have accounted for 38% to 70% of the total Universities and Colleges footprint. Buildings, which include energy consumption, water and refrigerants contributed 42% to the Universities and Colleges total. Transport related emissions which include business travel, fleet and commuting contributed 5% to the total.

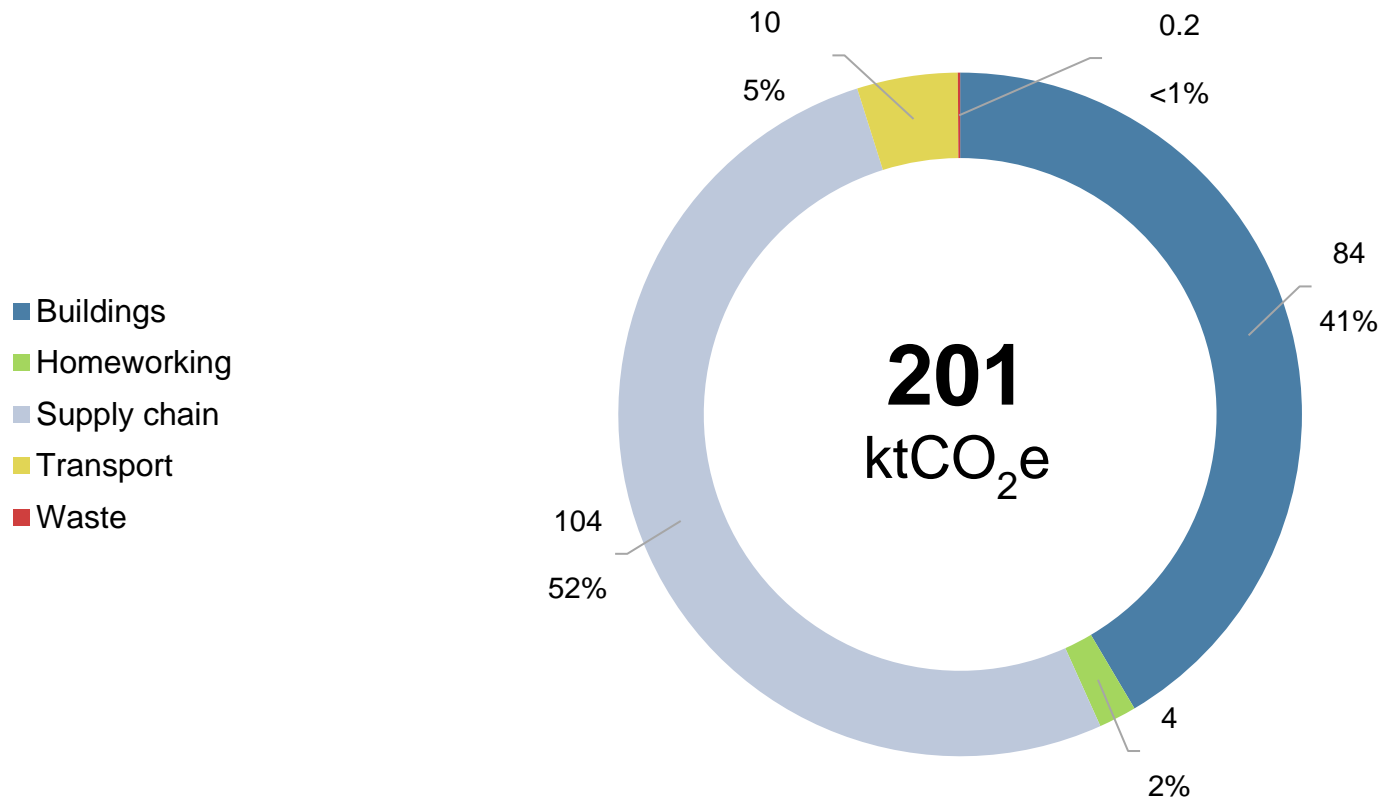


Figure 35 - Total University/College emissions (ktCO₂e) for 2023 by emissions category

Emissions shown below are disaggregated by supply chain and non-supply chain (buildings, transport, homeworking and waste). Universities and Colleges emissions are at their highest level since reporting began (201 ktCO₂e). This is largely driven by a rise in supply chain emissions (82% increase). Non-supply chain emissions have also increased since 2022 (4% increase). The number of reporting organisations has also changed each year excluding the two most recent reporting rounds (yellow line below).

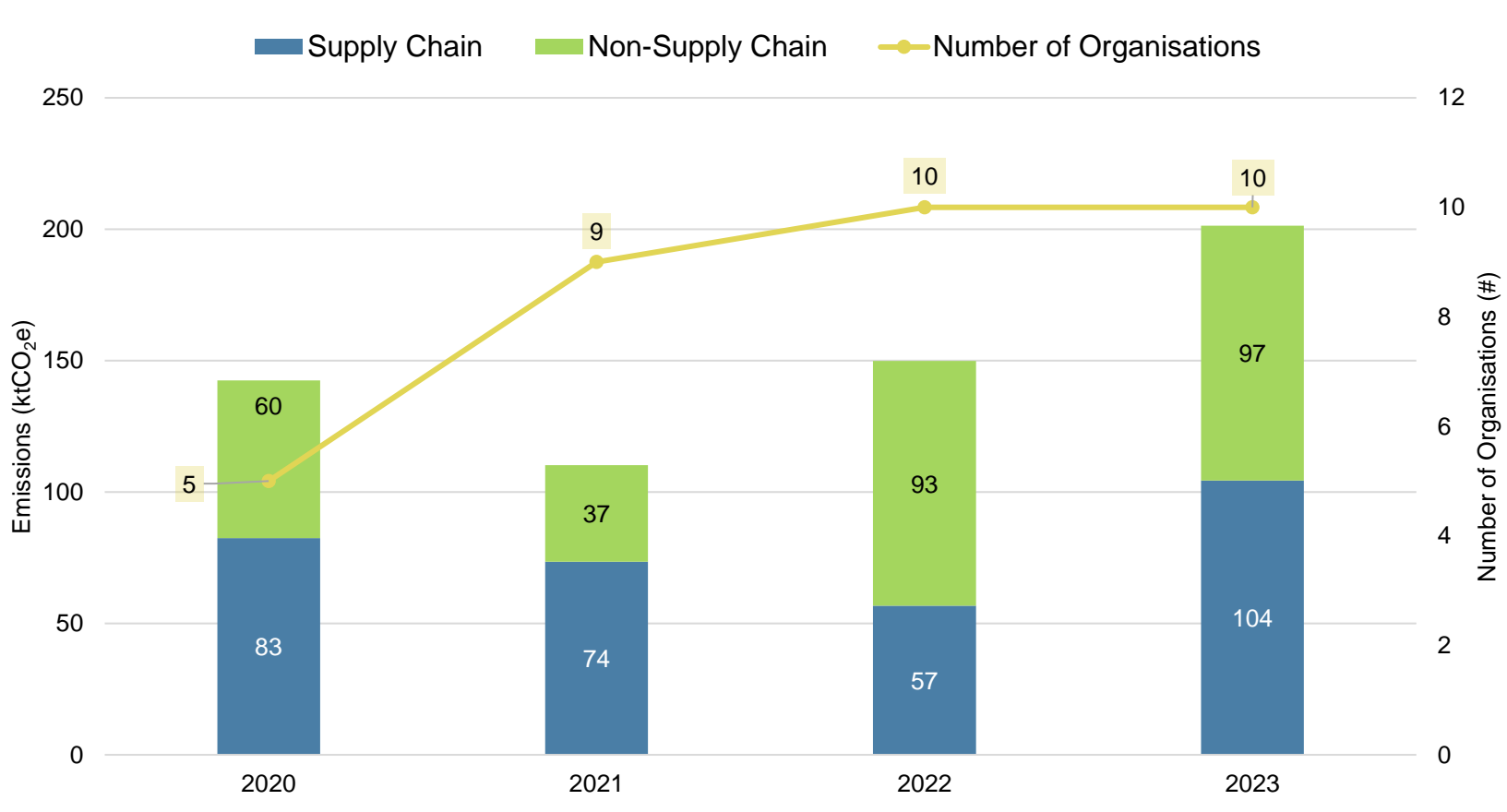


Figure 36 - Annual emissions (ktCO₂e) for Universities and Colleges by supply chain and non-supply chain split

Universities and Colleges vary in terms of operations, size, staff/student numbers which is reflected in the range of total emissions per organisation, from 1 ktCO_{2e} to 77 ktCO_{2e}. For most Universities and Colleges, supply chain emissions contribute the largest proportion of the total footprint. The average Universities and Colleges emissions figure is 20 ktCO_{2e}, 54% less than Average Public Sector emissions (45 ktCO_{2e}).

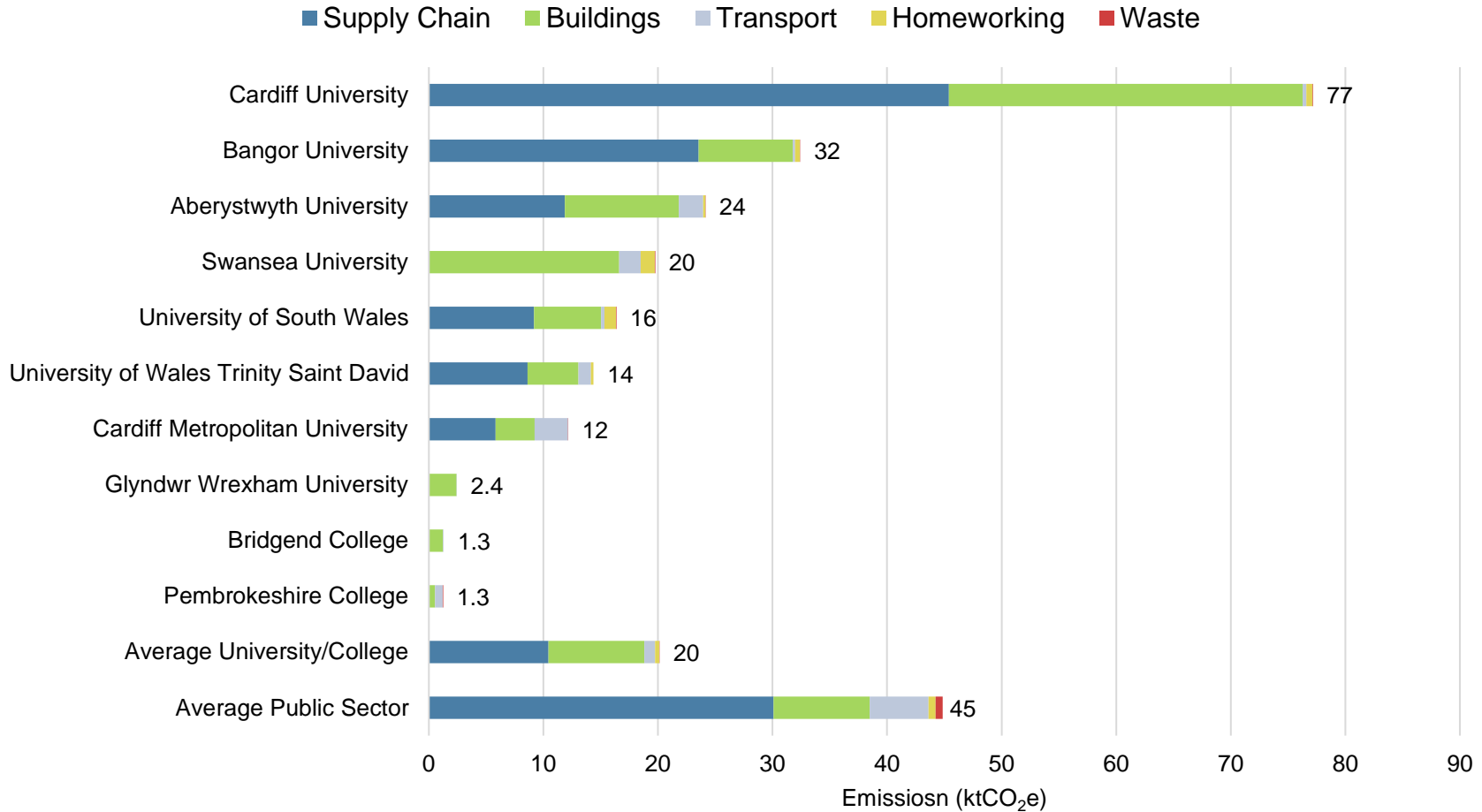


Figure 37 - 2023 emissions (ktCO_{2e}) by University/College and emissions category

Buildings

This sub-section covers emissions sources including energy consumption, water usage and refrigerants. The majority of building emissions for Universities and Colleges arise from fossil fuel usage for heating and hot water, closely followed by electricity consumption. Fossil fuels burned on-site are almost exclusively natural gas. However, Aberystwyth University uses bioenergy in addition to natural gas.

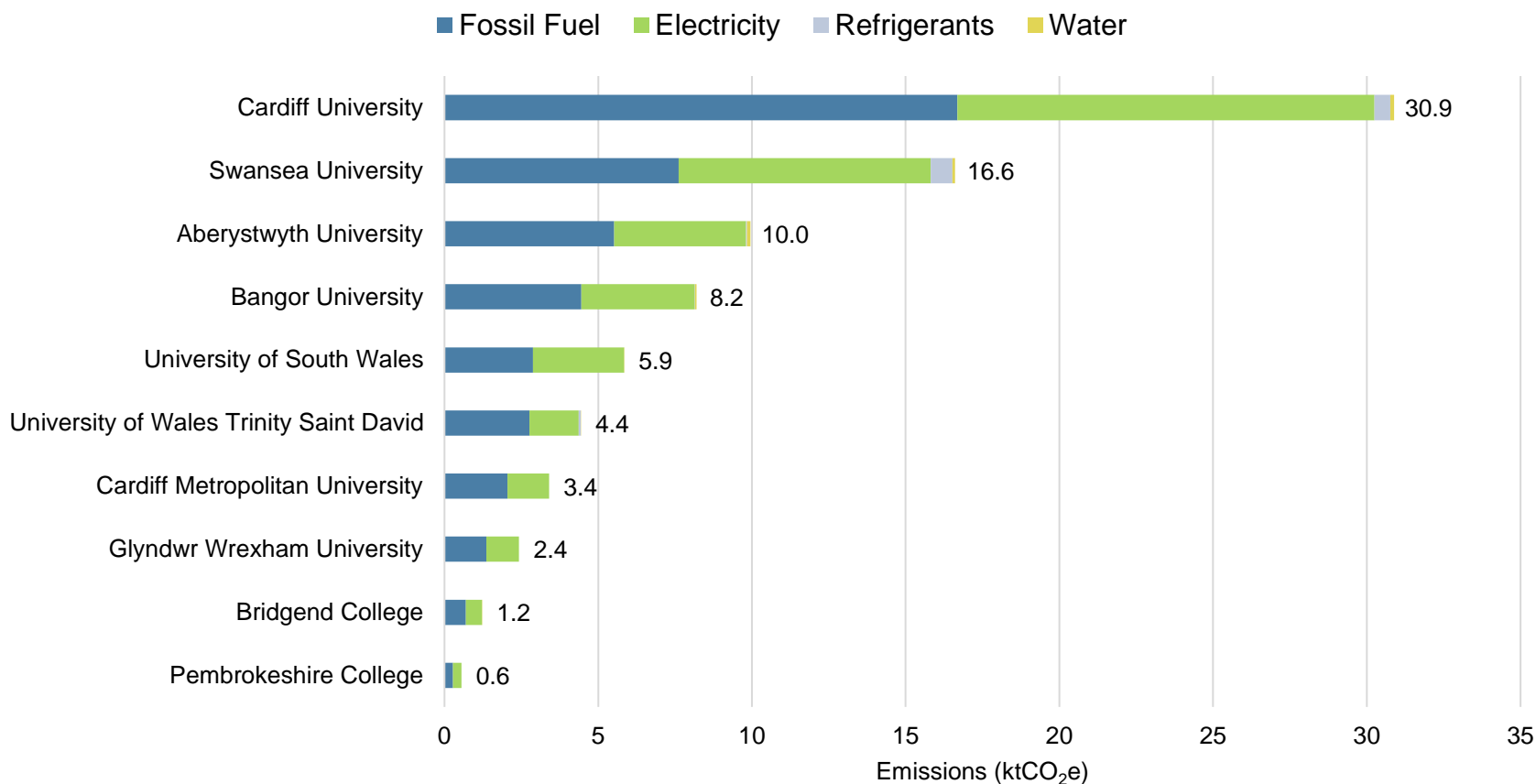


Figure 38 - 2023 Building related emissions (ktCO₂e) for University/College by emissions sub-category

Building related emissions for Universities and Colleges have increased between 2023 and the previous reporting year by 3 ktCO_{2e}, or +<1%. This is driven by an increase in Scope 1 emissions, mainly from fossil fuel use. Associated Scope 3 emissions arise from upstream activities linked with the production and distribution of natural gas and electricity.

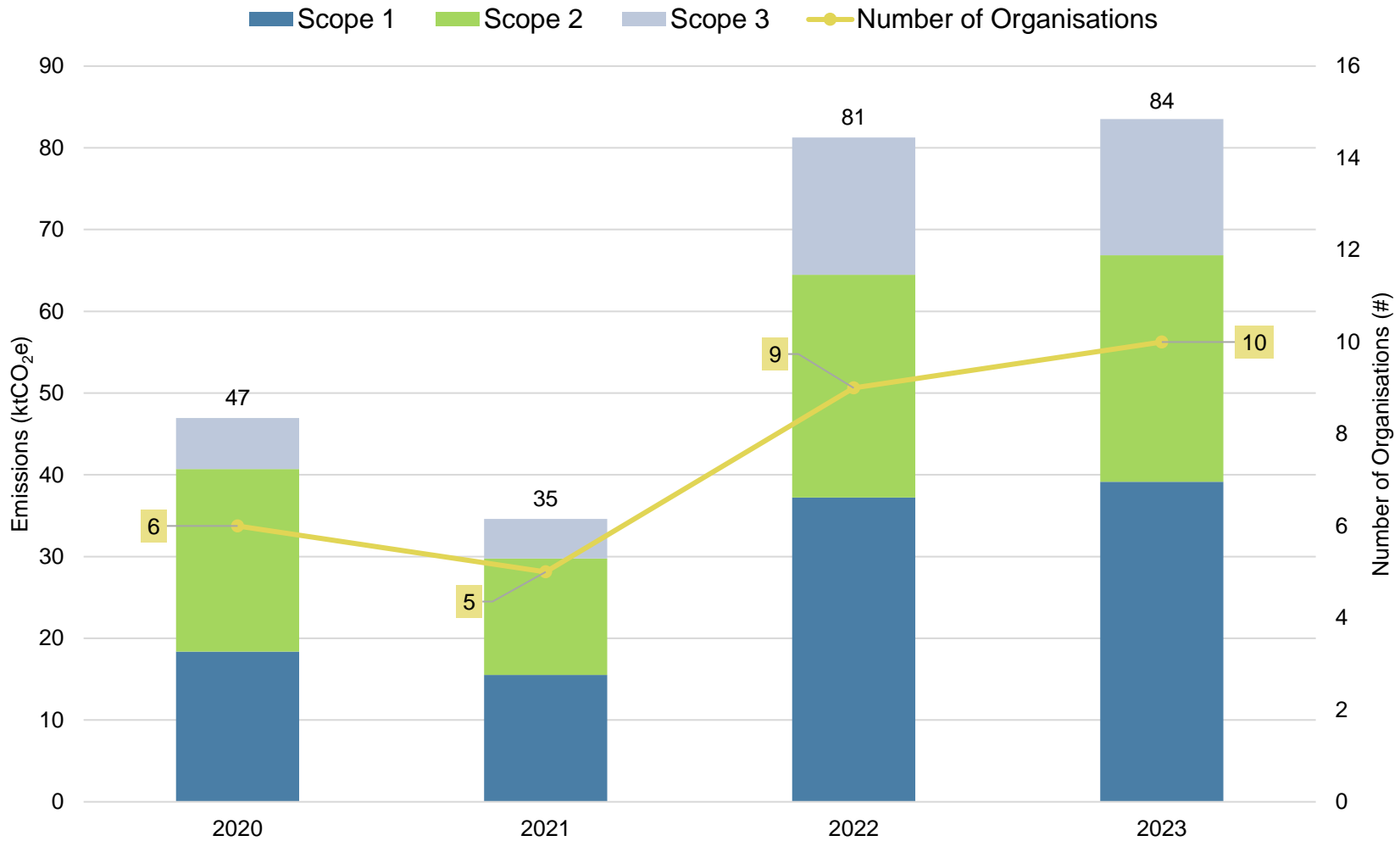


Figure 39 - Time Series of University/College building emissions (ktCO_{2e}) by scope

Transport

This sub-section covers emissions sources from fleet, business travel, commuting and homeworking. The relative contribution of the different transport emissions sources varies greatly between organisations. In some instances, there are potential gaps e.g. not all Universities and Colleges report emissions sources such as homeworking and commuting.

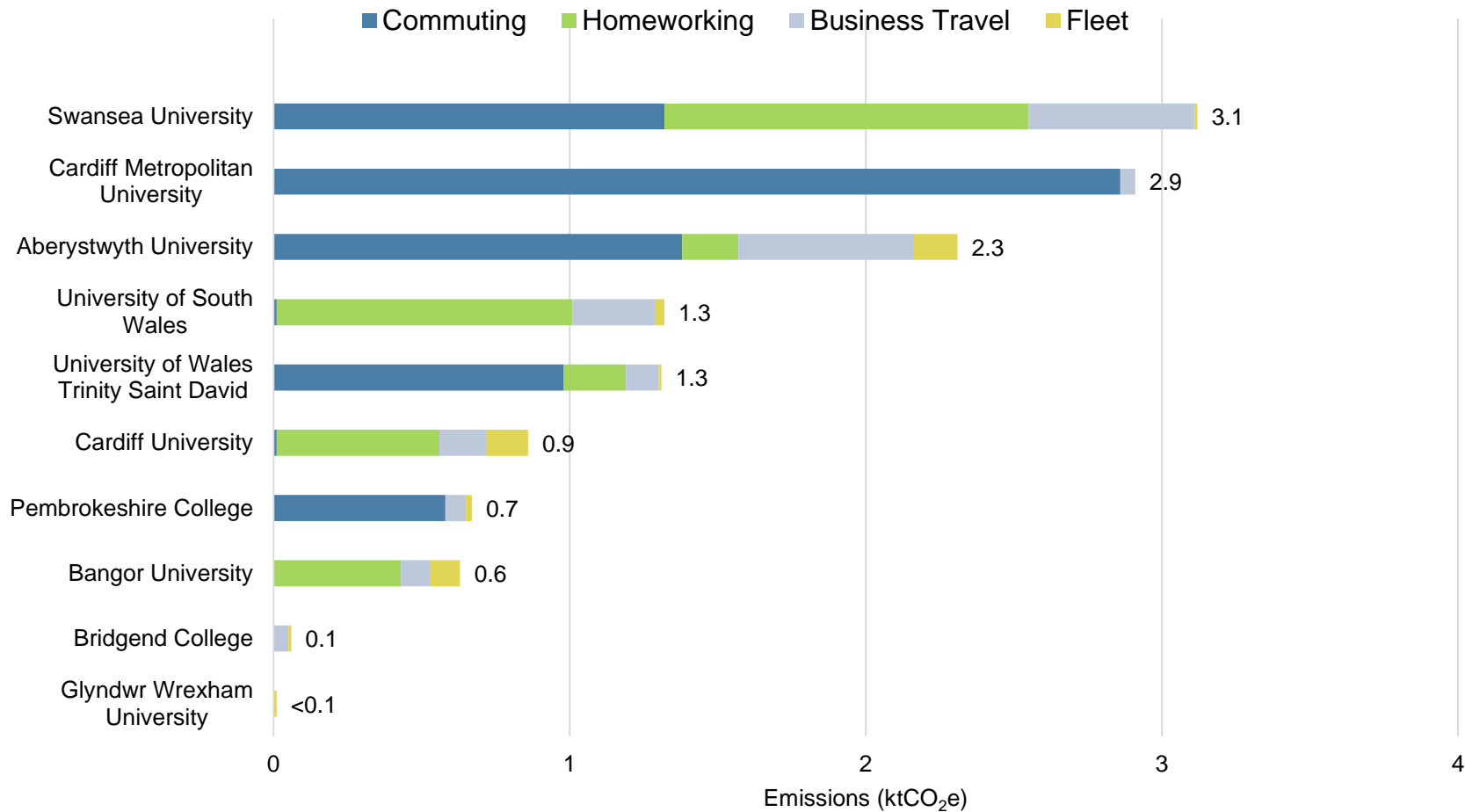


Figure 40 - 2023 Transport related emissions (ktCO₂e) by University/College and emissions sub-category

Transport related emissions for Universities and Colleges have increased between 2023 and the previous reporting year by 1.5 ktCO₂e, or +1%. This has been driven by an increase in Scope 3 emissions, mainly from commuting and homeworking. Fleet and business travel also saw small increases in emissions between 2022 and 2023.

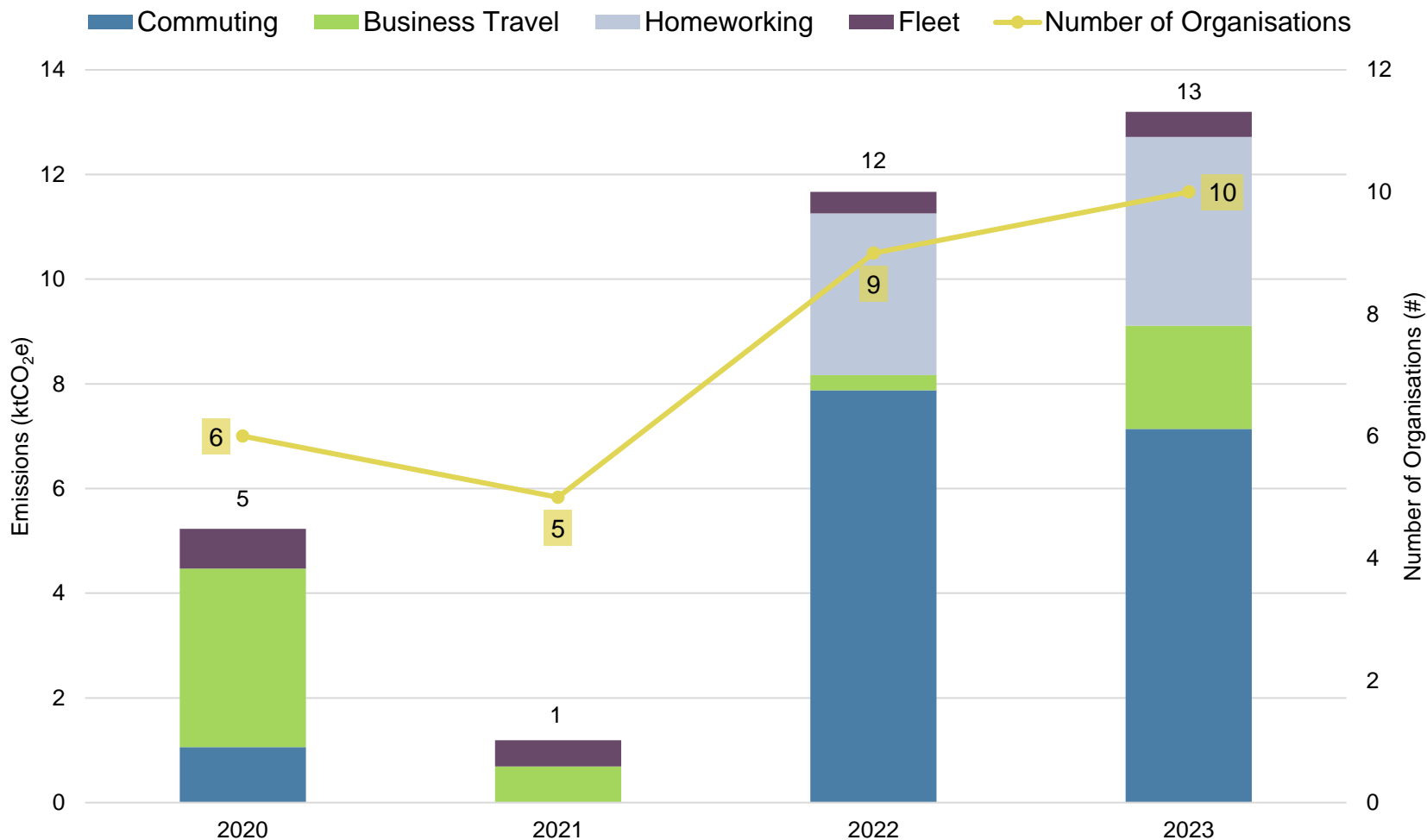


Figure 41 - Annual transport related emissions (ktCO₂e) for all Universities/Colleges by emissions category

Waste

This sub-section covers emissions arising from waste. Not all Universities and Colleges report waste. Those that do are shown in the chart below. Waste is categorised into 'Project', 'Organisational' and 'Municipal'. Here we present emissions by waste treatment method as opposed to its type or source. Most emissions arising from waste lie within the disposal routes of energy from waste (combustion) or from landfill. Less than 0.01% of waste by mass is sent to landfill yet accounts for 5% of emissions. This demonstrates the large difference in emissions intensities between landfill and other means of waste disposal.

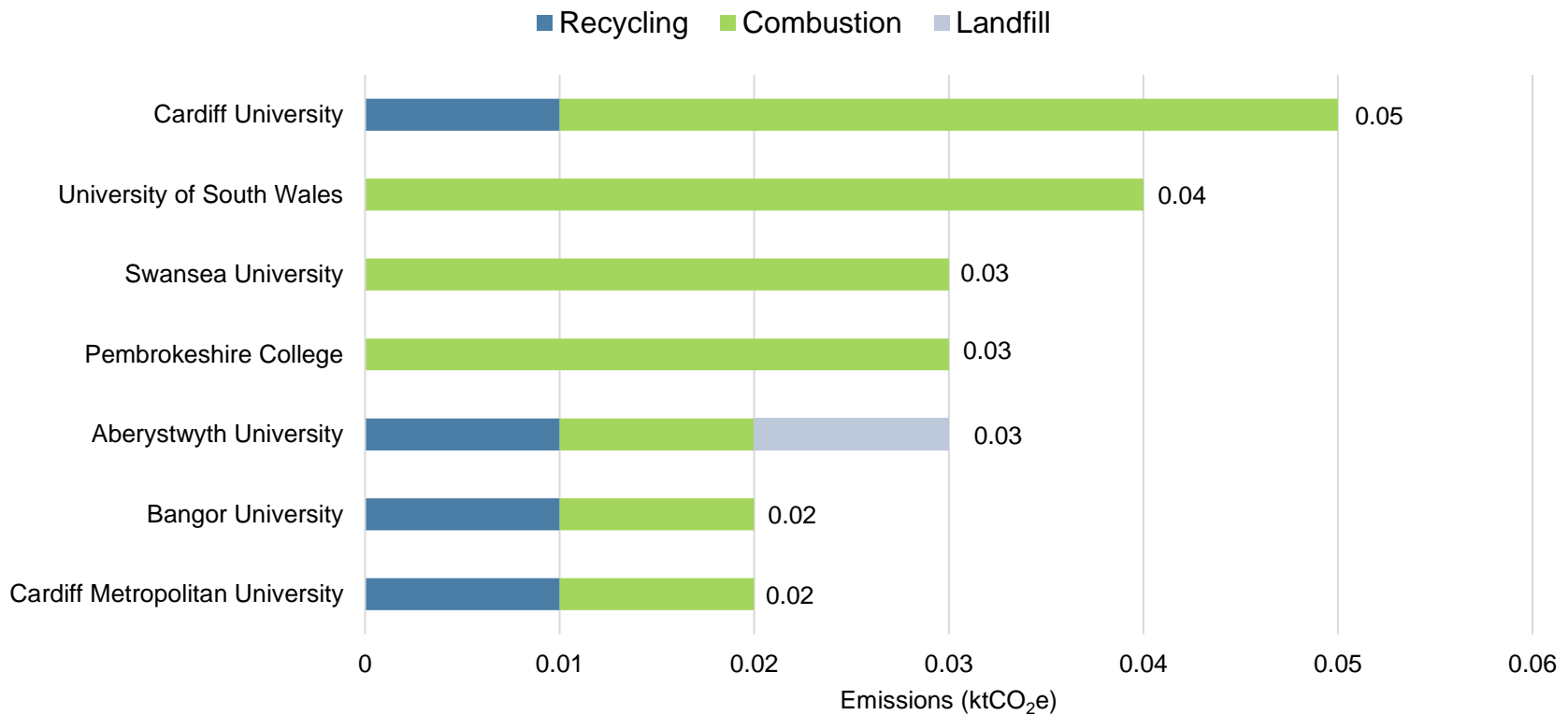


Figure 42 - 2023 Waste related emissions (ktCO₂e) by University/College and emissions sub-category

University and College waste related emissions have remained consistent between 2023 and the previous reporting year at ~0.2 ktCO_{2e}. This represents a 97% reduction since 2020, despite the number of reporting organisations having increased from 6 to 10 over the same period.

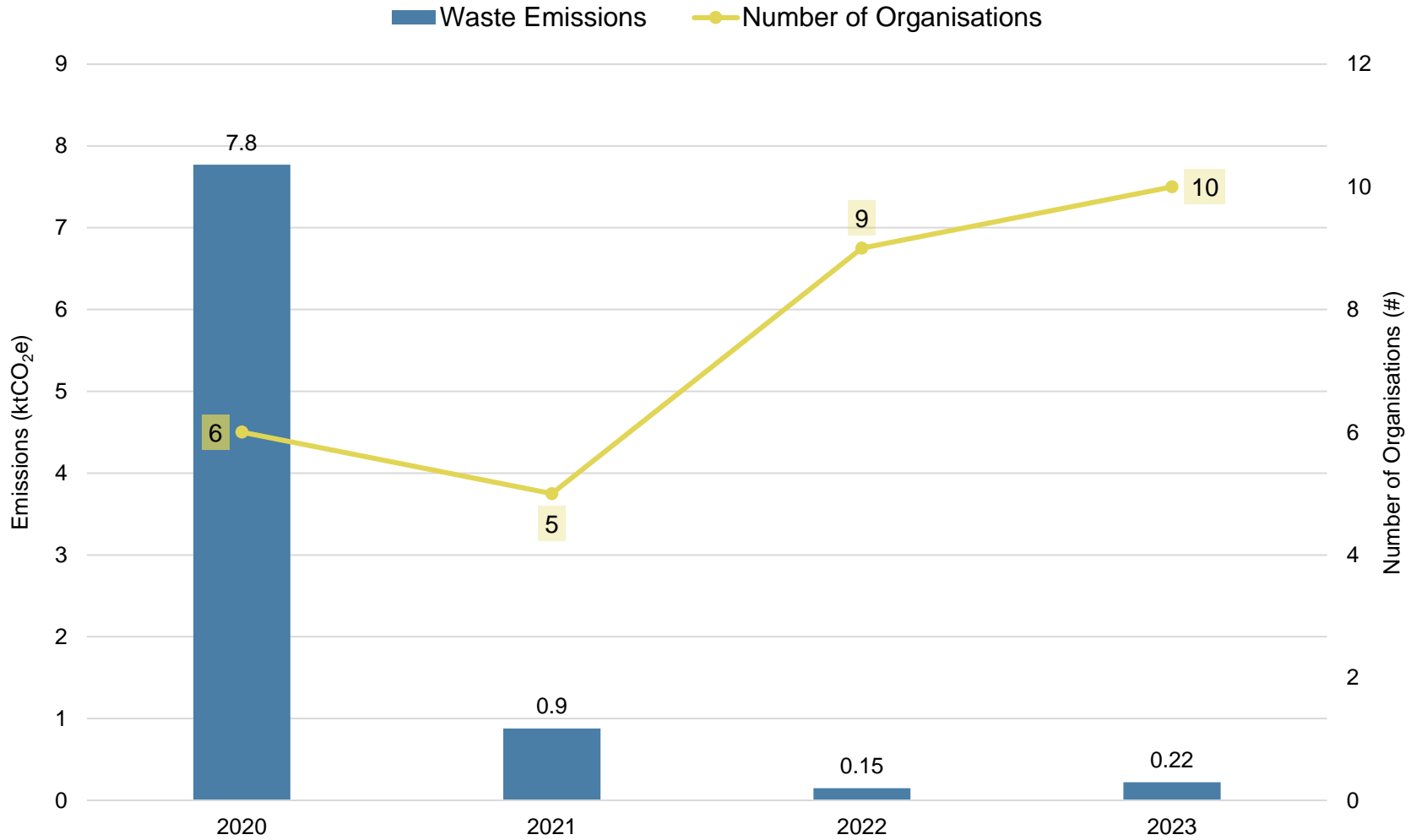


Figure 43 - Annual waste related emissions (ktCO_{2e}) for all Universities/Colleges

Supply Chain

This following sub-section covers emissions arising from the supply chain. University and College emissions have increased significantly between 2022 to 2023, an increase of 47 ktCO₂e (82%). Over this same period, spend on goods and services has almost doubled. An update in emissions factors between 2022 and 2023 has resulted in the increase being less than would otherwise be expected.

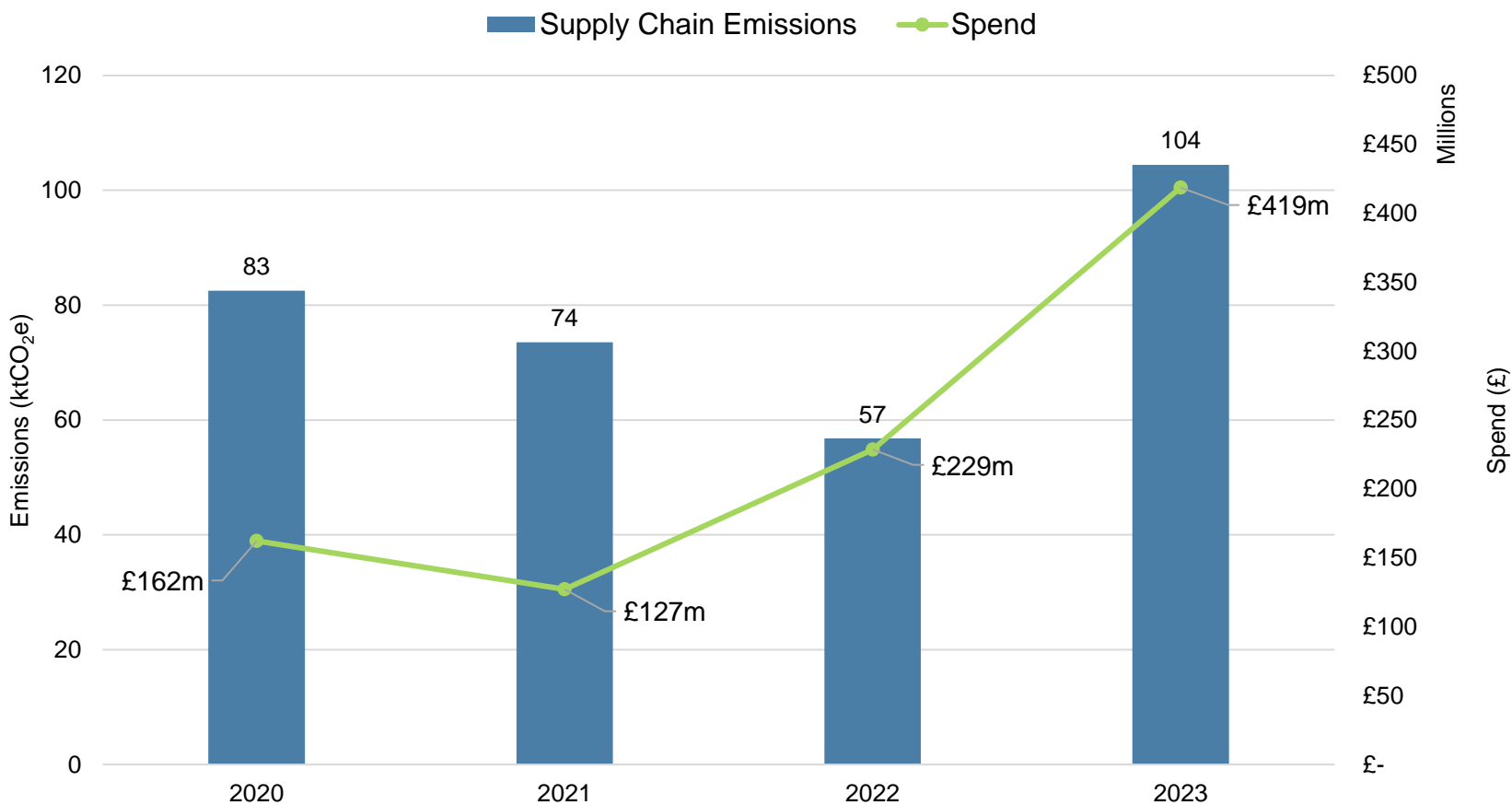


Figure 44 - Annual University/College supply chain spend (£) and emissions (ktCO₂e)

The chart (below) shows the top five emitting categories within the Universities and Colleges supply chain across each reporting year. All other categories beyond the top five have been aggregated within the 'Remainder' category. 'Manufacturing', 'Construction', 'Real Estate Activities', and 'Professional, Scientific and Technical Activities' emissions have all increased between 2022 and 2023, while 'Electricity, Gas, Steam and Air Conditioning Supply' emissions have decreased.

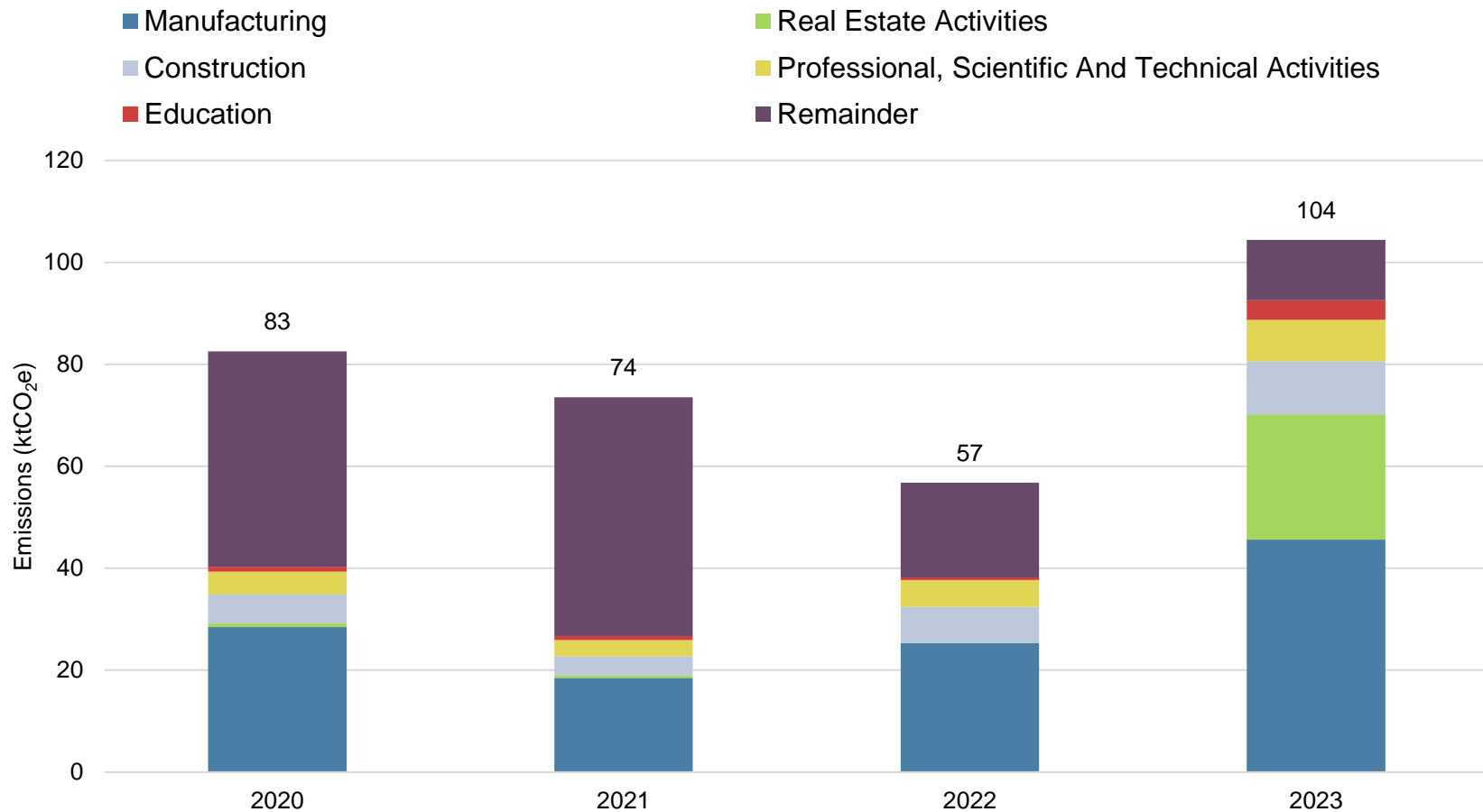


Figure 45 - Annual Universities/Colleges supply chain emissions (ktCO₂e) by top emitting categories of 2023

Land Use

This sub-section covers emissions arising from land. Not all Universities and Colleges report land use, those that do are shown in the chart below. For 2023, total emissions produced from land use change equated to 0.16 ktCO₂e and removals from land use equated to -4.12 ktCO₂e. This provides a net emissions removal from land use change of -3.96 ktCO₂e in 2023.

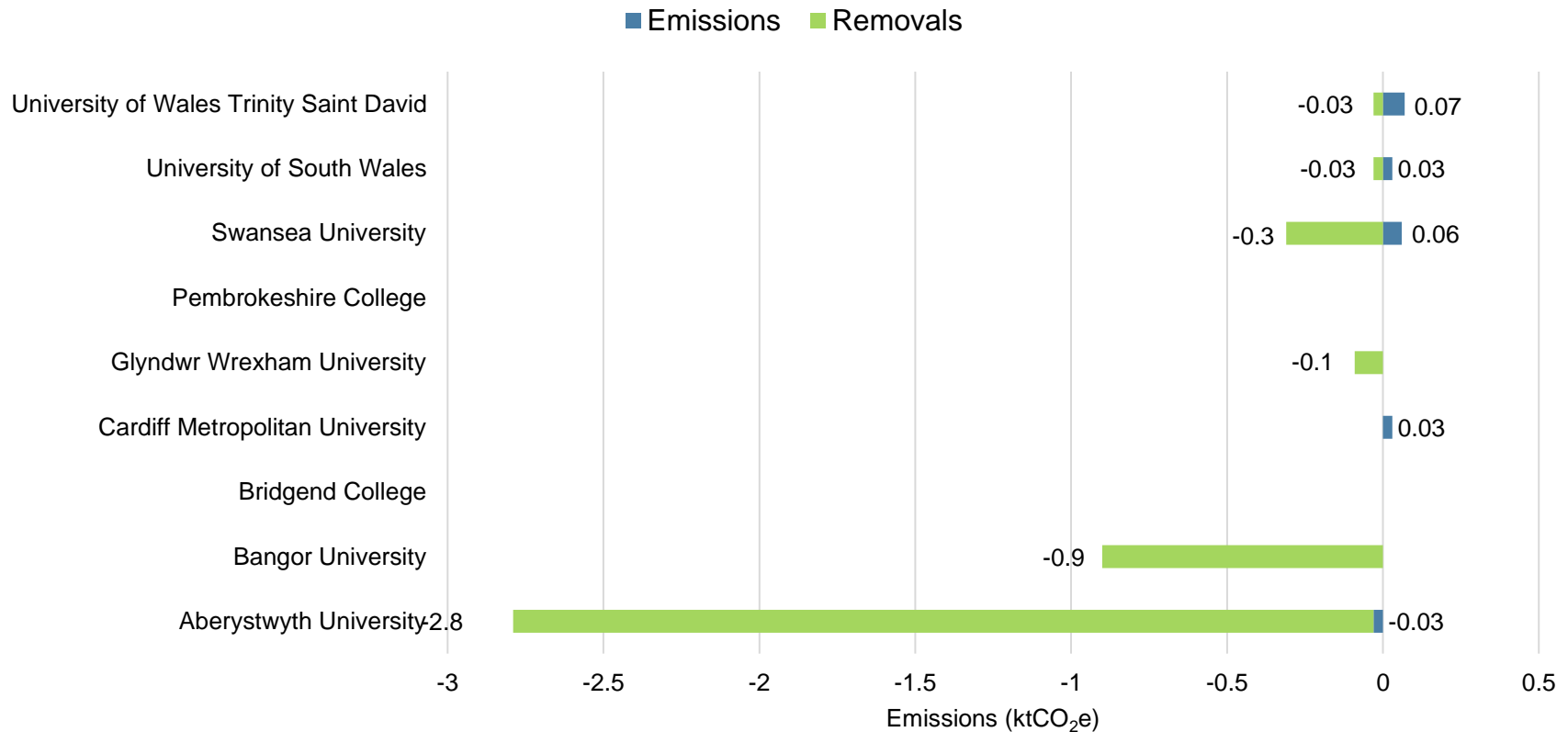


Figure 46 – University/College 2023 emissions (ktCO₂e) from land use

Net emissions from land use have decreased, with 2023 being the fourth year running where more emissions were removed than produced from land use change.

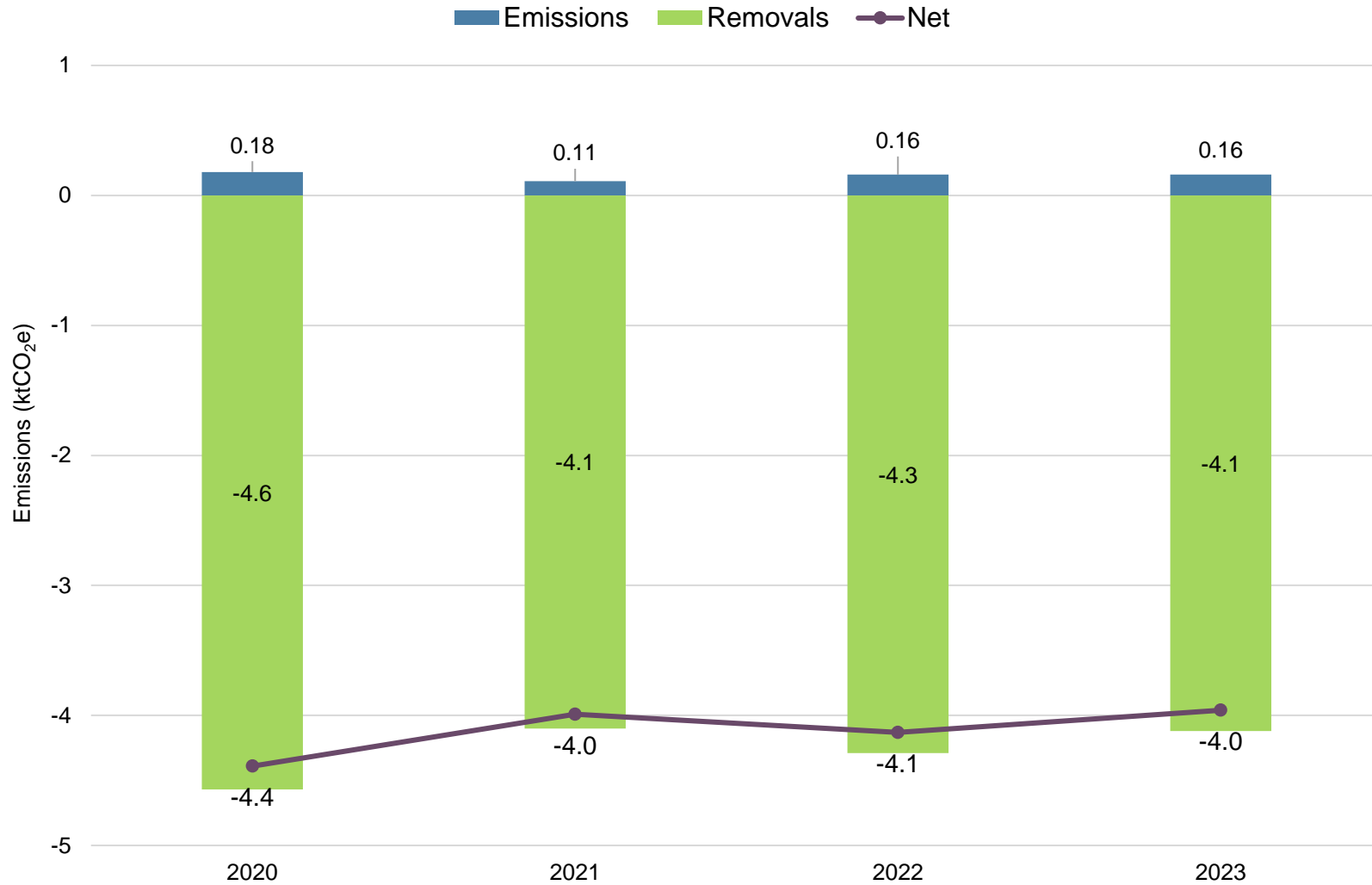


Figure 47 - Annual Universities/Colleges emissions (ktCO₂e) from land use change

Renewables

In 2023 Universities and Colleges generated over 6 GWh of renewable electricity, with the overwhelming majority from solar PV (99%). Universities and Colleges also generated almost 0.5 GWh of low carbon heat through combined heat and power at Swansea University and Bridgend College. Some Universities and Colleges also procure electricity through renewable procurement mechanisms, including green tariffs, PPAs and REGOs. This is not shown on the graph below:

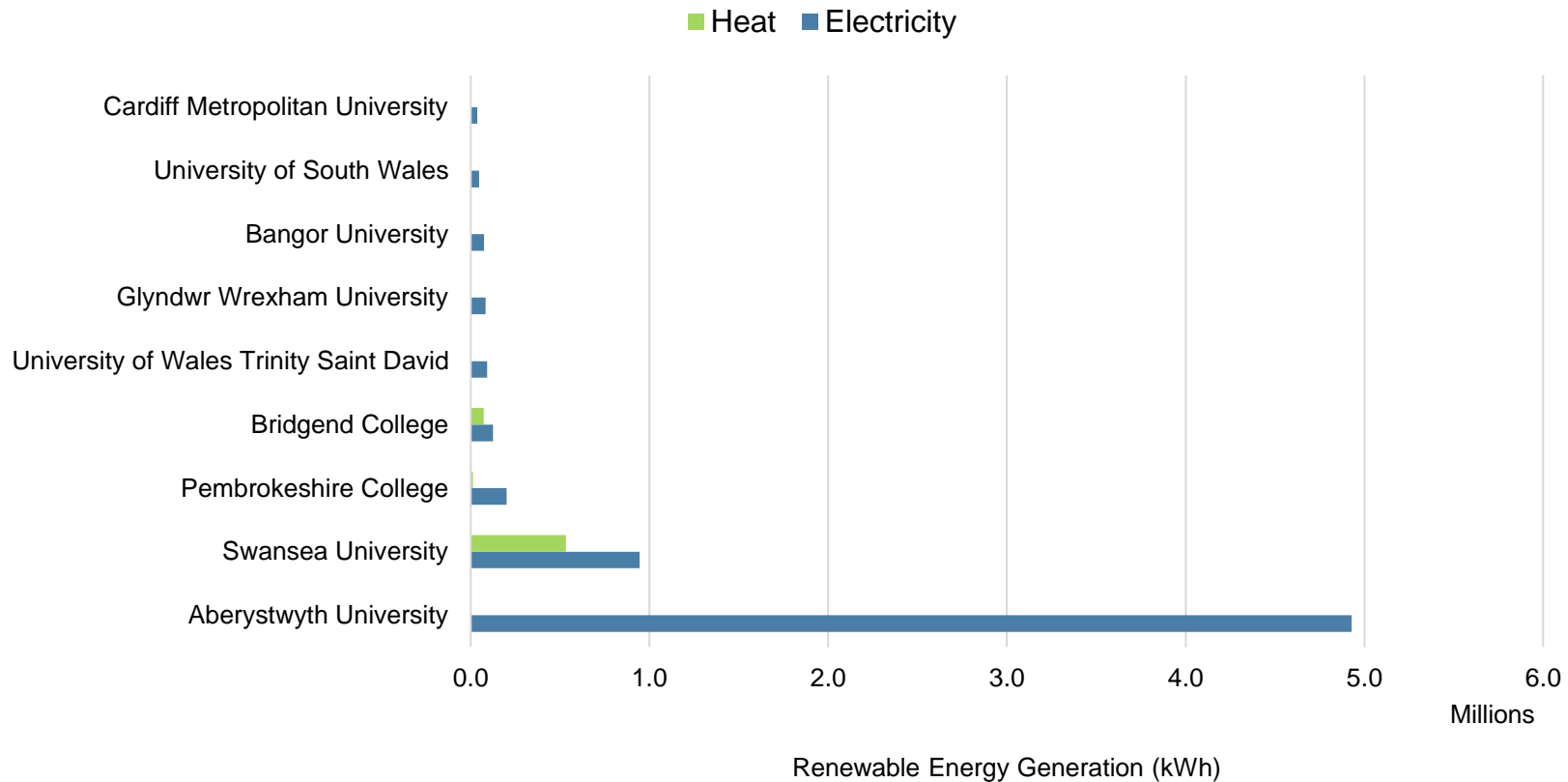


Figure 48 – University/College renewable electricity and heat generation (kWh) in 2023

Welsh Government

Overview

Headlines

The total Welsh Government footprint for 2023 is estimated as 95 ktCO_{2e}. Welsh Government emissions have decreased by 34% since 2022, or 50 ktCO_{2e} (from 145 ktCO_{2e}). Since reporting commenced in 2020, emissions have decreased by 39%.

Building emissions have decreased by 11% since 2022 and by 16% since 2020. Transport emissions have decreased by 14% since 2022 and by 77% since 2020. Waste emissions have increased by 20% since 2022 – no waste data was submitted for 2021 and 2020. Supply chain emissions have

decreased by 38% since 2022 and 41% since 2020.

Key contributors to the 2023 Welsh Government carbon footprint were Supply Chain (82%), Buildings (11%) and Transport (7%). These categories cumulatively contribute almost 100% of the 2023 Welsh Government footprint and 3% of the total 2023 Welsh Public Sector Footprint.

The key contributors to emissions change between 2022 and 2023 for Welsh Government associated emissions were:

- Supply chain emissions changed from 126 ktCO_{2e} to 78

ktCO_{2e} (-38%), driven by a reduction in spend*.

- Emissions associated with natural gas consumption changed from 6.3 ktCO_{2e} to 1.6 ktCO_{2e} (-75%) driven by a reduction in consumption.
- Emissions associated with the consumption of electricity changed from 146 ktCO_{2e} to 41 ktCO_{2e} (-72%). This has been driven by a combination of grid decarbonisation and reduced electricity consumption.
- All other emissions sources remained relatively stable between 2022 and 2023, or not material to the footprint.

* This has not been adjusted for inflation.

About this section

The figures in this section present an overview of data submitted for Welsh Government. This includes annual accounts covering the last three reporting rounds. Further figures present data for key emission categories which includes:

- Buildings
- Transport
- Waste
- Supply Chain
- Land use
- Renewables

The presentation of portfolio level emission estimates from individual organisations is not intended as a comparative exercise. It is purely demonstrative of the available data, and a result of how public sector bodies are categorised. Organisational size, specific operations and the make-up of emission portfolios should be

respected when making any comparative deductions.

Additional commentary for drivers of emissions change between reporting years has not been included. The analysis of this should be conducted at the individual organisational level using activity data (not available or requested as part of the Net Zero reporting process currently).

Commentary of Welsh Government data coverage can be found within the appendices.

Please note that the reported figures are approximated to the nearest whole number for ease of presentation. Consequently, there may be slight discrepancies at aggregate levels when whole numbers are summed, due to the exclusion of decimal values.

Supply chain emissions contribute the largest proportion of the total Welsh Government footprint. The figures for Welsh Government emissions are more than double the average emissions for public sector organisations in Wales.

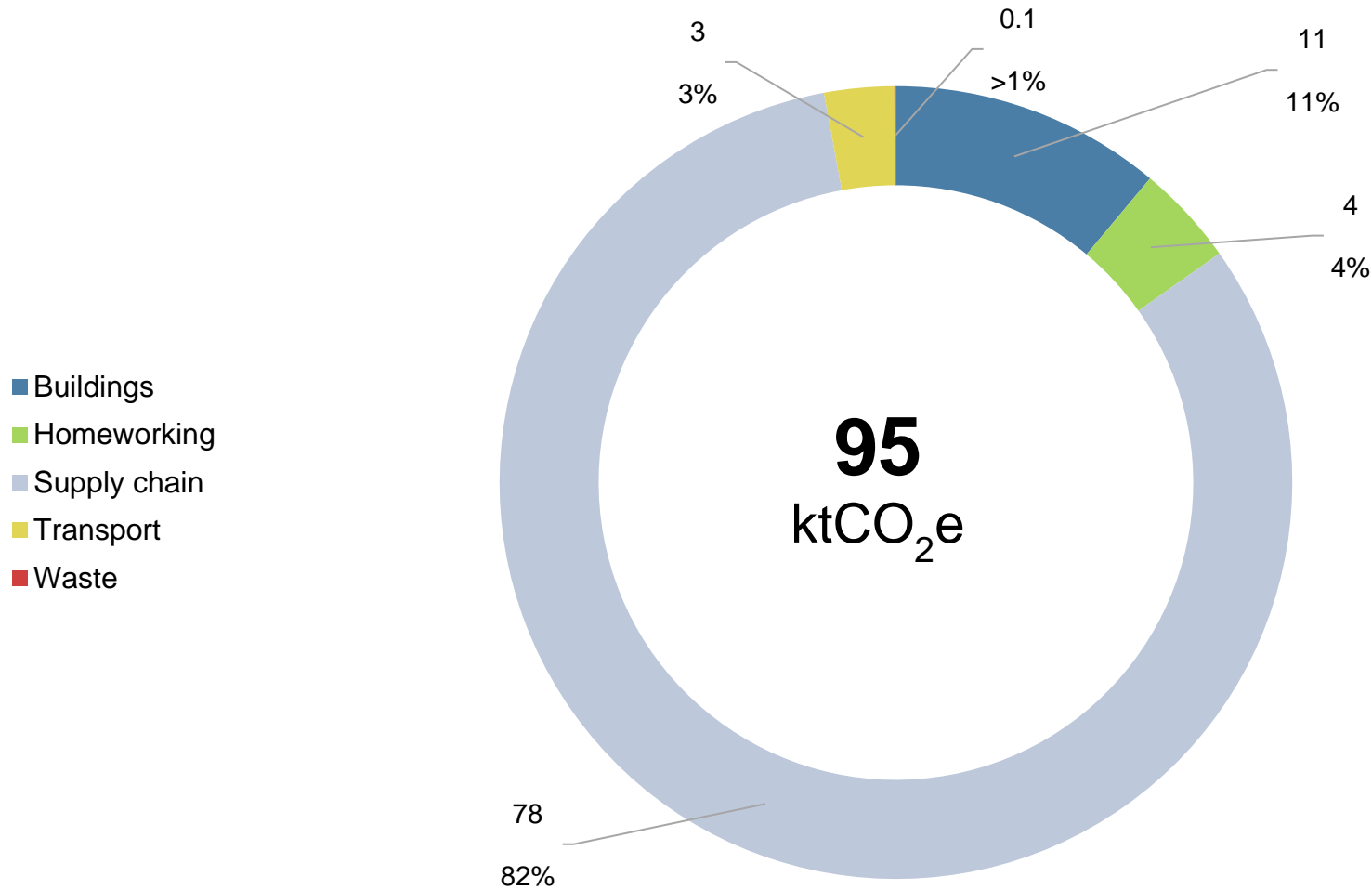


Figure 49 - Total Welsh Government emissions (ktCO₂e) for 2023 by emissions category

Emissions shown below are disaggregated by supply chain and non-supply chain (buildings, transport, homeworking and waste). Welsh Government emissions are at their lowest level since reporting began (95 ktCO₂e). This is driven by a decrease in supply chain emissions (38% decrease since 2022). Non-supply chain emissions have also decreased since 2022 (11% decrease).

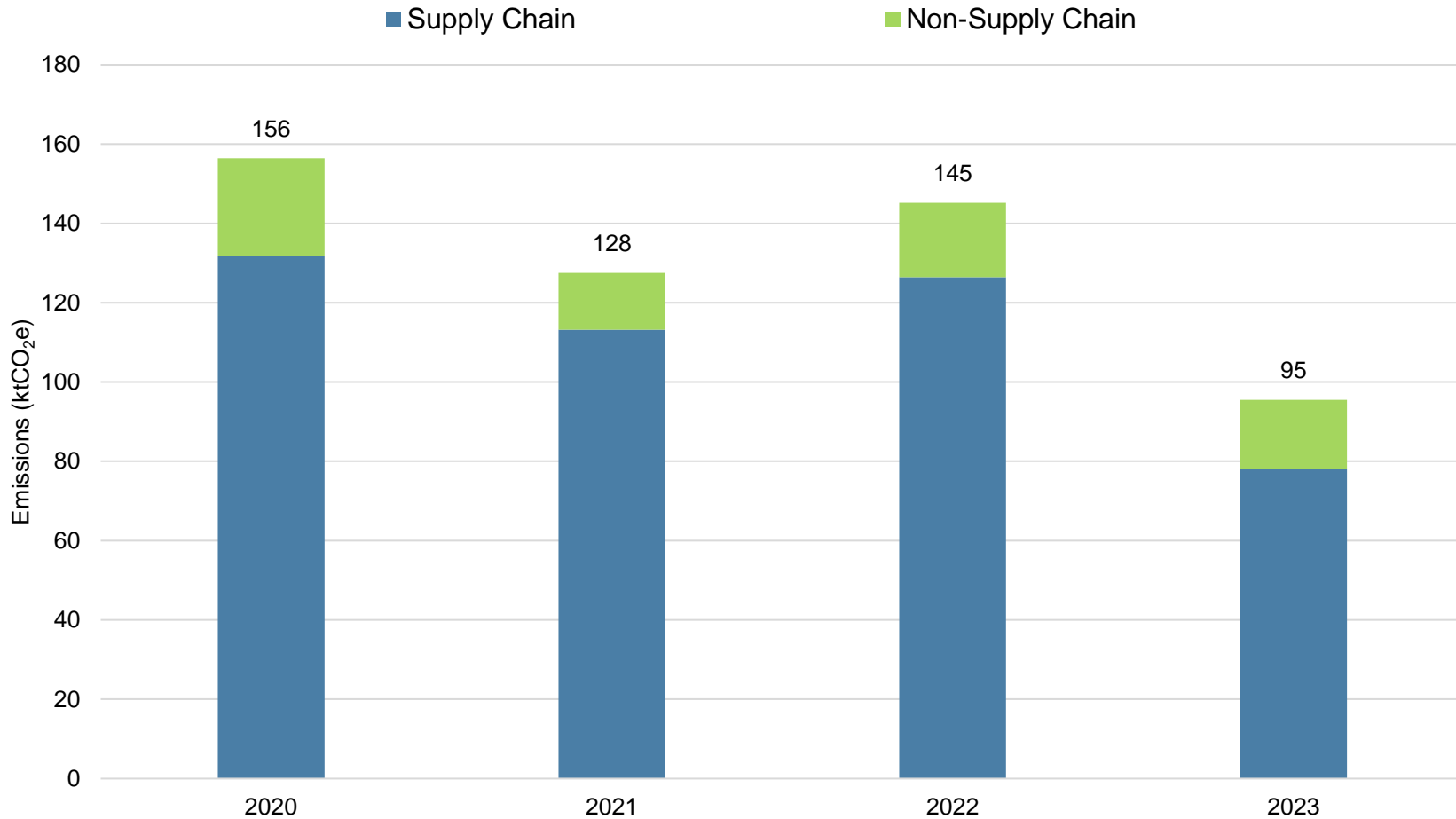


Figure 50 - Annual emissions (ktCO₂e) for Welsh Government by supply chain and non-supply chain split

Total emissions in 2023 equate to 95 ktCO₂e for the Welsh Government. The majority of emissions arise from the supply chain (82%). In previous years, supply chain emissions have accounted for up to 89% of the total Welsh Government footprint. Buildings, which include energy consumption, water and refrigerants contributed 11% to the Welsh Government total. Transport related emissions which include business travel, fleet and commuting contributed <1% to the total. Homeworking contributed 3%.

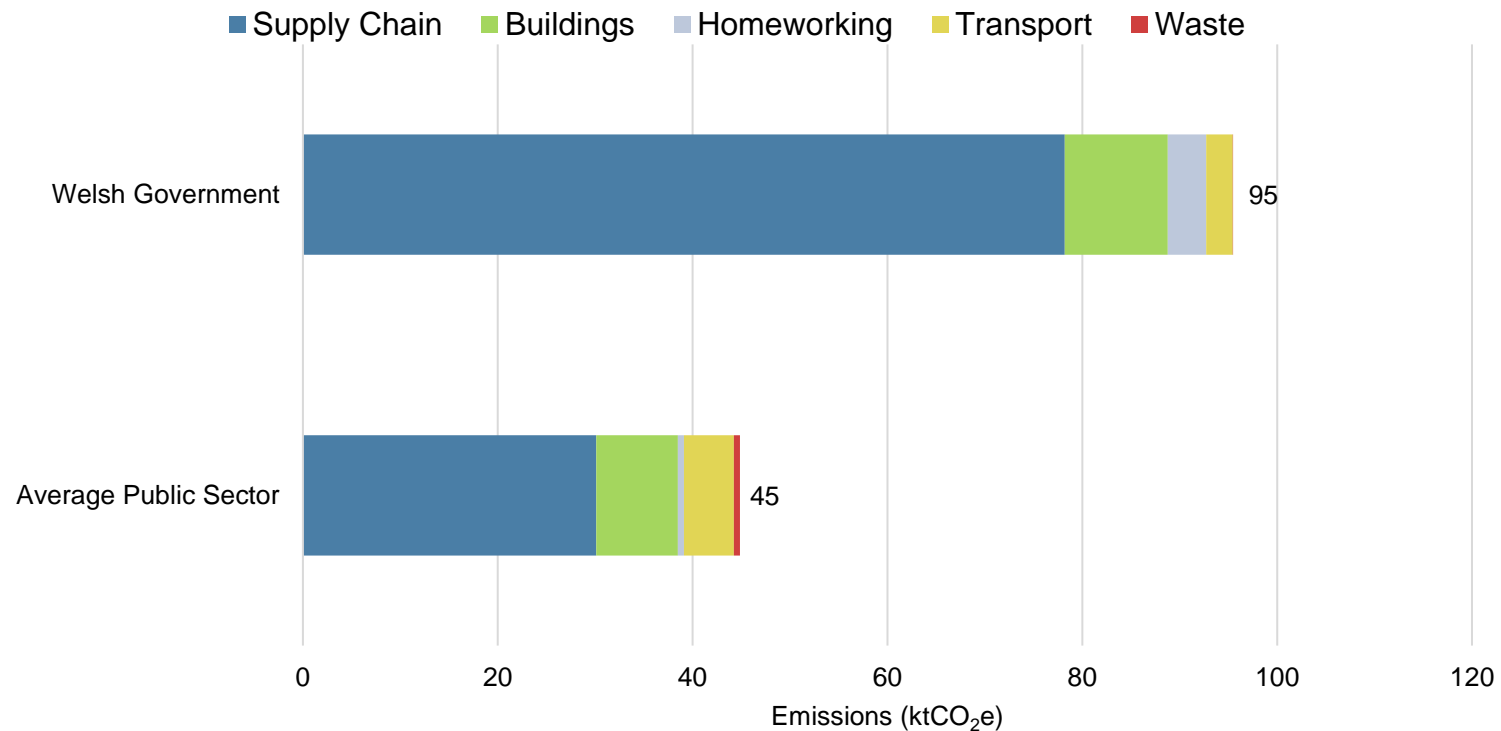


Figure 51 - 2023 emissions (ktCO₂e) for Welsh Government and emissions category

Buildings

This sub-section covers emissions sources including energy consumption, water usage and refrigerants. The majority of building emissions for the Welsh Government arise from electricity usage, both in buildings (41%), and for streetlighting (39%). Fossil fuels (18%) including natural gas, kerosene, gas oil, LPG and coal are also used in Welsh Government buildings.

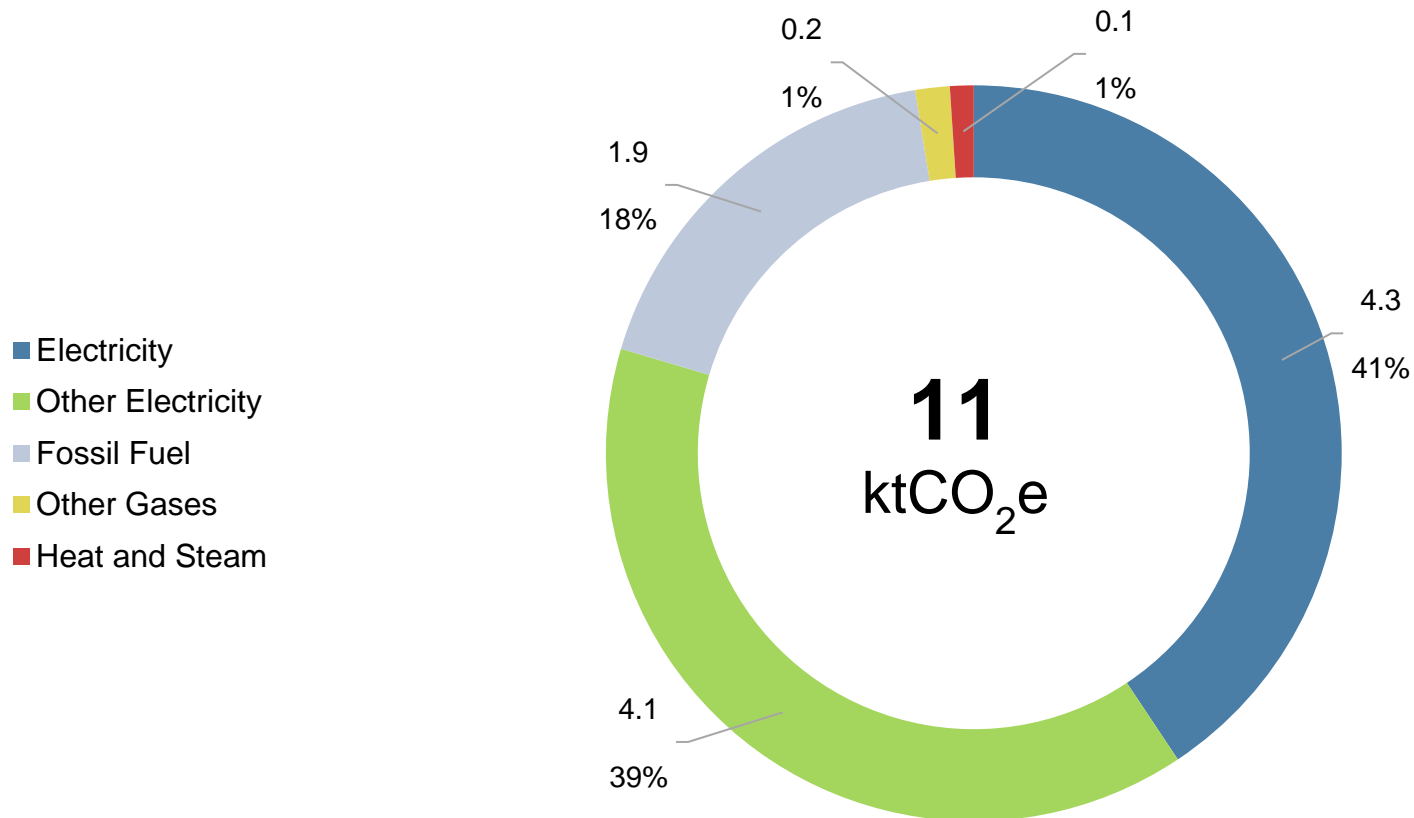


Figure 52 - 2023 Building related emissions (ktCO₂e) for Welsh Government by emissions sub-category

Building related emissions for Welsh Government have decreased between 2023 and 2022 year by 1 ktCO₂e, or 8%. This has been driven by a reduction in Scope 2 emissions predominantly. Associated Scope 3 emissions arise from upstream activities linked with the production and distribution of natural gas and electricity.

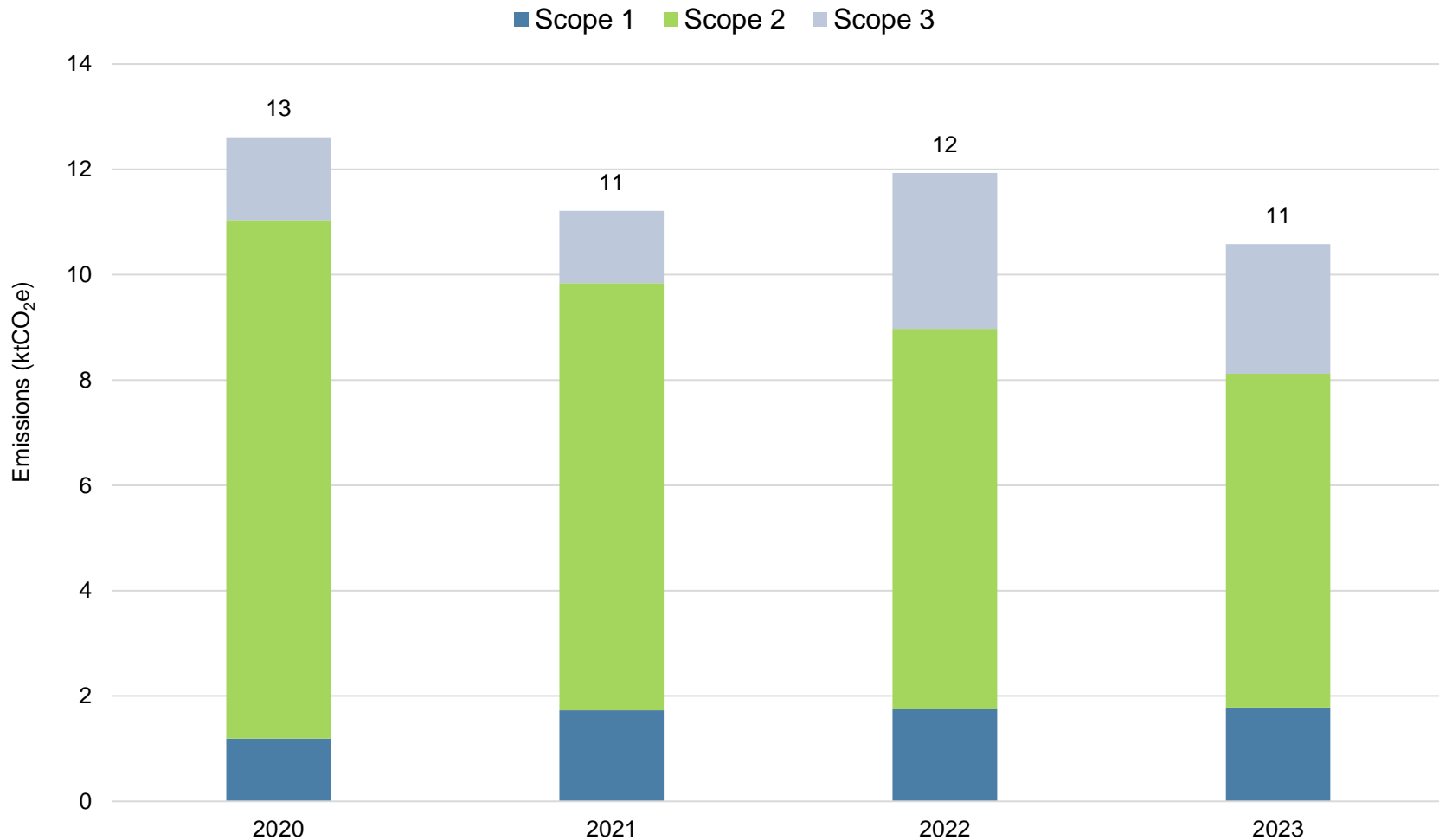


Figure 53 - Annual building related emissions (ktCO₂e) for Welsh Government by emissions scope

Transport

This sub-section covers Welsh Government emissions sources from fleet, business travel, commuting and homeworking. Homeworking accounts for 59%, or 3.9 ktCO₂e of transport emissions. This represents an 8% increase from 2022 - the first year homeworking was reported by Welsh Government.

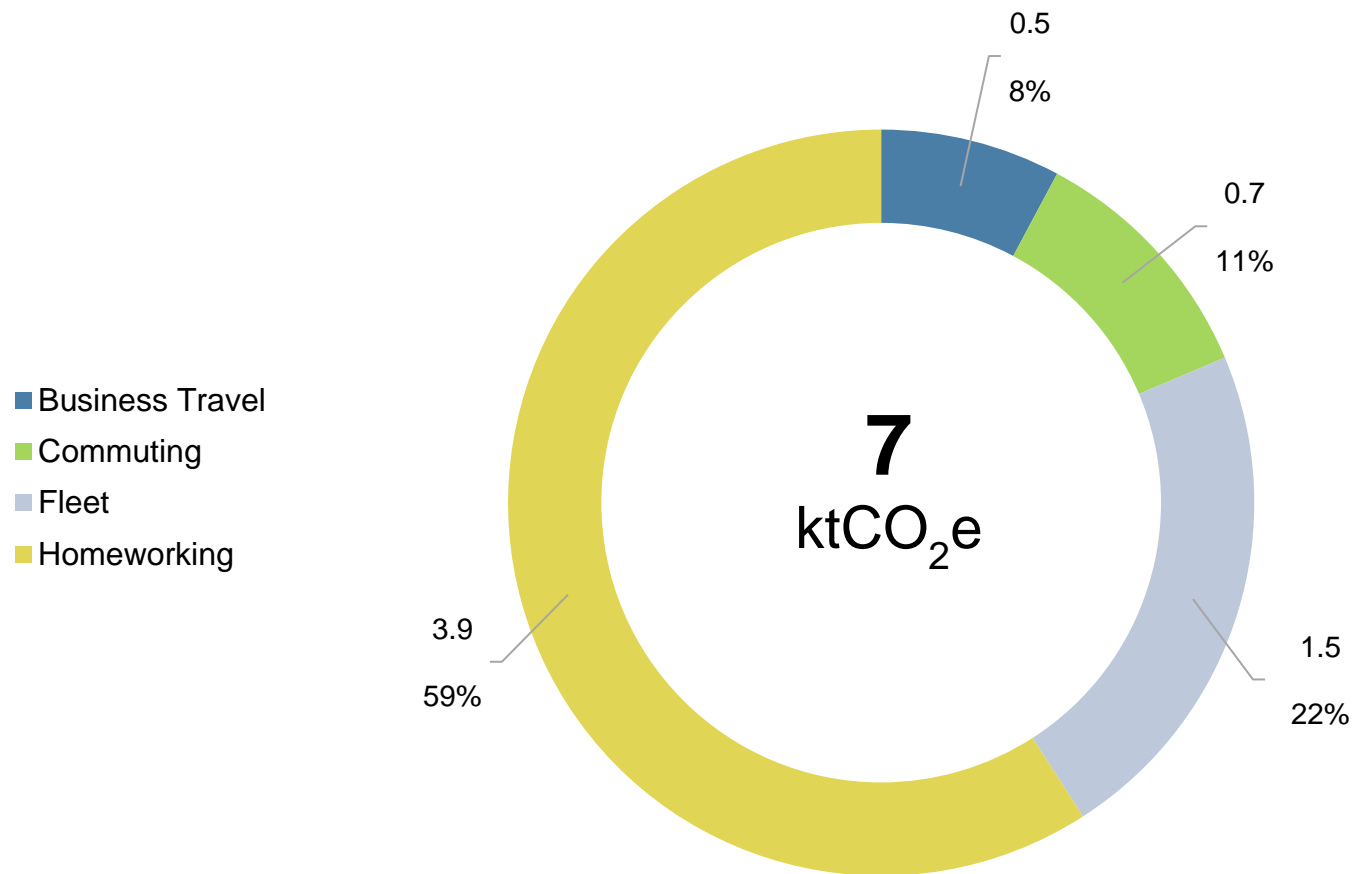


Figure 54 - 2023 Transport related emissions (ktCO₂e) for Welsh Government and emissions sub-category

Transport related emissions for Welsh Government have remained stable between 2023 and 2022 overall. The figures have decreased by 5.3 ktCO₂e or -44% since 2020. This has been driven by a reduction in Scope 1 and Scope 3 emissions mainly from fleet, commuting and business travel.



Figure 55 - Annual transport related emissions (ktCO₂e) for Welsh Government by emissions scope

Waste

This sub-section covers emissions arising from waste. Waste has been categorised into 'Project', 'Organisational' and 'Municipal'. Here we present emissions by waste treatment method as opposed to its type or source. 99.9% of emissions from waste are due to waste sent to landfill. This is despite it only accounting for approximately half of all disposed waste by mass. This demonstrates the large difference in emission intensity between landfill and other means of waste disposal.

Welsh government waste related emissions have increased between 2023 and 2022 by 0.01 ktCO₂e or +20%. This has been driven by an increase in the amount of waste being generated, and an increase in the proportion of waste going to landfill.

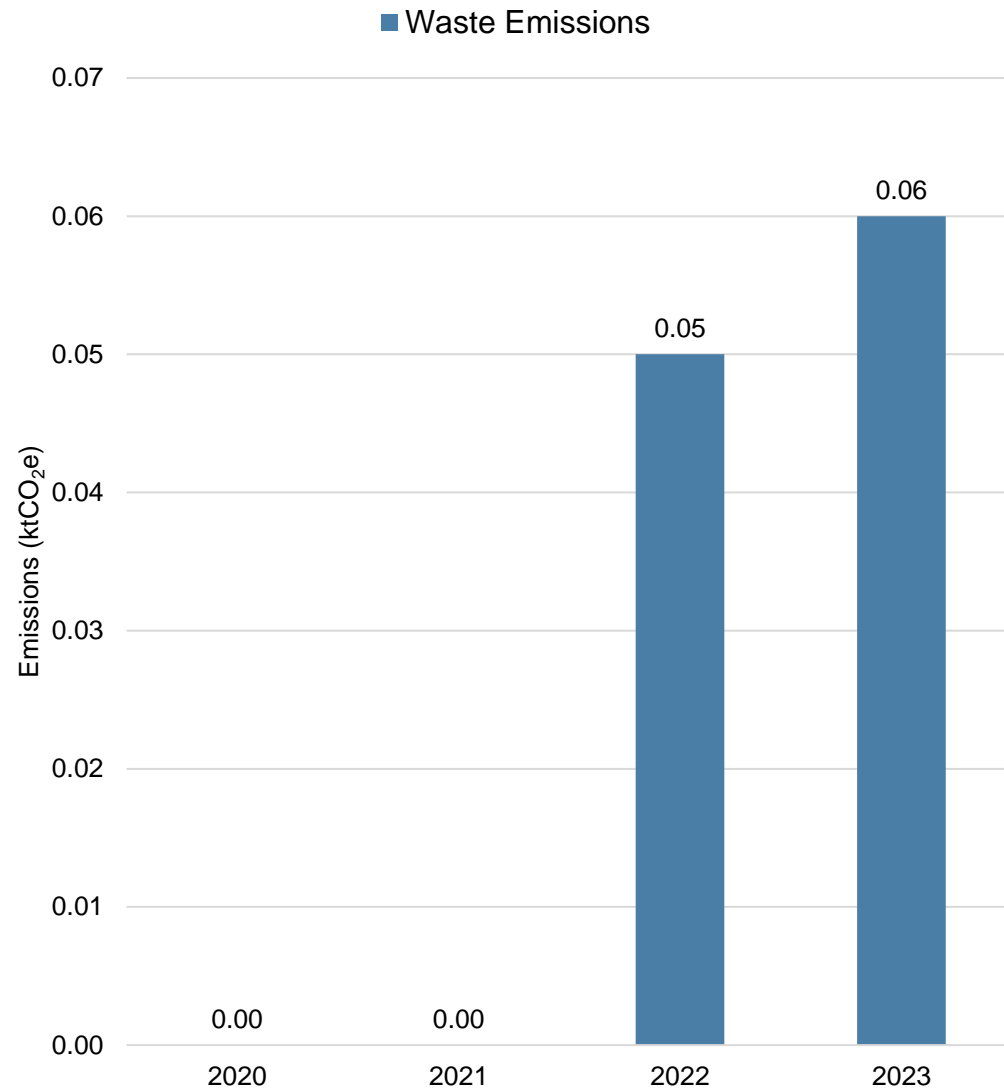


Figure 56 - Annual waste related emissions (ktCO₂e) for Welsh Government

Supply Chain

This following sub-section covers emissions arising from the supply chain. Welsh Government emissions have decreased significantly between 2022 to 2023, with a decrease of 48.2 ktCO₂e (38%). Over this same period, spend on goods and services has almost doubled. An update in emissions factors between 2022 and 2023 has resulted in the decrease in estimated emissions despite increased spend.

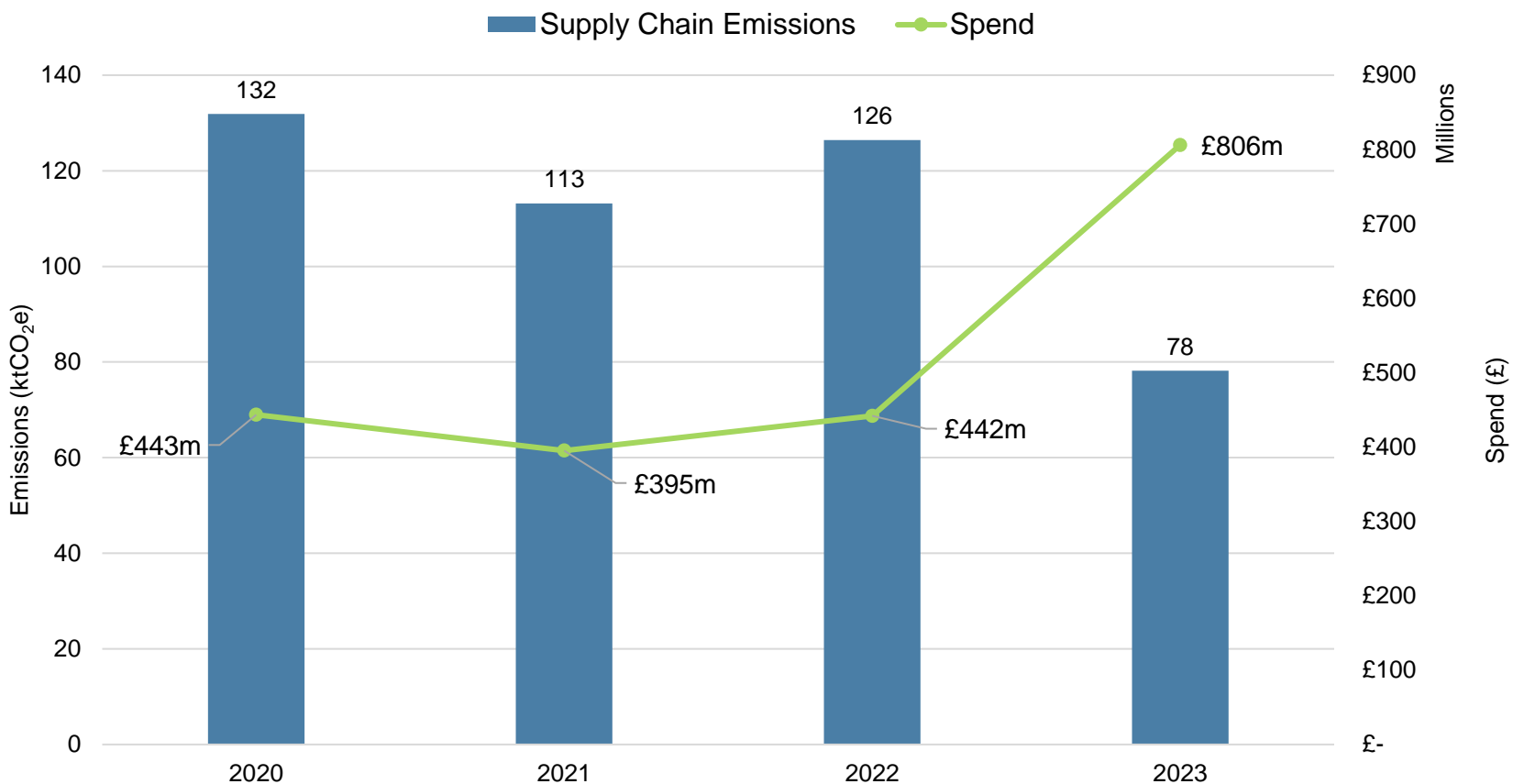


Figure 57 - Annual Welsh Government supply chain spend (£) and emissions (ktCO₂e)

The chart (below) shows the top five emitting categories within the Welsh Government supply chain for the year 2023. All other categories beyond the top five have been aggregated within the 'Remainder' category. The same top five categories from 2023 are also displayed across the previous reporting years. All of the top five category emissions have decreased between 2022 and 2023.

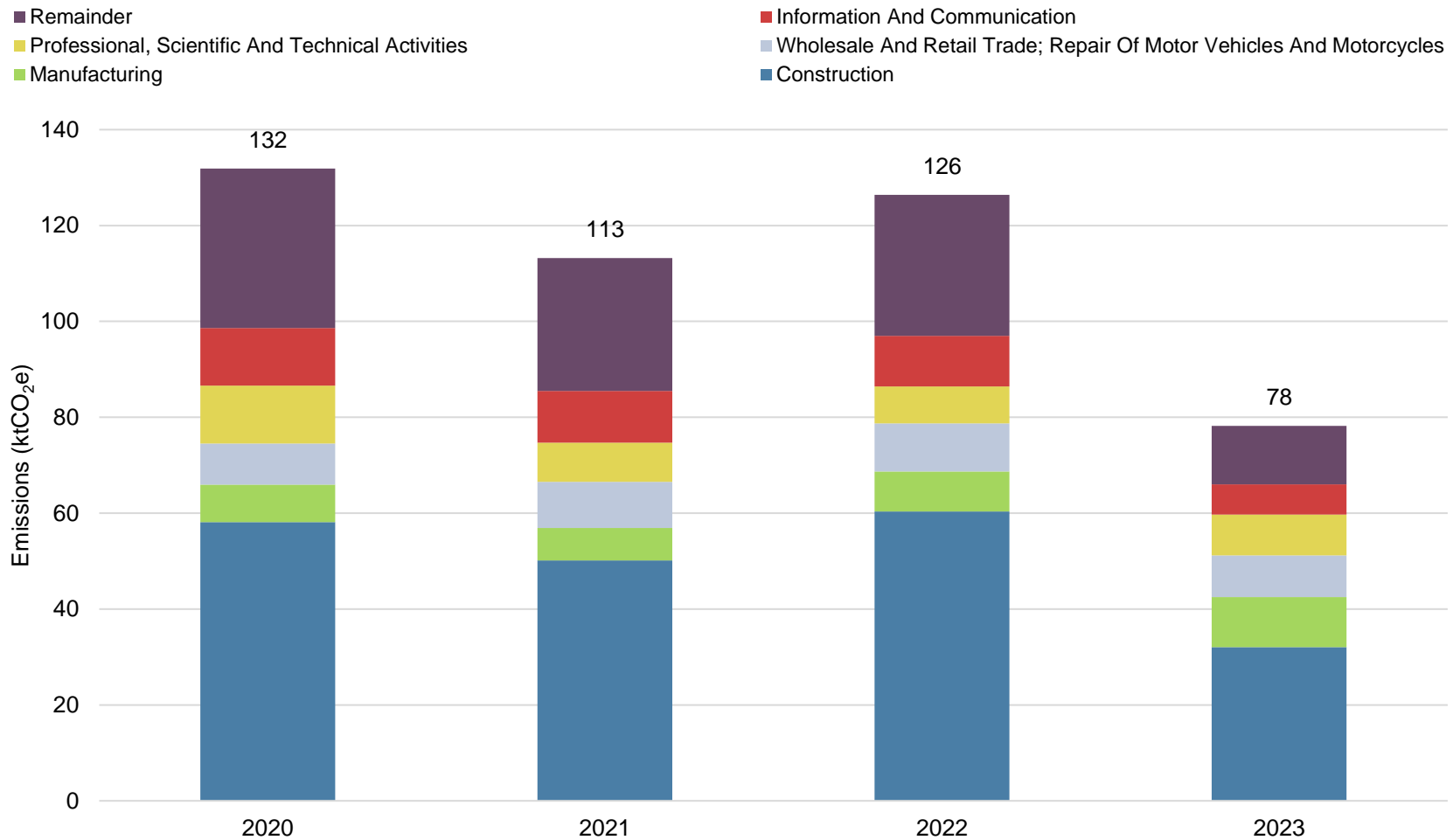


Figure 58 - Annual Welsh Government supply chain emissions (ktCO₂e) by top emitting categories of 2023

Land Use

This sub-section covers emissions arising from land. For 2023, total emissions produced from land use change equated to 0.6 ktCO₂e. Removals from land use equated to -1.1 ktCO₂e. This provides a net emissions removal from land use change of 0.4 ktCO₂e in 2023. Net emissions from land use have decreased, with 2023 being the first year where more emissions were removed than produced from land use change.

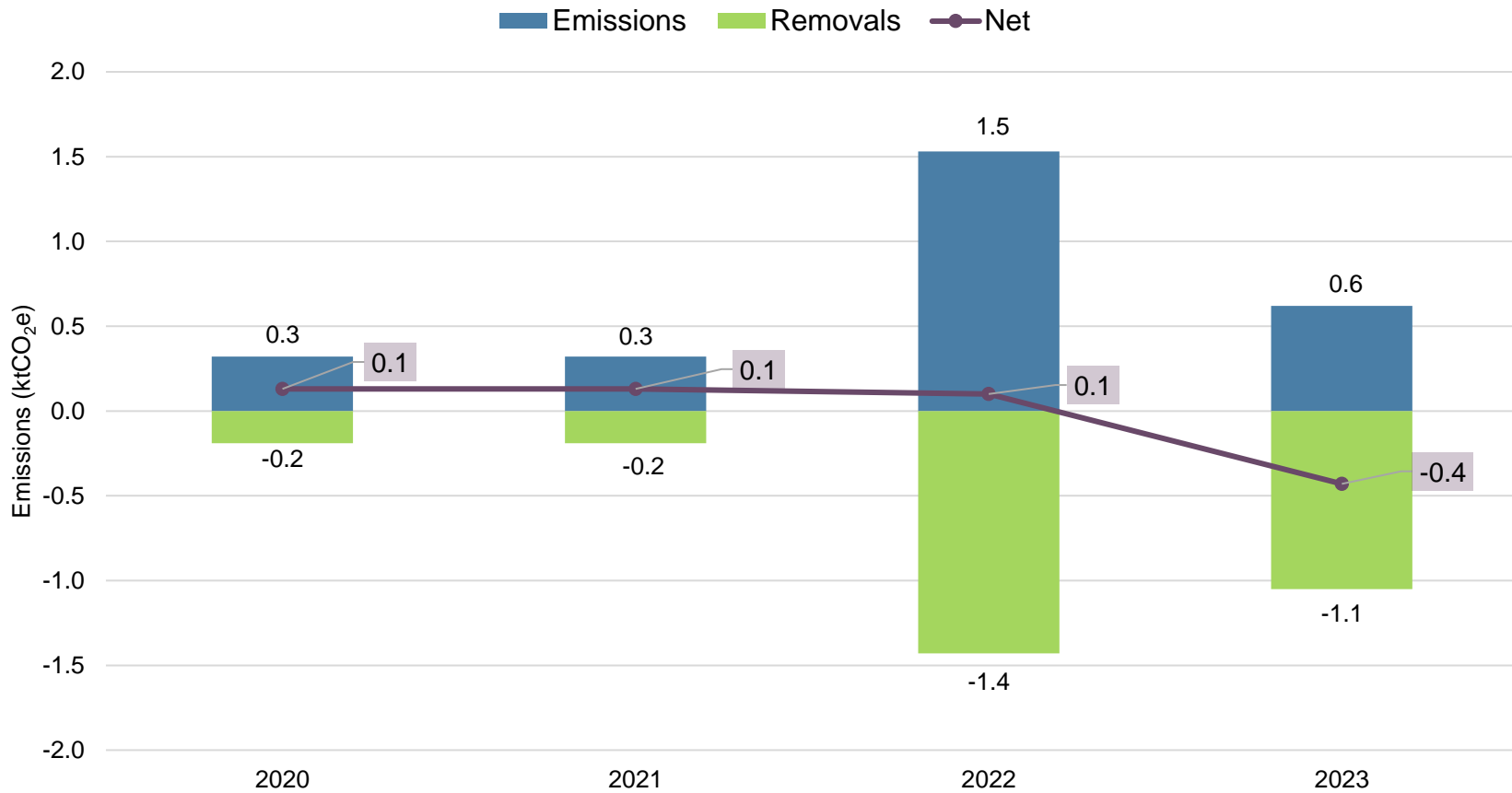


Figure 59 - Annual Welsh Government emissions (ktCO₂e) from land use change

[Return to main contents](#)

Renewables

Welsh Government did not report any renewable generation in 2023.

Fire and Rescue Services

Overview

Headlines

The total Fire and Rescue Service footprint for 2023 is estimated as 21.4 ktCO₂e. In total, three Fire and Rescue Services reported data in 2023.

Fire and Rescue Service emissions have increased by 14% since 2022, an increase of 2.6 ktCO₂e (from 18.7 ktCO₂e). Since reporting commenced in 2020, emissions have increased by 195%. The number of Fire and Rescue Services reporting has remained static over the same time period.

Building emissions have decreased by 9% since 2022 and since 2020. Transport (excluding homeworking)

emissions have increased by 44% since 2022 and nearly threefold since 2020. No waste emissions were reported for 2023. Supply chain emissions have increased by 12% since 2022 and nearly threefold since 2020.

Key contributors to the 2023 Fire and Rescue Services carbon footprint were Supply Chain (46%), Buildings (18%) and Transport (35%). These categories cumulatively contribute 99% to the 2023 Fire and Rescue Services footprint and <1% of the total 2023 Welsh Public Sector Footprint.

The key contributors to emissions change between 2022 and 2023 for

Fire and Rescue Services associated emissions were:

- Supply chain emissions changed from 8.8 ktCO₂e to 9.9 ktCO₂e (+12%), driven by an increase in spend*.
- Emissions associated with transport changed from 5.2 ktCO₂e to 7.5 ktCO₂e (-44%), driven by an increase in fleet fuel consumption.
- All other emissions sources remained relatively stable between 2022 and 2023.

* This has not been adjusted for inflation.

About this section

The figures in this section present an overview of data submitted for Fire and Rescue Services. This includes annual accounts covering the last three reporting rounds. Further figures present data for key emission categories which includes:

- Buildings
- Transport
- Waste
- Supply Chain
- Land use
- Renewables

The presentation of portfolio level emission estimates from individual organisations is not intended as a comparative exercise. It is purely demonstrative of the available data, and a result of how public sector bodies are categorised. Organisational size, specific operations and the make-up of emission portfolios should be

respected when making any comparative deductions.

Additional commentary for drivers of emissions change between reporting years has not been included. The analysis of this should be conducted at the individual organisational level using activity data (not available or requested as part of the Net Zero reporting process currently).

Commentary on Fire and Rescue Services data coverage can be found within the appendices.

Please note that the reported figures are approximated to the nearest whole number for ease of presentation. Consequently, there may be slight discrepancies at aggregate levels when whole numbers are summed, due to the exclusion of decimal values.

Total emissions in 2023 equate to 21.4 ktCO₂e for Fire and Rescue Services. Almost half of total emissions arise from the supply chain (46%). In previous years, supply chain emissions have accounted for 26% to 46% of the total Fire and Rescue Services footprint. Transport related emissions which include business travel, fleet and commuting contributed 35% to the total. Buildings, which include energy consumption, water and refrigerants contributed 18% to the total. Waste related emissions accounted for less than 0.03% of emissions and so have been omitted from the chart below for clarity.

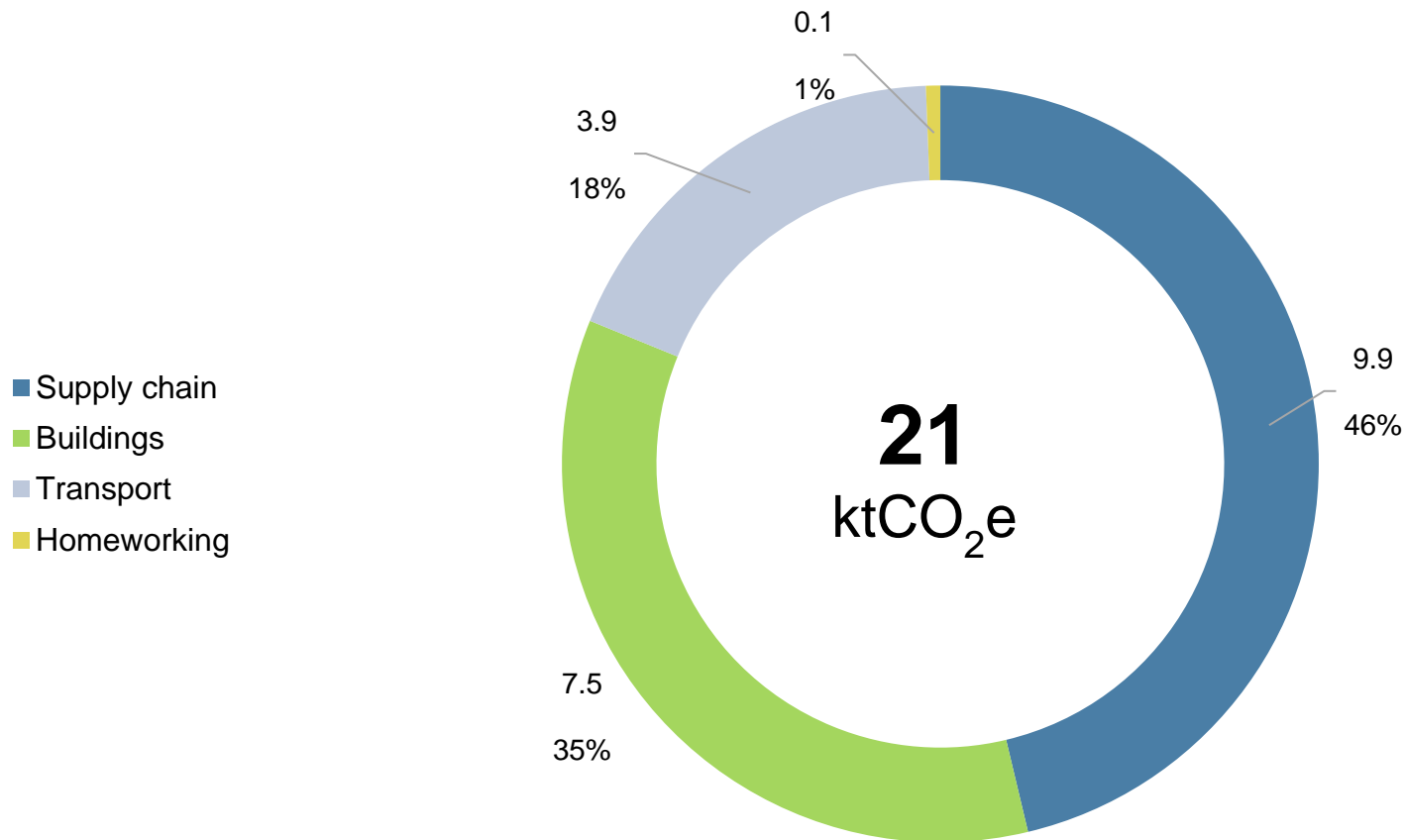


Figure 60 - Total Fire & Rescue Service emissions (ktCO₂e) for 2023 by emission category

Emissions shown below are disaggregated by supply chain and non-supply chain (buildings, transport, homeworking and waste). Fire and Rescue Services' emissions are at their highest level since reporting began (21 ktCO₂e). This is driven by a rise in both supply chain emissions (11% increase since 2022) and non-supply chain emissions (10% increase since 2022). The number of reporting organisations has remained constant each year (yellow line below).

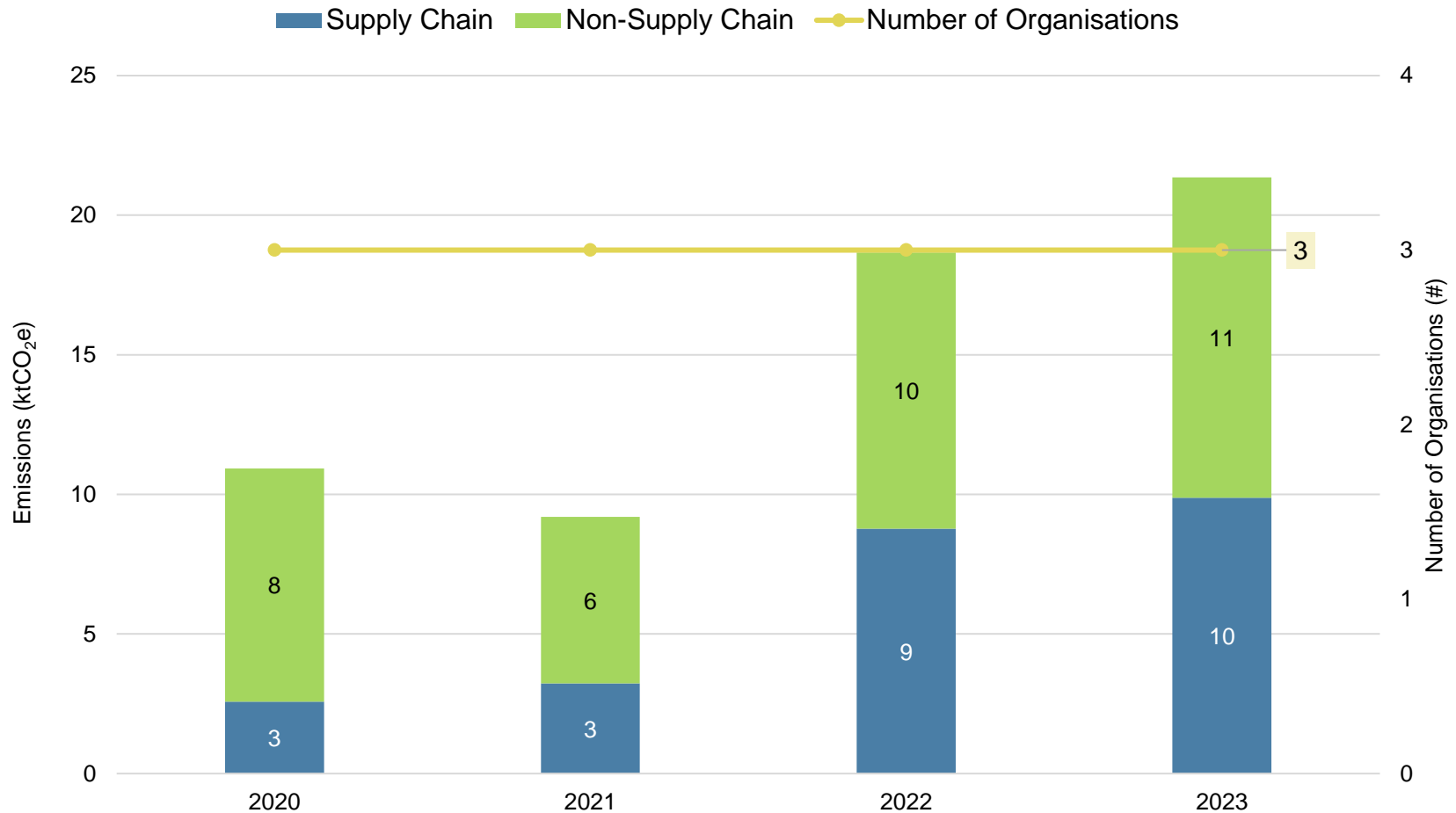


Figure 61 - Annual emissions (ktCO₂e) for Fire & Rescue Services by supply chain and non-supply chain split

Fire and Rescue Services vary in terms of geographical coverage and staff numbers. This is reflected in the range of total emissions per organisation, from 4 ktCO₂e to 10 ktCO₂e. For most Fire and Rescue Services, supply chain emissions contribute the largest proportion of the total footprint. Fire and Rescue Services have a larger share of emissions from transport compared to the public sector average.

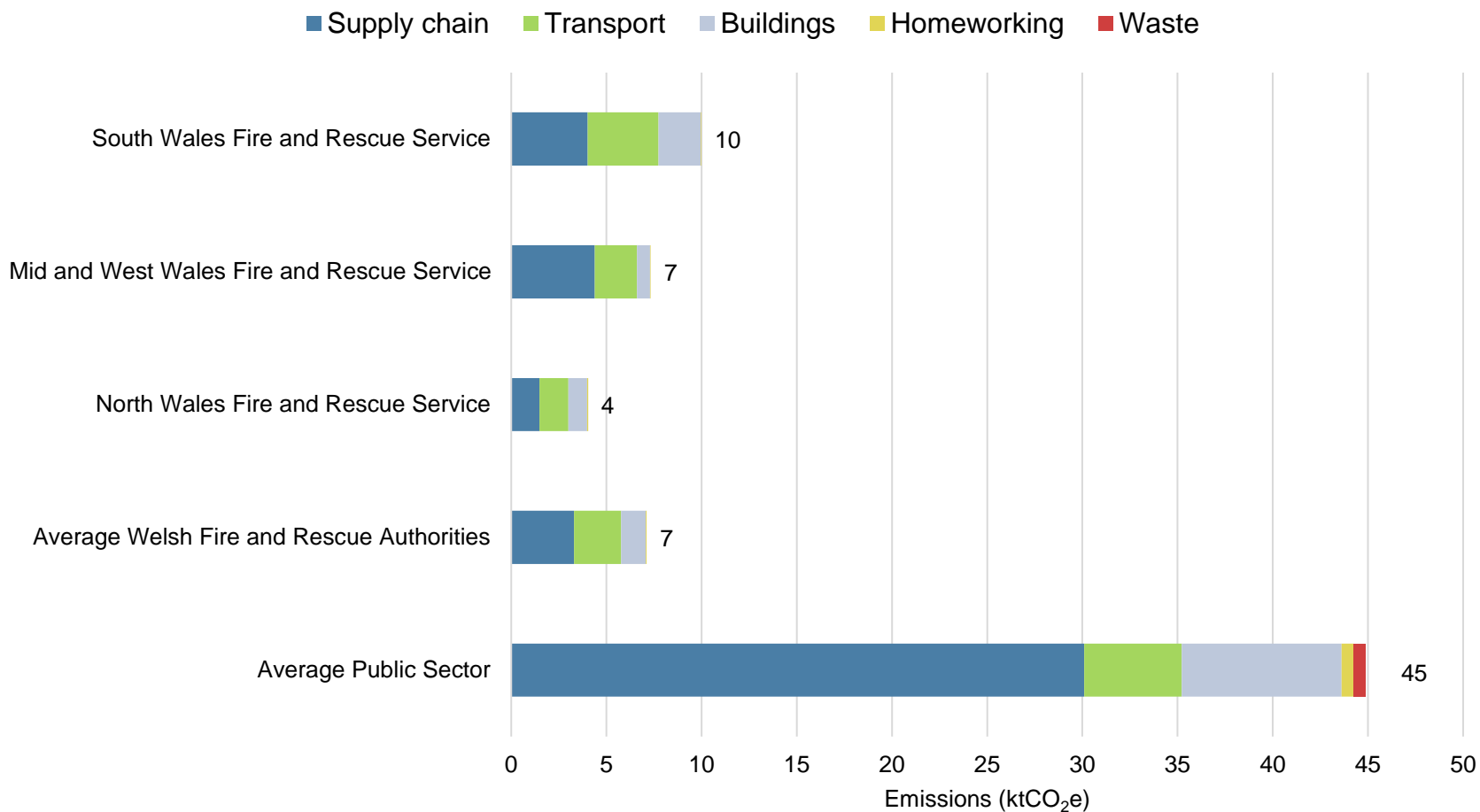


Figure 62 - 2023 emissions (ktCO₂e) by Fire & Rescue Services and emissions category

Buildings

This sub-section covers emissions sources including energy consumption, water usage and refrigerants. The majority of building emissions arise from fossil fuel usage for heating and hot water. This is almost exclusively from natural gas use. However, Fire and Rescue Services also use kerosene or LPG in operations. Emissions from 'Other Gases' arise from the use of F-gases in air conditioning units, which are often powerful GHGs.

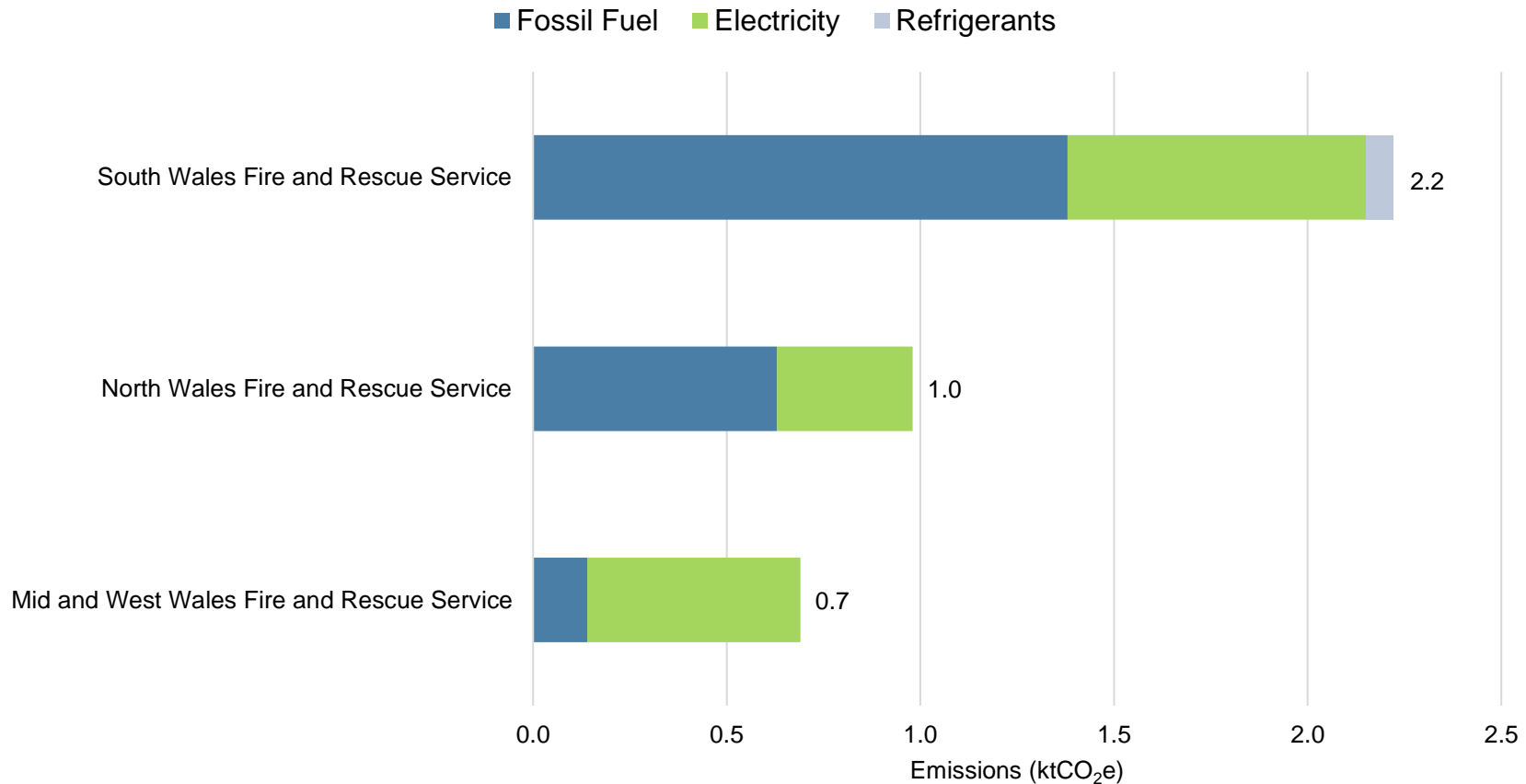


Figure 63 - 2023 Building related emissions (ktCO₂e) for Fire & Rescue Services by emissions sub-category

Building related emissions for Fire and Rescue Services have decreased between 2023 and the previous reporting year by 0.4 ktCO₂e, or -9%. This has been driven by a reduction in emission from electricity consumptions and some reduction in fossil fuel emissions.

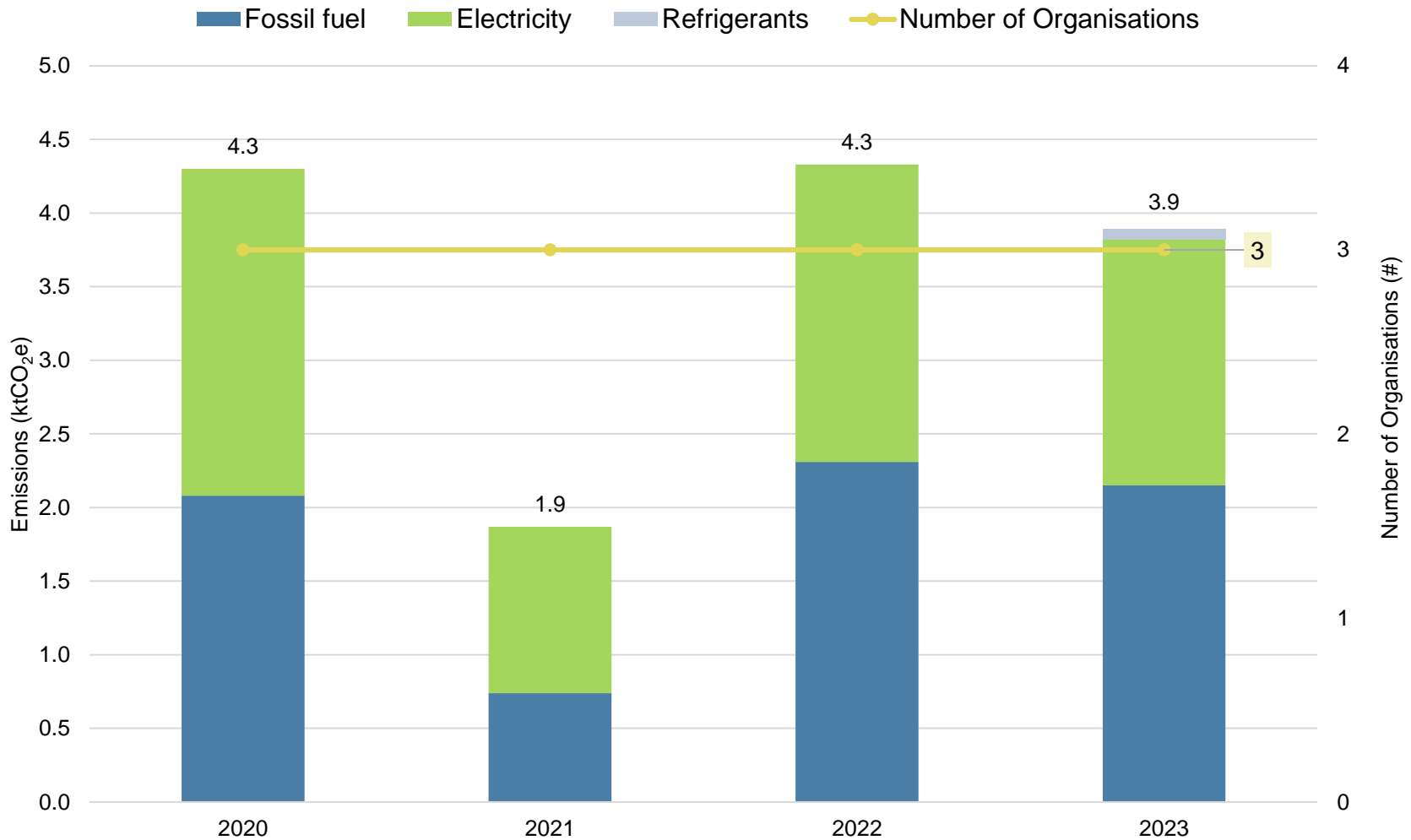


Figure 64 - Time Series of Fire & Rescue Services building emissions (ktCO₂e) by sub-category

Transport

This sub-section covers emissions sources from fleet, business travel, commuting and homeworking. The relative contribution of the different transport emissions sources varies between organisations, particularly business travel. Only South Wales Fire and Rescue Service reported commuting emissions in 2023.

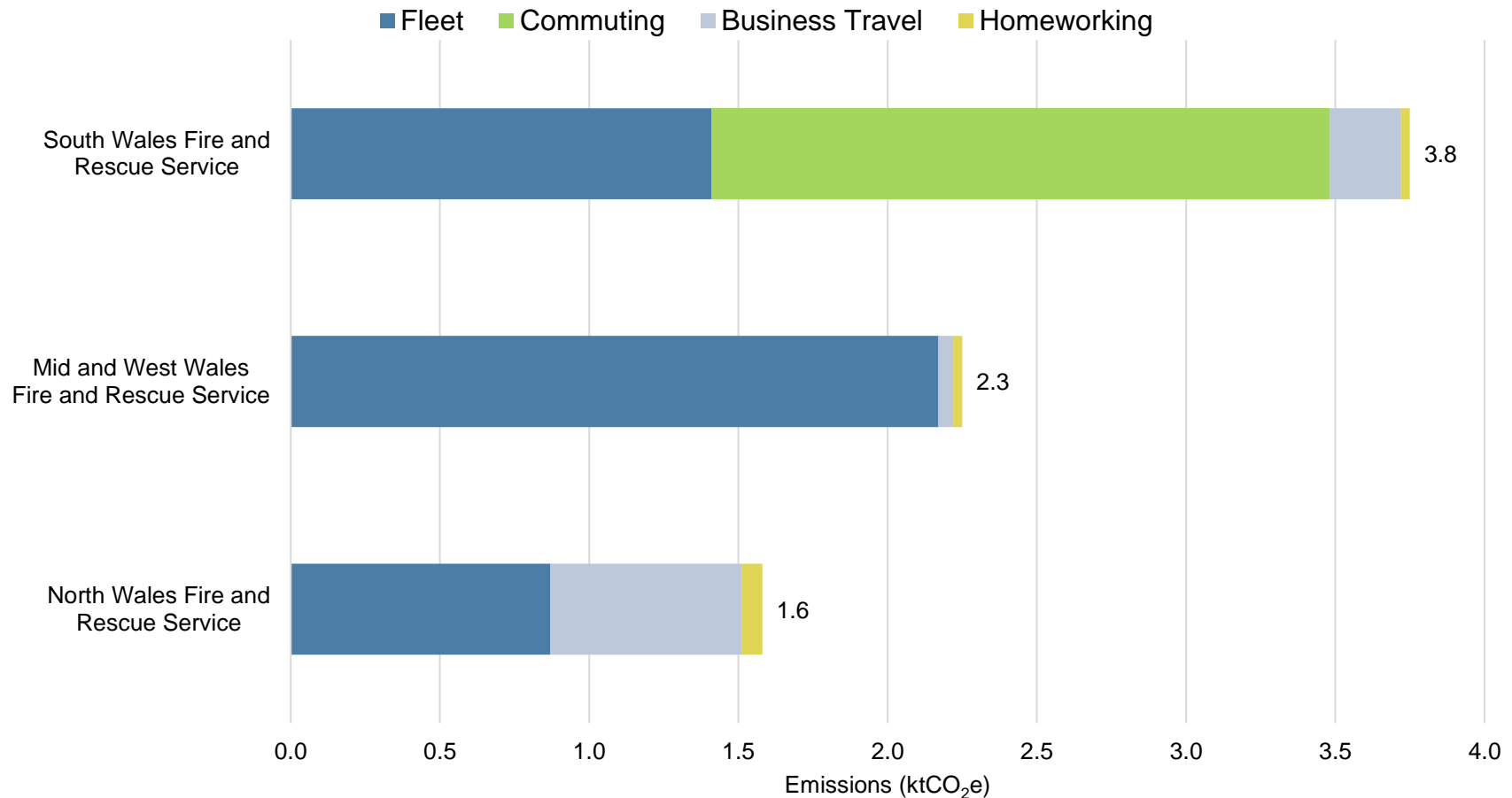


Figure 65 - 2023 Transport related emissions (ktCO₂e) by Fire & Rescue Services and emissions sub-category

Transport related emissions for Fire and Rescue Services have increased between 2023 and the previous reporting year by 2.3 ktCO_{2e}, or +43%. This has been driven by an increase in reported Scope 3 emissions mainly from commuting and homeworking.

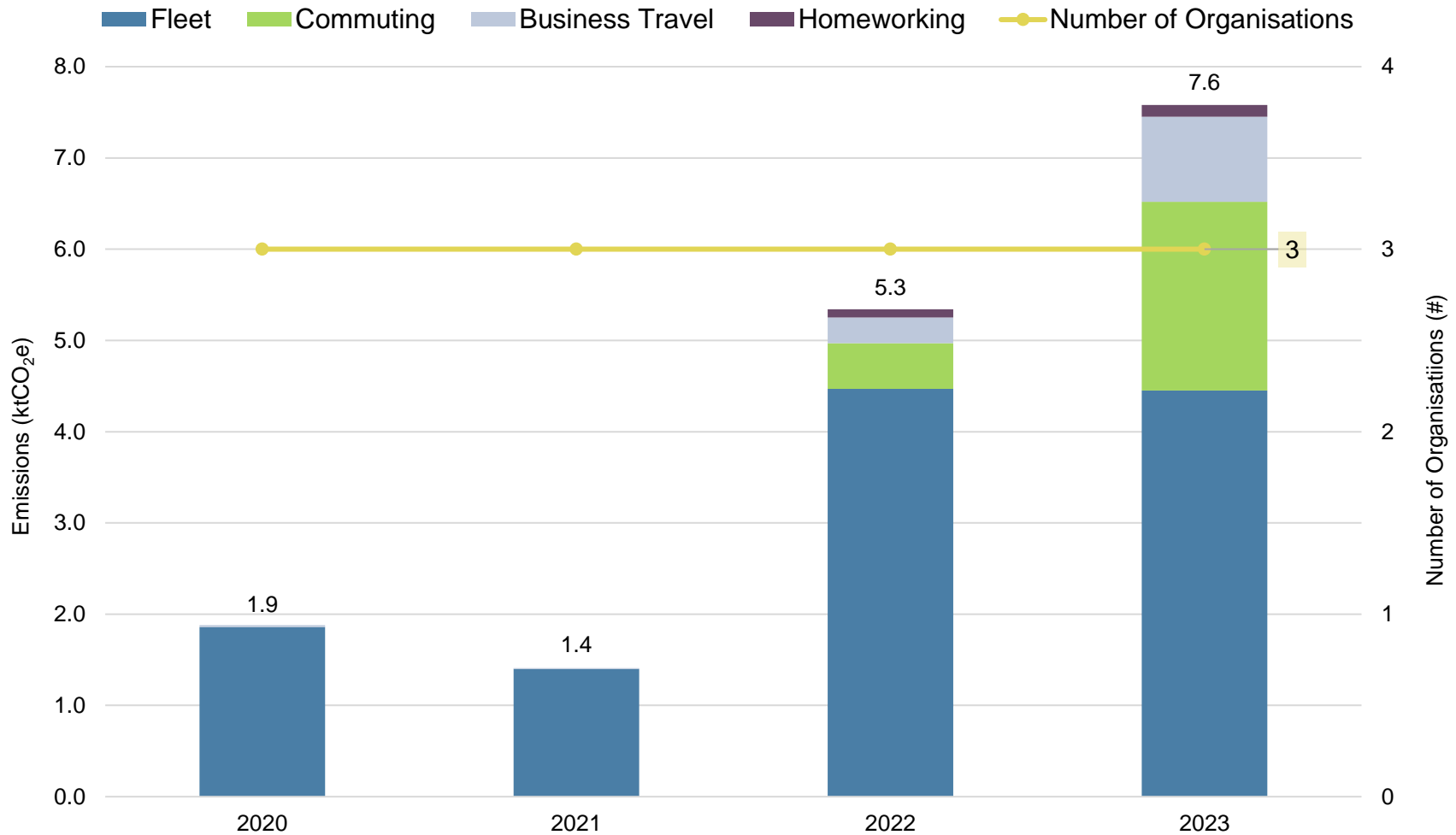


Figure 66 - Annual transport related emissions (ktCO_{2e}) for Fire and Rescue Services by emissions sub-category

Waste

Only two Fire and Rescue Services submitted data for 2023, waste related emissions have decreased substantially with a 99% decrease in emissions between last reporting year and the most current reporting year. In 2023 15% of waste emission arose from waste sent to landfill, despite landfill waste being less than 1% of total waste disposed of by mass. This reflects the much larger emissions intensity of waste sent to landfill compared to recycling, anaerobic digestion or energy from waste.

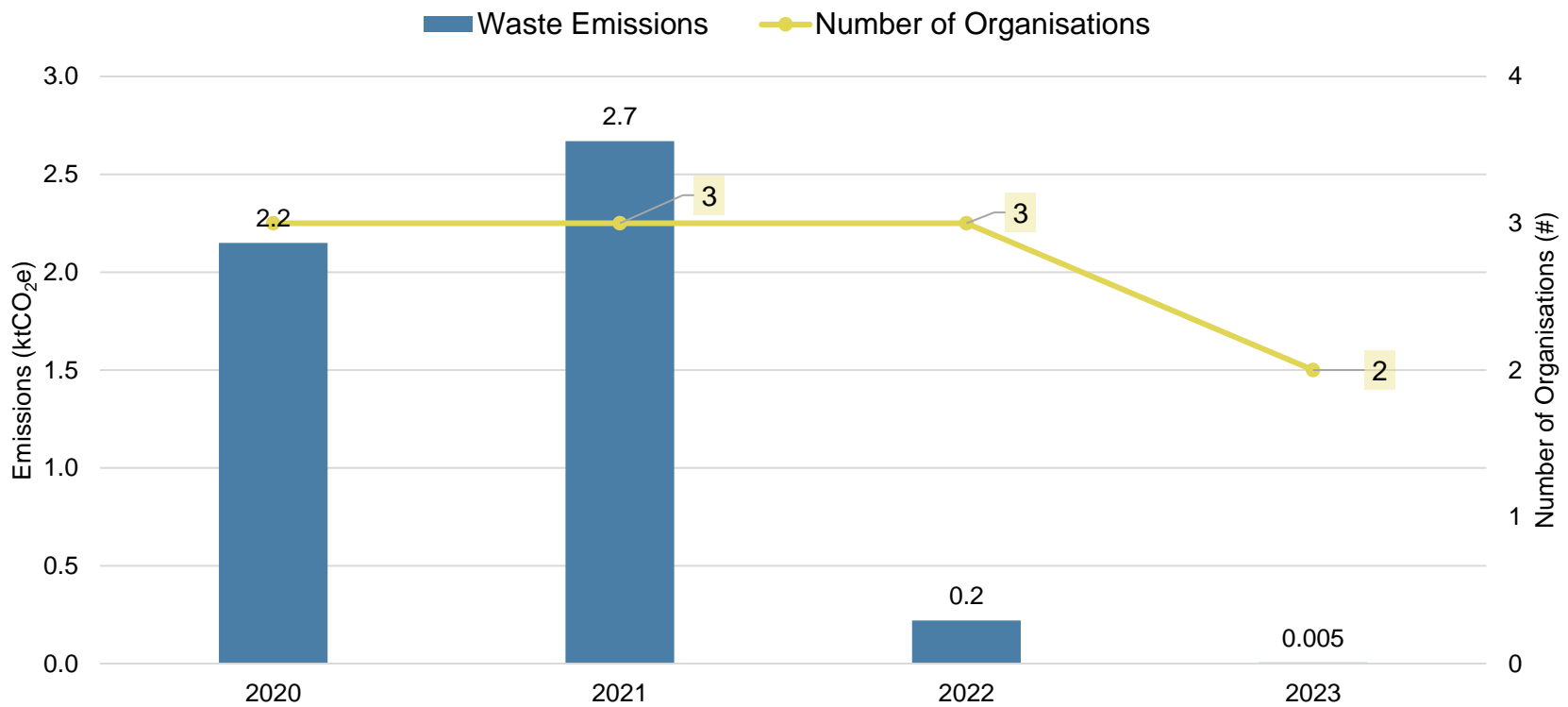


Figure 67 - Annual waste related emissions (ktCO₂e) for all Fire & Rescue Services

Supply Chain

The following sub-section covers emissions arising from the supply chain. Fire and Rescue Services' emissions have increased between 2022 to 2023. An increase of 1.1 ktCO₂e (12%). Over this same period, spend on goods and services has increased by 45%. An update in emissions factors between 2022 and 2023 has resulted in the increase being less than would otherwise be expected.

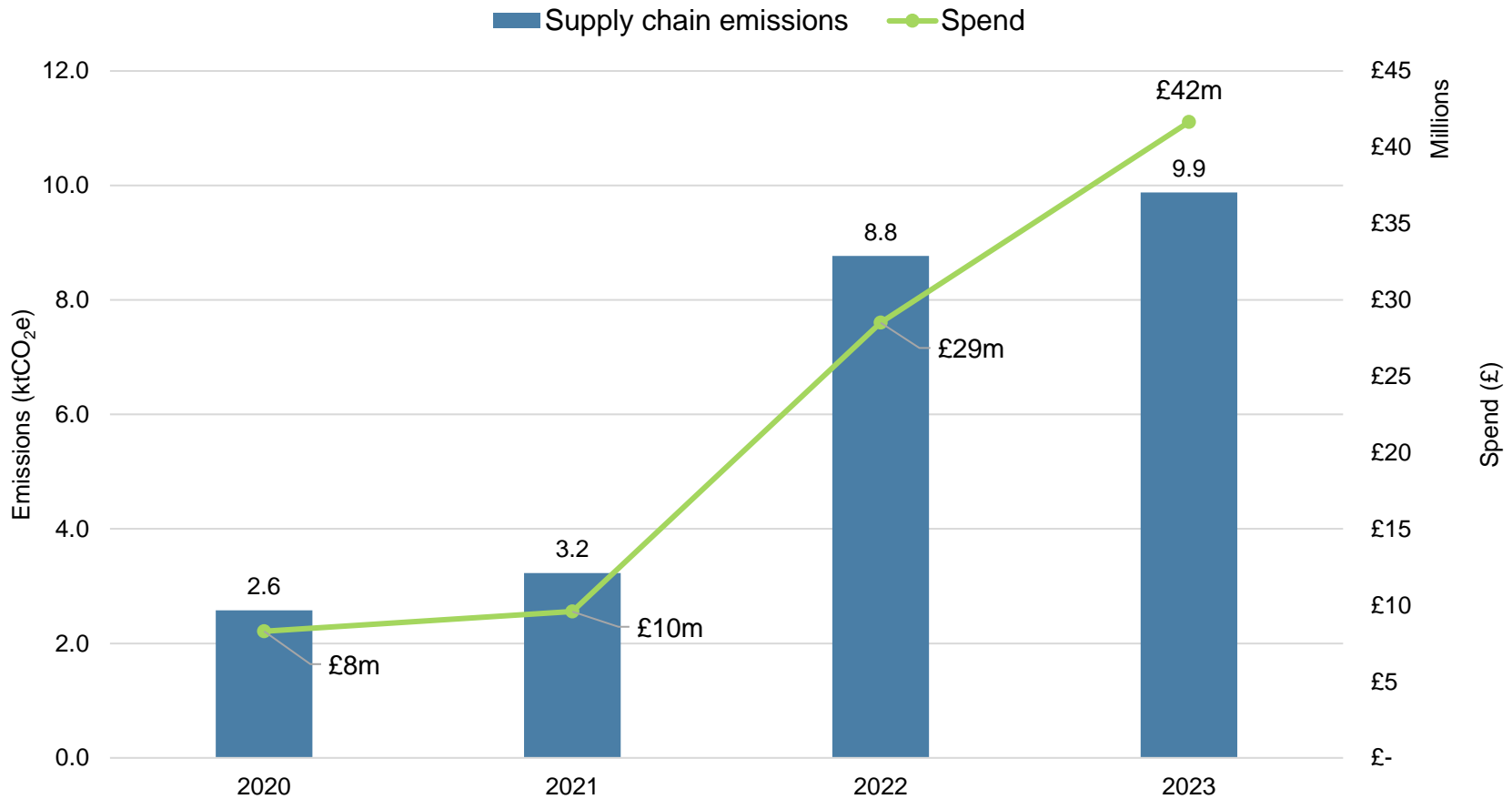


Figure 68 - Annual Fire & Rescue Service supply chain spend (£) and emissions (ktCO₂e)

The chart (below) shows the top five emitting categories within the Fire and Rescue Services supply chain for the year 2023. All other categories beyond the top five have been aggregated within the 'Remainder' category. The same top five categories from 2023 are also displayed across the previous reporting years. 'Manufacturing' emissions have increased between 2022 and 2023, while the other top four emissions have all decreased.

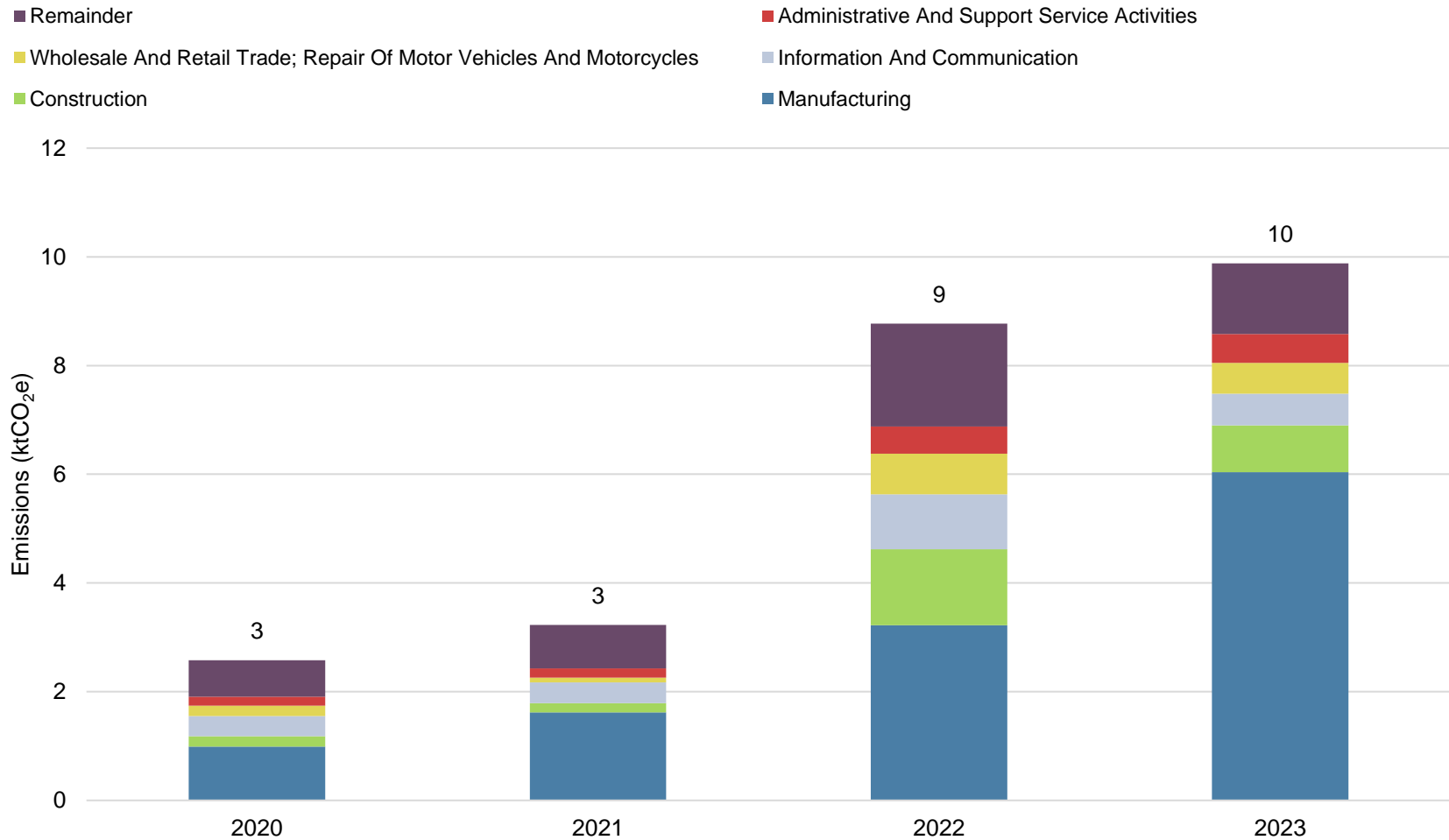


Figure 69 - Annual Fire & Rescue Service supply chain emissions (ktCO₂e) by top emitting categories of 2023

Land Use

Only South Wales Fire and Rescue Service report land use. In 2023, total emissions produced from land use change equated to 0.04 ktCO_{2e} and removals from land use equated to 0 ktCO_{2e}. This provides net emissions from land use change of 0.04 ktCO_{2e} in 2023.

Renewables

Only North Wales Fire and Rescue Service report renewable generation. In 2023 North Wales Fire and Rescue Service generated 19,460 kWh of renewable electricity through solar PV.

National Park Authorities

Overview

Headlines

The total National Park Authorities footprint for 2023 is estimated as 3 ktCO_{2e}. In total, three National Parks reported data in 2023.

National Park Authorities' emissions have decreased by 5% since 2022, a decrease of 0.1 ktCO_{2e} (from 3.1 ktCO_{2e}). Since reporting commenced in 2020, emissions have increased by almost 60%. The number of National Park Authorities reporting has remained consistent at three over the same time period.

Buildings emissions have remained stable since 2022 and decreased by 33% since 2020. Transport (incl. homeworking) emissions have also remained stable since 2022 and

increased 23% since 2020. No waste emissions were reported in 2023. Supply chain emissions have remained stable since 2022 but have doubled since 2020.

Key contributors to the 2023 National Parks carbon footprint were Supply Chain (74%), Buildings (12%) and Transport (11%). These categories cumulatively contribute 97% to the 2023 National Park Authorities footprint and <1% of the total 2023 Welsh Public Sector Footprint.

The key contributors to emissions change between 2022 and 2023 for National Park Authorities associated emissions were:

- Emissions associated with homeworking changed from 0.2

ktCO_{2e} to 0.1 ktCO_{2e} (-50%), which may have been driven by staff returning to office working post-covid.

- Other emissions categories remained relatively constant, although the category aggregation masks some minor changes. These include, for example, fleet emissions decreasing by a similar amount to the increase in commuting emissions.

About this section

The figures in this section present an overview of data submitted for National Park Authorities. This includes annual accounts covering the last three reporting rounds. Further figures present data for key emission categories which includes:

- Buildings
- Transport
- Waste
- Supply Chain
- Land use
- Renewables

The presentation of portfolio level emission estimates from individual organisations is not intended as a comparative exercise. It is purely demonstrative of the available data, and a result of how public sector bodies are categorised. Organisational size, specific operations and the make-up of emission portfolios should be

respected when making any comparative deductions.

Additional commentary for drivers of emissions change between reporting years has not been included. The analysis of this should be conducted at the individual organisational level using activity data (not available or requested as part of the Net Zero reporting process currently).

Commentary of National Park Authorities data coverage can be found within the appendices.

Please note that the reported figures are approximated to the nearest whole number for ease of presentation. Consequently, there may be slight discrepancies at aggregate levels when whole numbers are summed, due to the exclusion of decimal values.

Total emissions in 2023 equate to 3 ktCO₂e for National Park Authorities. The majority of total emissions arise from the supply chain (74%). In previous years, supply chain emissions have accounted for 60% to 74% of the total National Park Authorities footprint. Buildings, which include energy consumption, water, and refrigerants contributed 12% to the National Park Authorities total. Transport related emissions which include business travel, fleet and commuting contributed 11% to the total. Waste related emissions are present but account for 0.006 ktCO₂e or >0.5% of the total National Park Authority footprint, and so hasn't been represented on the chart below.

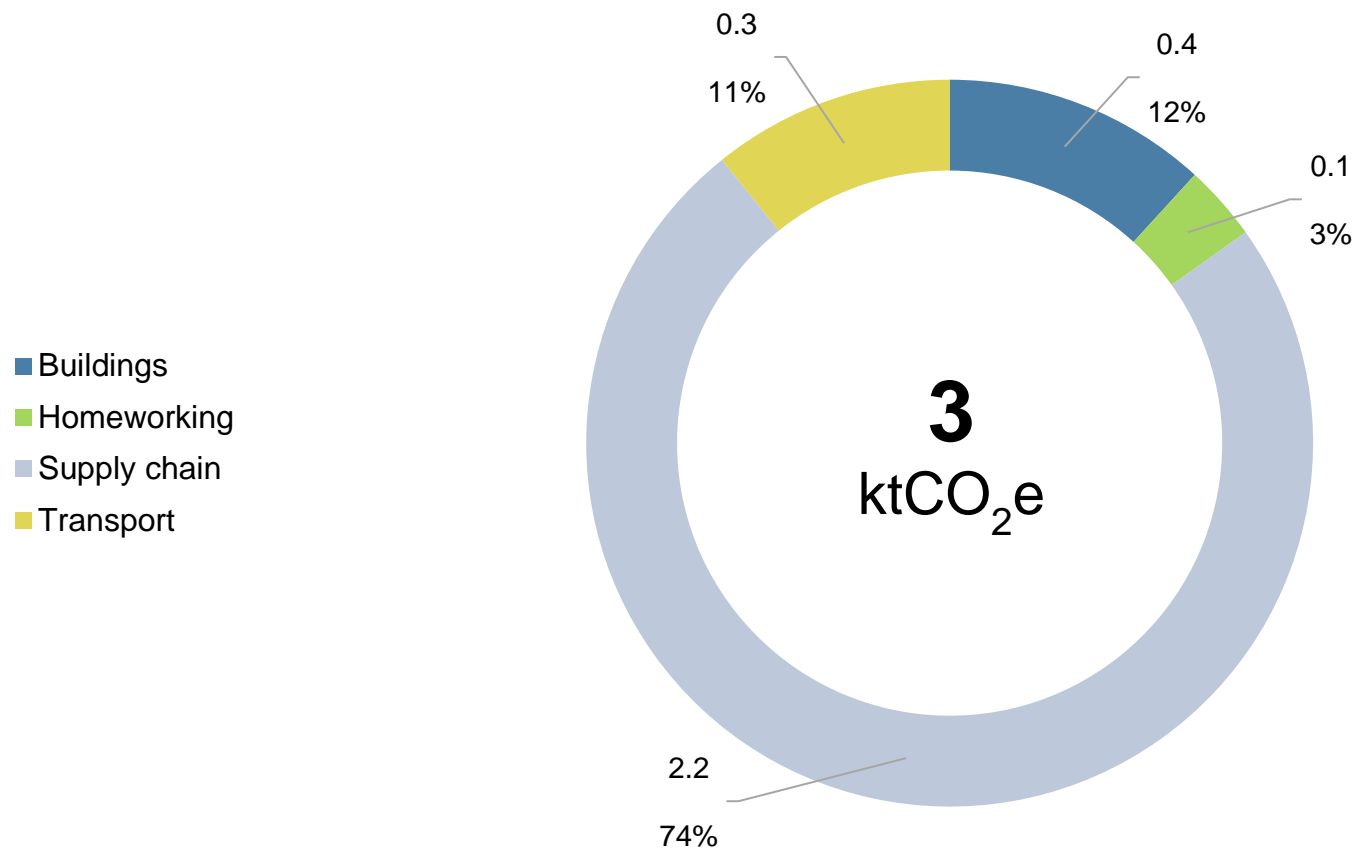


Figure 70 - Total National Park Authority emissions (ktCO₂e) for 2023 by emissions category

Emissions shown below are disaggregated by supply chain and non-supply chain (buildings, transport, homeworking, and waste). National Park Authority emissions have been variable since reporting began. Since 2021 an increase has been driven by a more than doubling of supply chain emissions. The number of reporting organisations has remained the same each year (yellow line below).

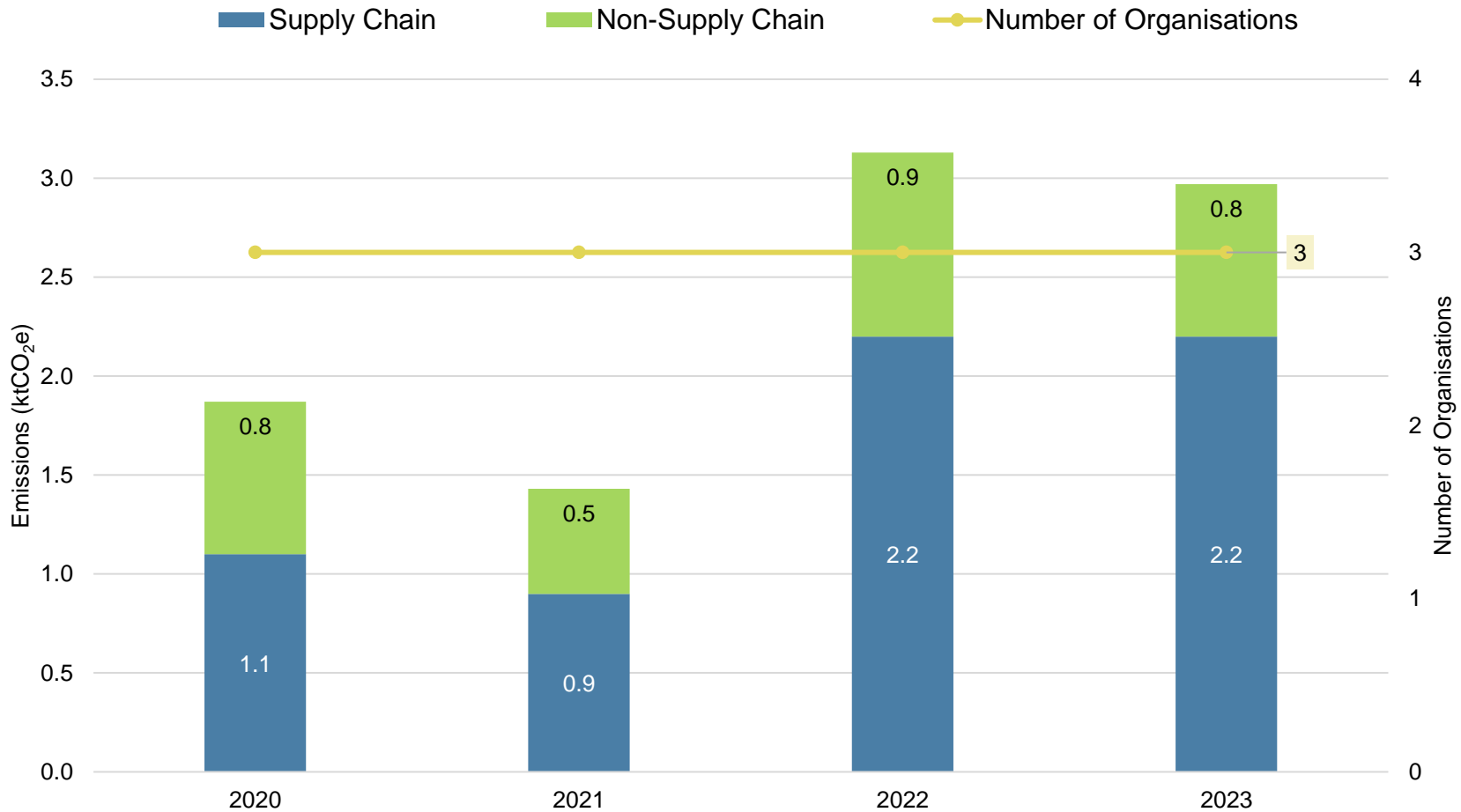


Figure 71 - Annual emissions (ktCO₂e) for National Park Authorities by supply chain and non-supply chain split

National Park Authorities have varied operations, staff numbers, and areas to manage. This is reflected in the range of total emissions per organisation, from 0.8 ktCO_{2e} to 1.3 ktCO_{2e}, and the varying breakdown of emission sources. Supply chain emissions contribute the largest proportion of the overall footprint however.

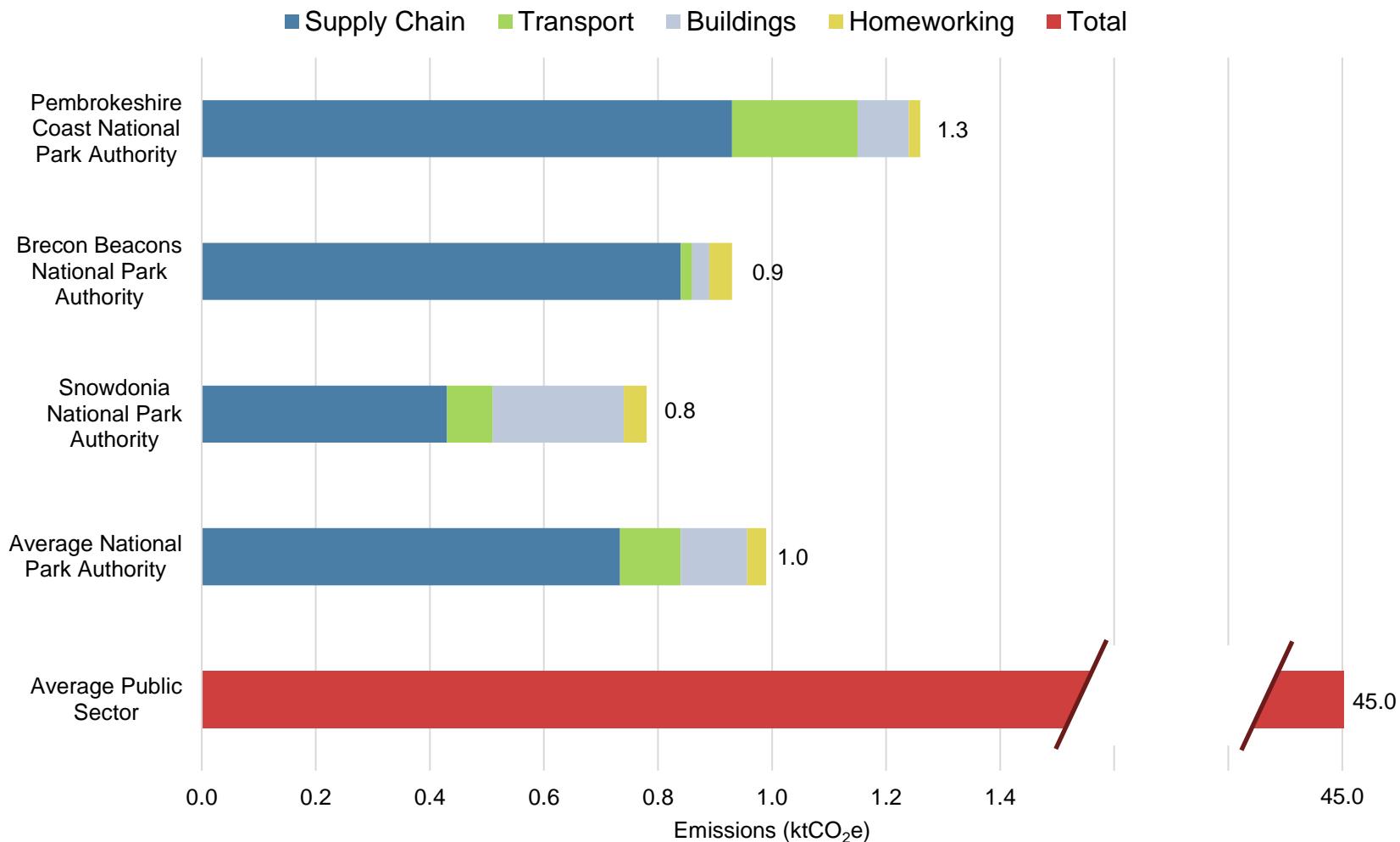


Figure 72 - 2023 emissions (ktCO_{2e}) by National Park Authority and emissions category

Buildings

This sub-section covers emissions sources including energy consumption, water usage, and refrigerants. Emissions arising from electricity use are the largest contributor to the buildings footprint, closely followed by fossil fuel and bioenergy usage for heating and hot water.

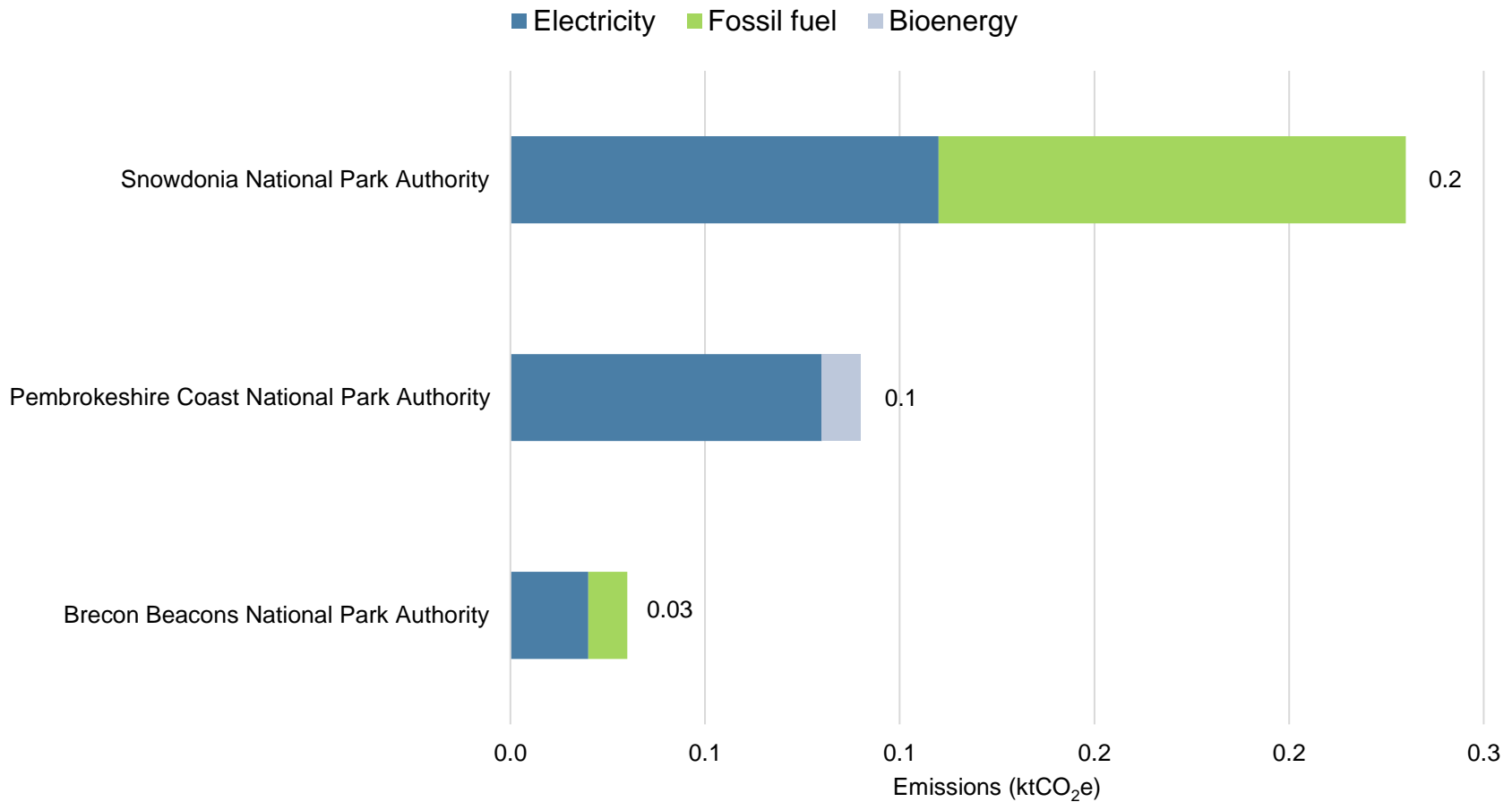


Figure 73 - 2023 Building related emissions (ktCO₂e) for National Park Authorities by emissions sub-category

Building related emissions for National Park Authorities have decreased between 2023 and 2022 by 0.16 ktCO_{2e}, or -5%. This has been driven by a reduction in Scope 1, 2 and 3 emissions. Associated scope 3 emissions arise from upstream activities linked with the production and distribution of natural gas and electricity.

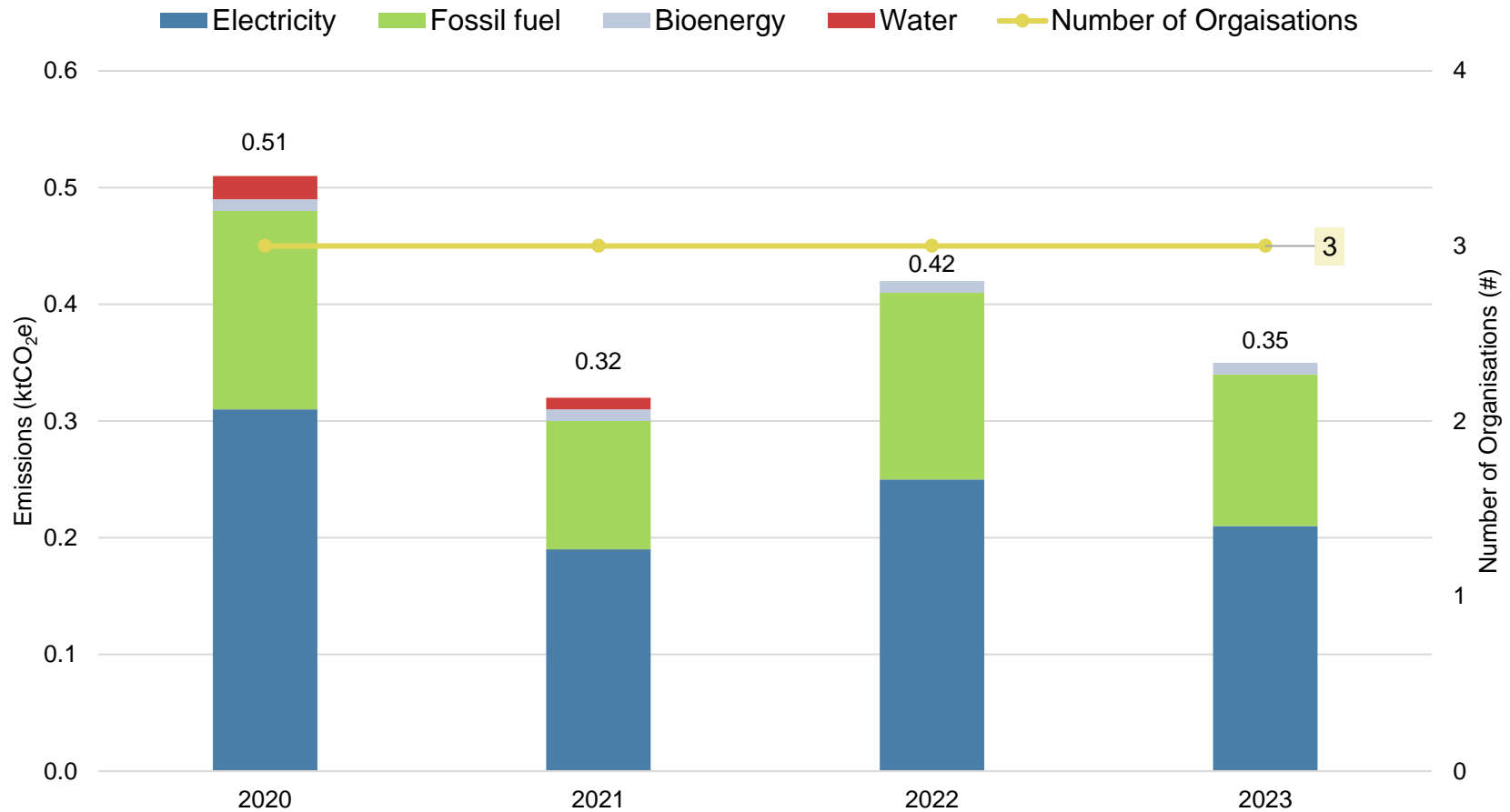


Figure 74 - Time Series of National Park Authorities building emissions (ktCO_{2e}) by sub-category

Transport

This section covers emissions sources from fleet, business travel, commuting, and homeworking. The relative contribution of the different transport emissions sources varies between organisations. In some instances, there are potential gaps e.g., Brecon Beacons National Park Authority do not report emissions from fleet and business travel.

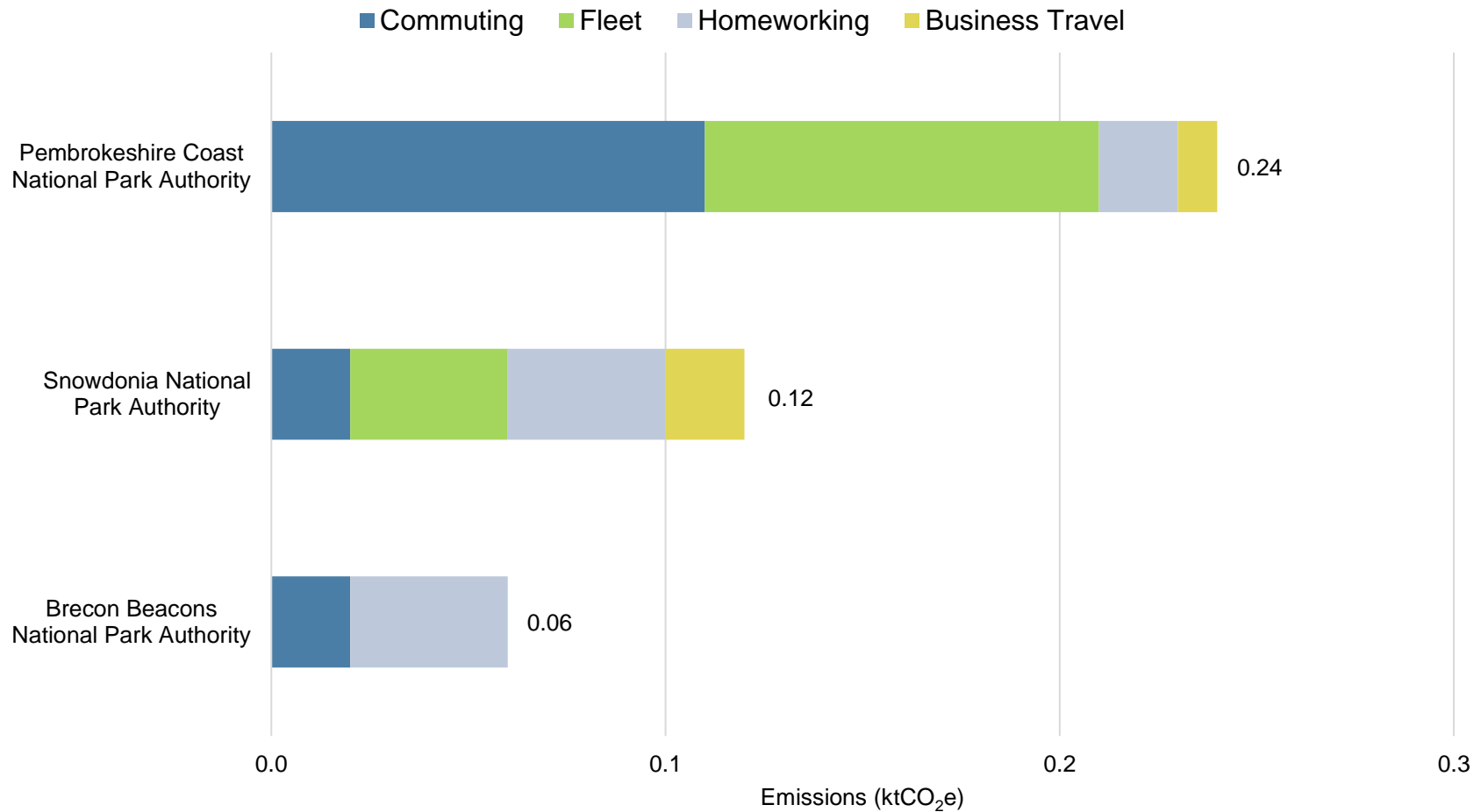


Figure 75 - 2023 Transport related emissions (ktCO₂e) by National Park Authority and emissions sub-category

Transport related emissions for National Park Authorities have decreased between 2023 and 2022 by 0.1 ktCO_{2e}, or -20%. This has been driven by a reduction in homeworking, which has partially been offset by an increase in commuting – reflecting a return to office-based working post-covid.

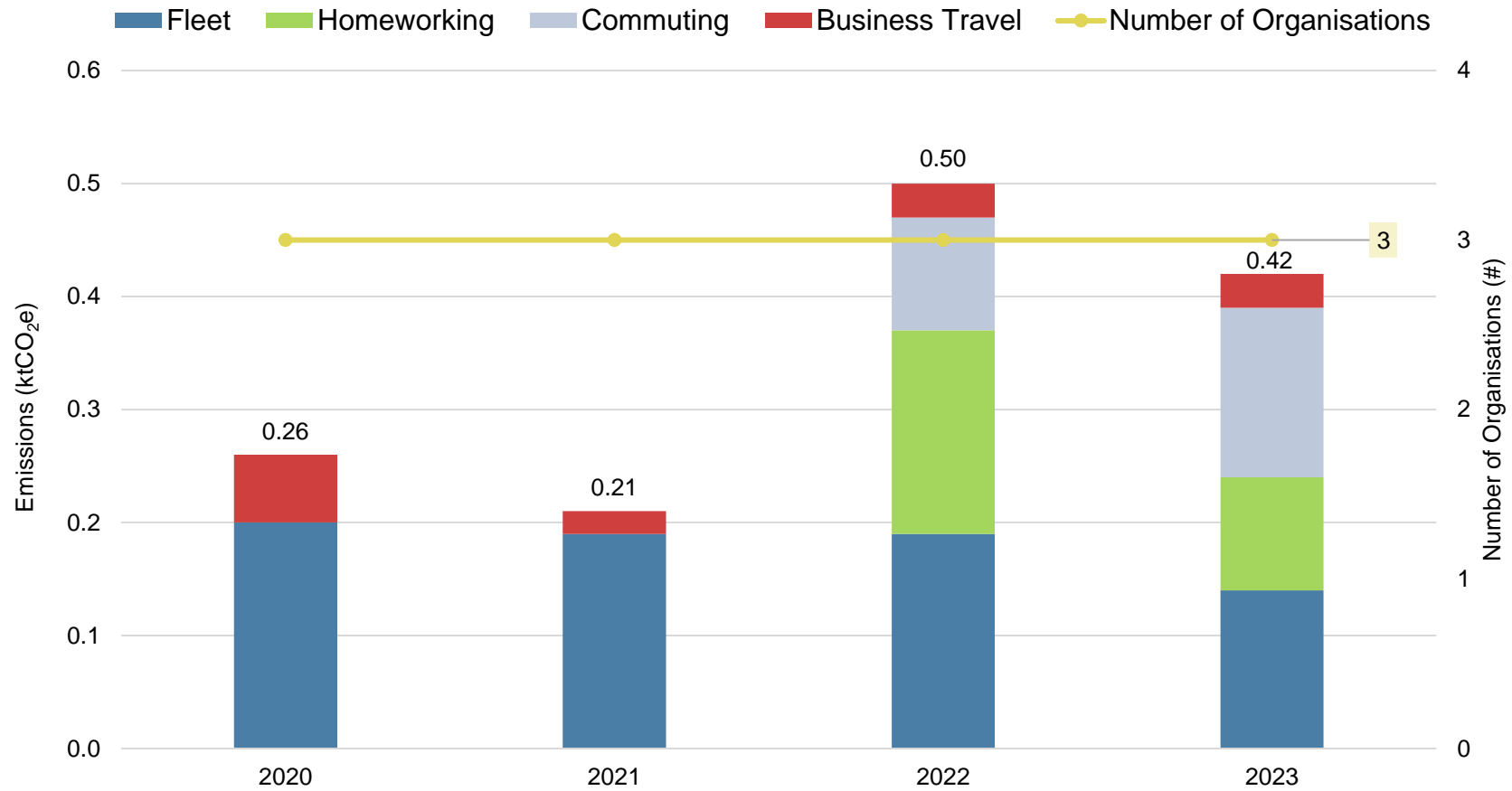


Figure 76 - Annual transport related emissions (ktCO_{2e}) for all National Park Authorities by emissions sub-category

Waste

Only two National Park Authorities reported waste data in 2023, Brecon Beacons and Snowdonia National Park Authorities. Brecon Beacons National Park Authority emitted 6 tCO₂e of waste related emissions (97% of which was from waste going to landfill). Snowdonia National Park Authority emitted 2 tCO₂e of waste related emissions (94% of which was from waste going to landfill). The emissions intensity of waste sent to landfill is much greater than other disposal methods, so landfill waste emissions represent the largest part of the footprint despite not necessarily being the disposal route of most waste by mass.

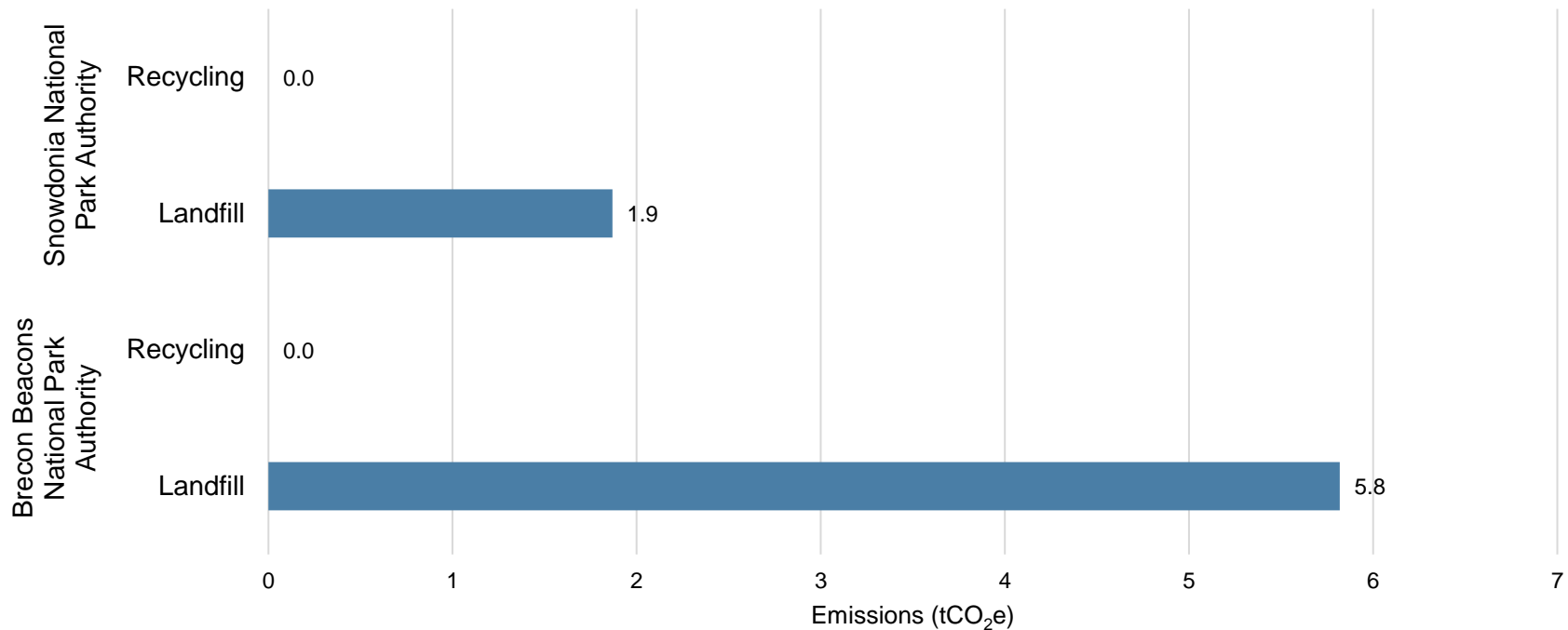


Figure 77 – 2023 National Park Authority waste emissions (tCO₂e)

Supply Chain

This following section covers emissions arising from the supply chain. National Park Authorities emissions have remained stable between 2022 to 2023, at 2.2 ktCO₂e. Over this same period, spend on goods and services has increased by 33%. An update in emissions factors between 2022 and 2023 means the increase in spend has not resulted in a reported increase emissions.

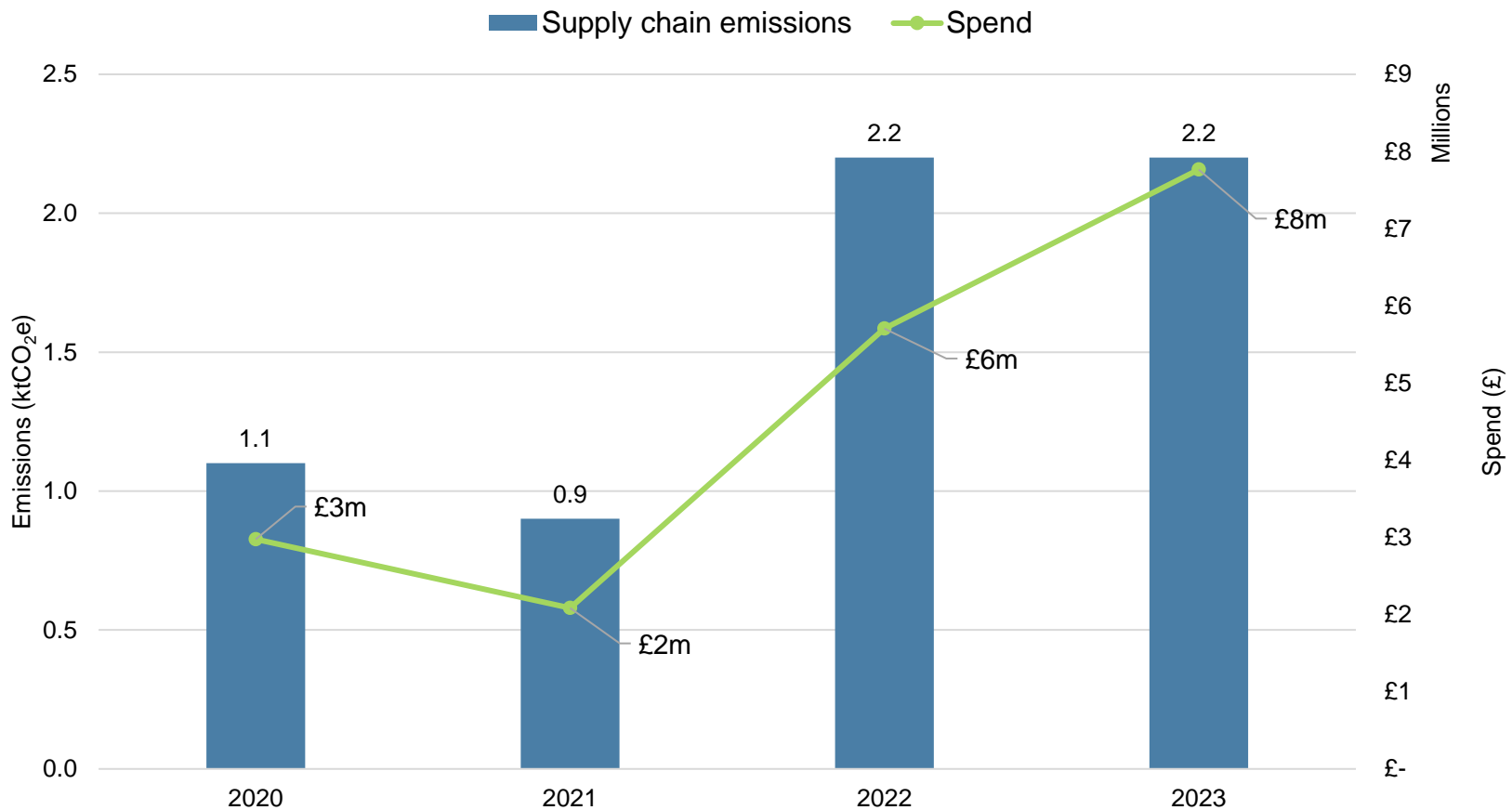


Figure 78 - Annual National Park Authority supply chain spend (£) and emissions (ktCO₂e)

The chart (below) shows the top five emitting categories within the National Park Authorities supply chain for 2023. All other categories beyond the top five have been aggregated within the 'Remainder' category. The same top five categories from 2023 are also displayed across the previous reporting years. 'Manufacturing', 'Professional, Scientific and Technical Activities', and 'Water Supply', emissions have increased while 'Construction' and 'Agriculture, Forestry And Fishing' emissions have decreased.

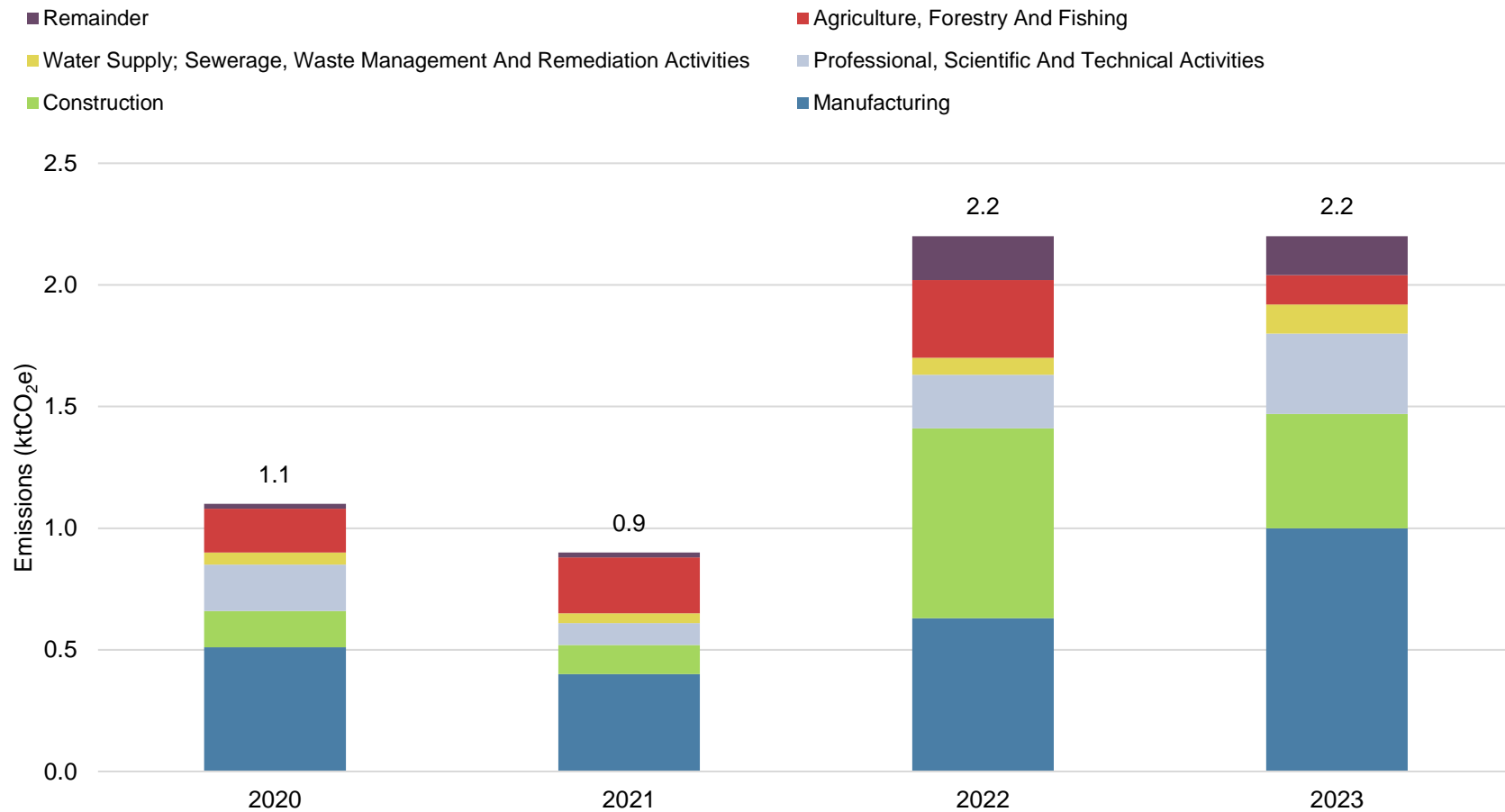


Figure 79 - Annual National Park Authority supply chain emissions (ktCO₂e) by top emitting categories of 2023

Land Use

This sub-section covers emissions arising from land. All three National Park Authorities report land use. For 2023, total emissions produced from land use change equated to 0 ktCO₂e and removals from land use equated to -17.9 ktCO₂e. This provides a net emissions removal from land use change of -17.9 ktCO₂e in 2023.

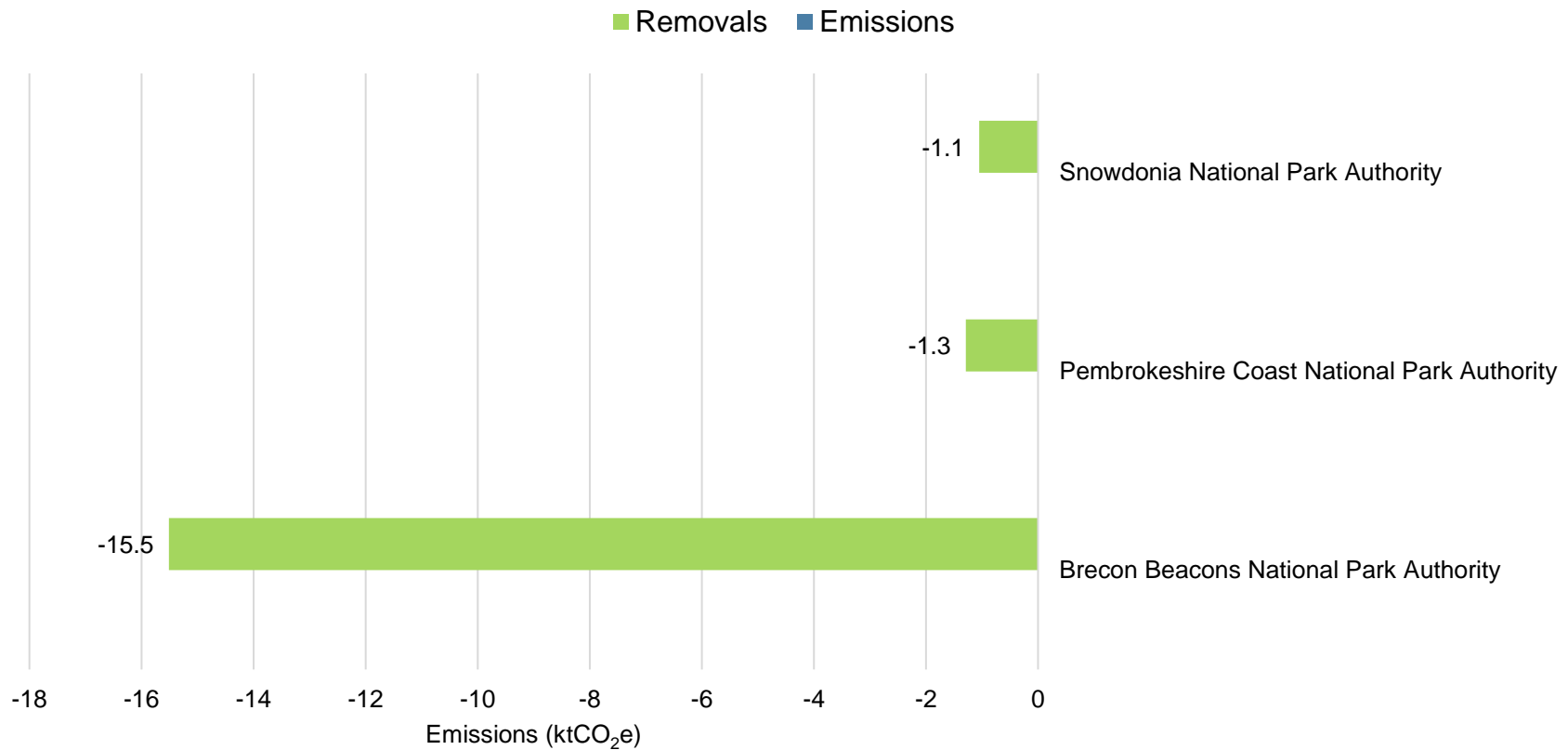


Figure 80 – National Park Authority 2023 emissions (ktCO₂e) from land use

Net emissions from land use have remained the same between 2023 and 2022.

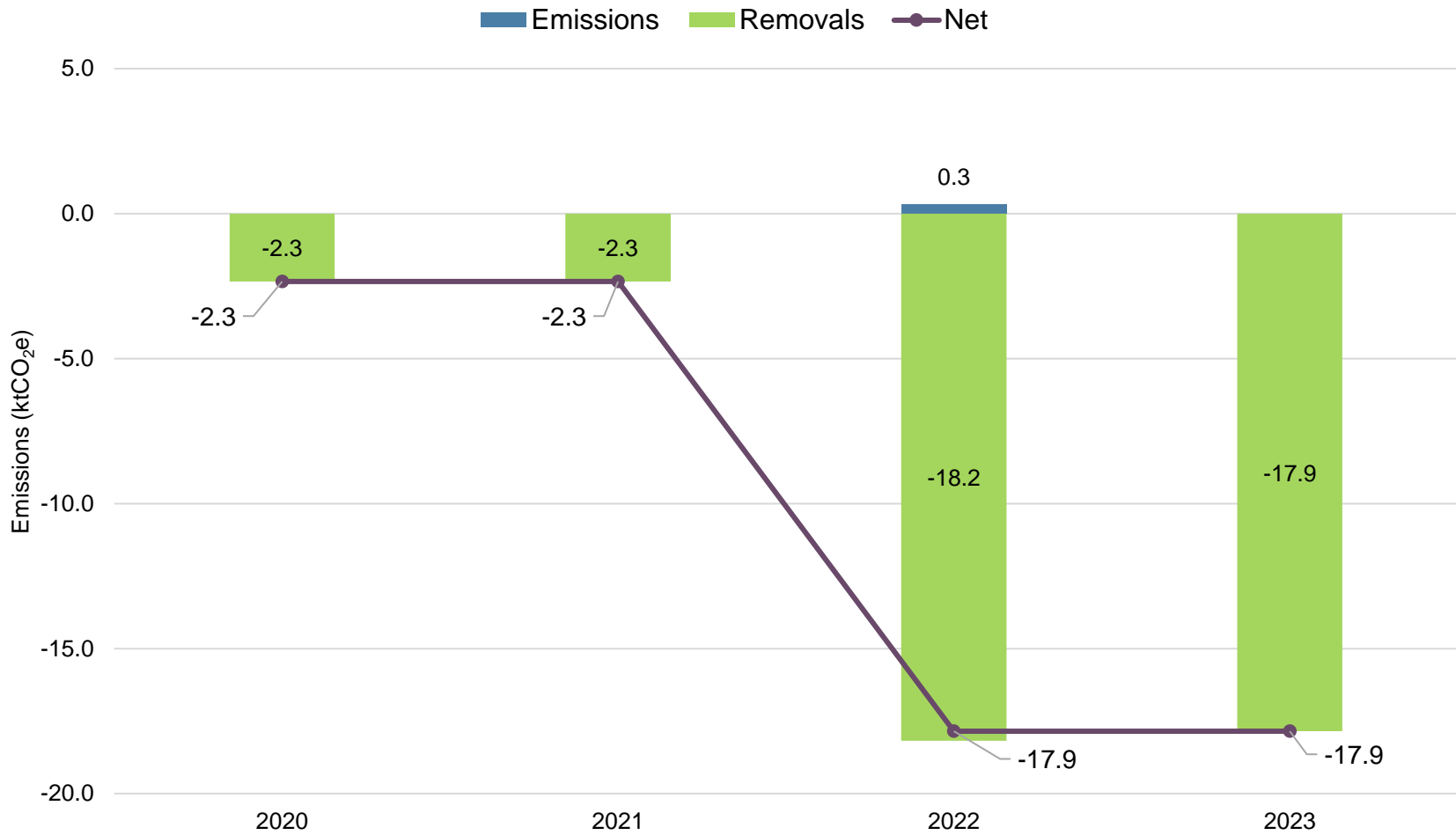


Figure 81 - Annual National Park Authorities emissions (ktCO₂e) from land use change

Renewables

In 2023 National Parks generated over 147MWh of renewable electricity, with the majority from solar PV. National Parks also generated almost 353MWh of low carbon heat, through biomass. Two of the three National Parks also procure electricity through renewable procurement mechanisms, including green tariffs and REGOs. This is not shown on the graph below.

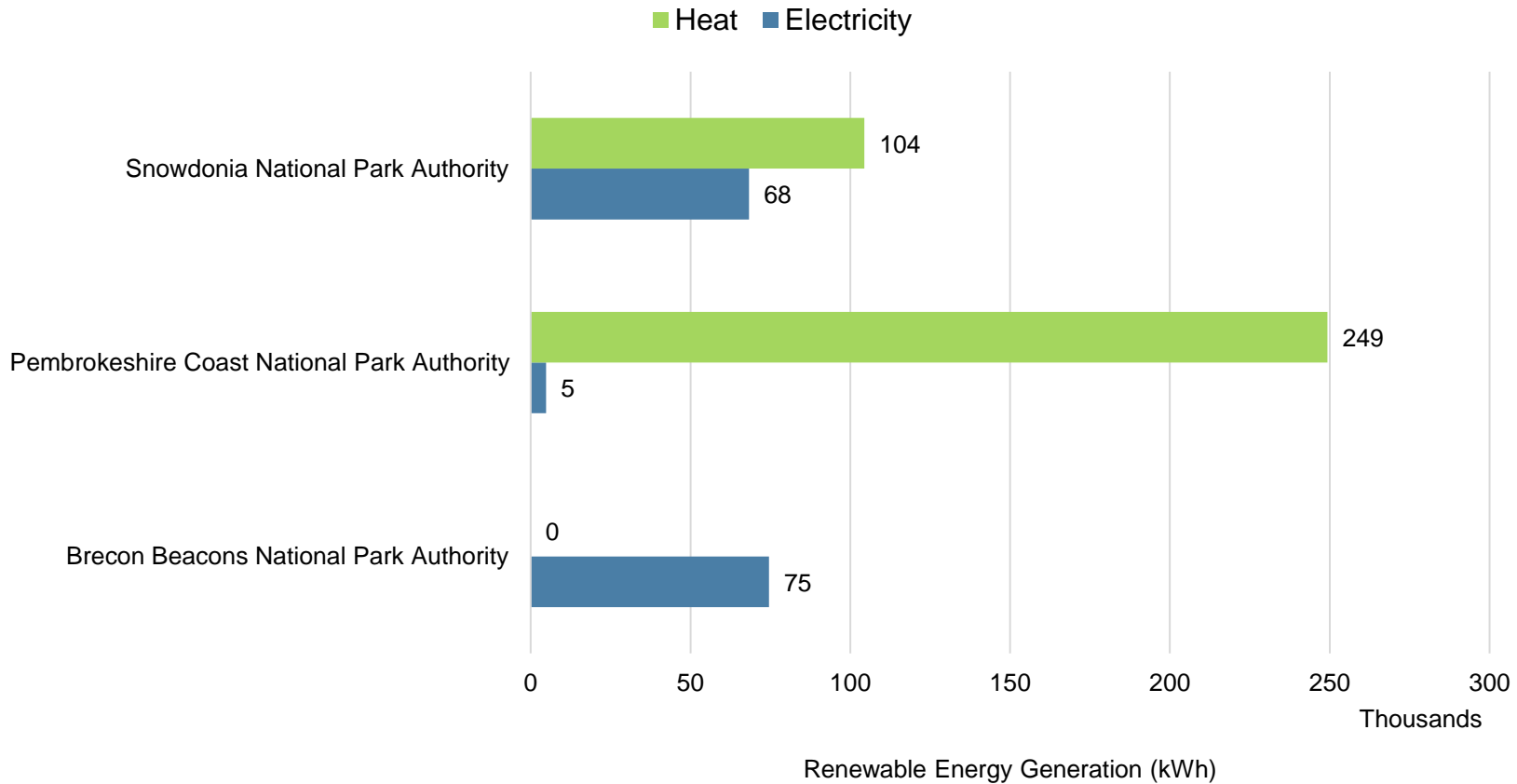


Figure 82 – National Park Authority renewable electricity and heat generation (kWh) in 2023

Other Public Sector Bodies

Overview

Headlines

The total Other Public Sector Bodies footprint for 2023 is estimated as 333 ktCO_{2e}. Other Public Sector Bodies include Transport for Wales, National Resources Wales, National Museum of Wales, National Library of Wales, and various other public sector bodies that do not fall into any of the previous categories. In total, nineteen Other Public Sector Bodies reported data in 2023.

Other Public Sector Bodies emissions have increased by 5% since 2022, an increase of 17 ktCO_{2e} (from 316 ktCO_{2e}). Since reporting commenced in 2020, emissions have increased ninefold. However, the number of organisations reporting has

increased from 8 to 19 over the same time period.

Building emissions have remained relatively stable since 2022 but have doubled since 2020.

Transport (including homeworking) emissions have increased by 15% since 2022 and by a factor of sixteen since 2020. Supply chain emissions have remained stable since 2022 and increased by a factor of eight since 2020.

Key contributors to the 2023 Other Public Sector Bodies carbon footprint were Supply Chain (60%), Transport (35%), and Buildings (4%). These categories cumulatively contribute 99% to the 2023 Other Public Sector Bodies

footprint and 10% of the total 2023 Welsh Public Sector Footprint.

The key contributors to emissions change between 2022 and 2023 for Other Public Sector Bodies associated emissions were:

- Transport emissions changed from 101 ktCO_{2e} to 117 ktCO_{2e} (+15%), driven by a 12 ktCO_{2e} increase in fleet emissions.
- All other emissions sources remained relatively stable between 2022 and 2023.

About this section

The figures in this section present an overview of data submitted for Other Public Sector Bodies. This includes annual accounts covering the last three reporting rounds. Further figures present data for key emission categories which includes:

- Buildings
- Transport
- Waste
- Supply Chain
- Land use
- Renewables

The presentation of portfolio level emission estimates from individual organisations is not intended as a comparative exercise. It is purely demonstrative of the available data, and a result of how public sector bodies are categorised (i.e. 19 unique organisations under the Other Public Sector Bodies umbrella). Organisational size,

specific operations and the make-up of emission portfolios should be respected when making any comparative deductions.

Additional commentary for drivers of emissions change between reporting years has not been included. The analysis of this should be conducted at the individual organisational level using activity data (not available or requested as part of the Net Zero reporting process currently).

Commentary of Other Public Sector Bodies data coverage can be found within the appendices.

Please note that the reported figures are approximated to the nearest whole number for ease of presentation. Consequently, there may be slight discrepancies at aggregate levels when whole numbers are summed, due to the exclusion of decimal values.

Total emissions in 2023 equate to 333 ktCO₂e for Other Public Sector Bodies. The majority of total emissions arise from the supply chain (60%). In previous years, supply chain emissions have accounted for up to 86% of the total for Other Public Sector Bodies. Transport related emissions which include business travel, fleet and commuting contributed 35% to the Other Public Sector Bodies total. Buildings, which include energy consumption, water, and refrigerants contributed 4% to the total.

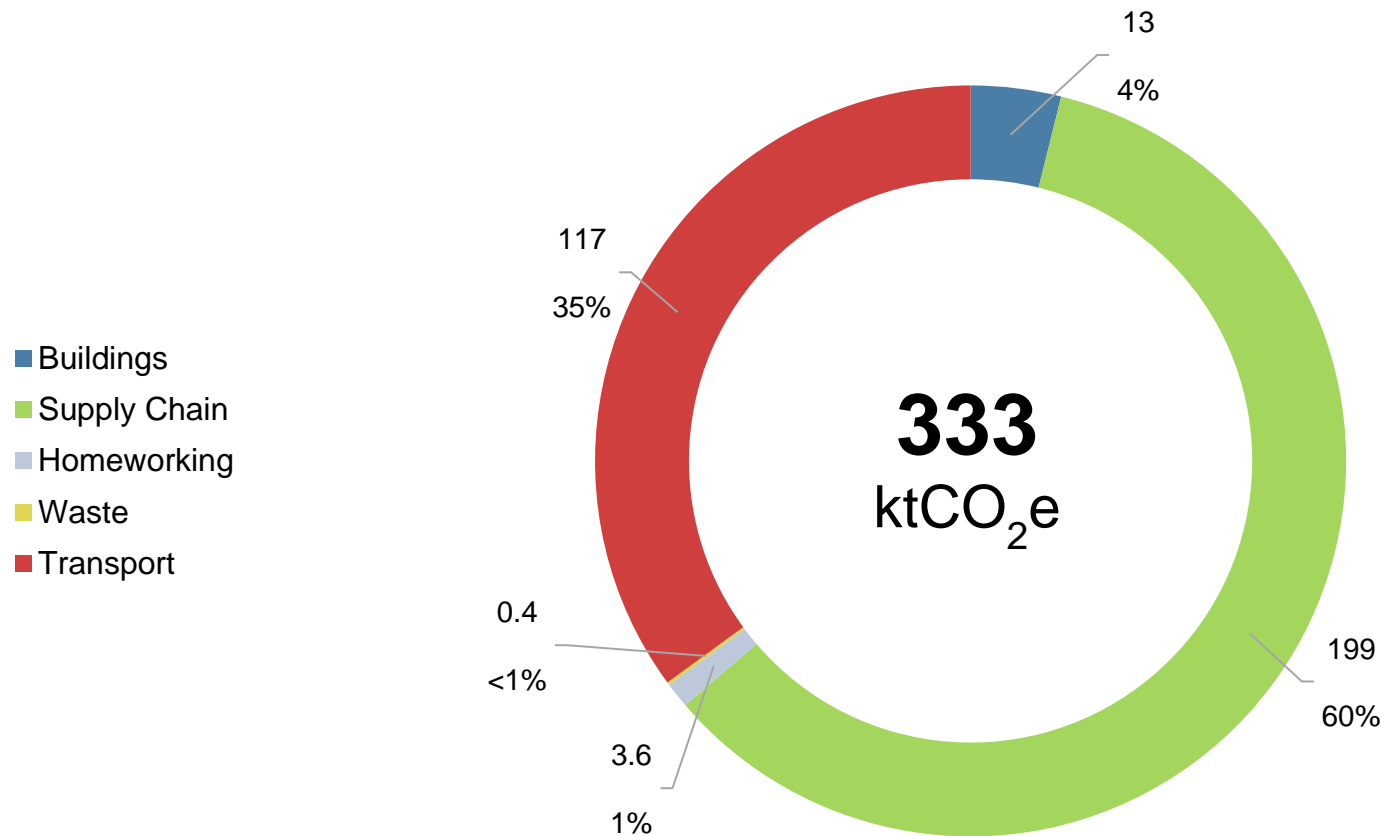


Figure 83 - Total Other Public Sector Bodies emissions (ktCO₂e) for 2023 by emissions category

Emissions shown below are disaggregated by supply chain and non-supply chain (buildings, transport, homeworking, and waste). Other Public Sector Bodies footprint emissions have been variable since reporting began. Changes have been largely driven by the changing number of reporting organisations as shown below (yellow line).

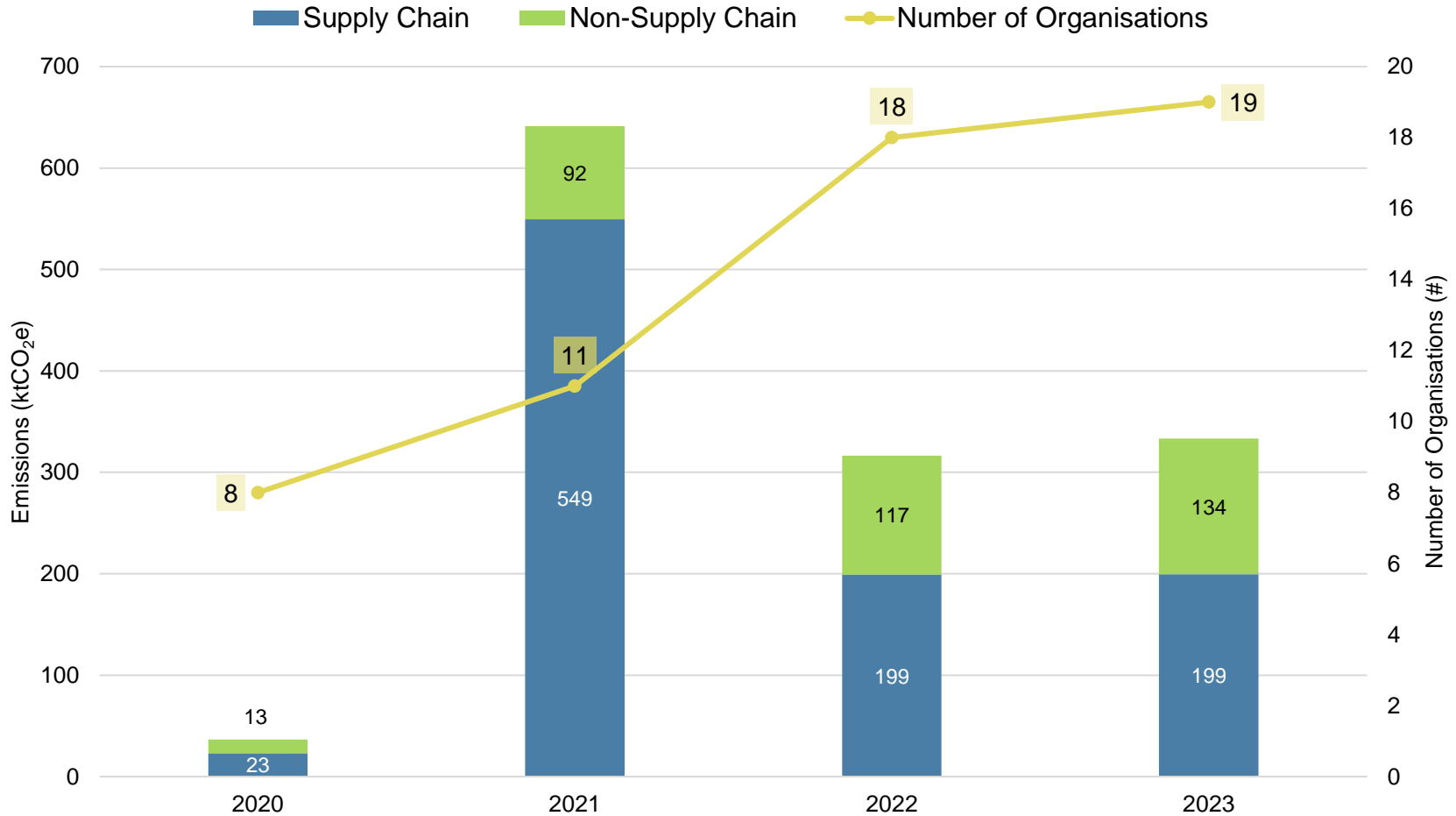


Figure 84 - Annual emissions (ktCO₂e) for Other Public Sector Bodies by supply chain and non-supply chain split

Organisations within Other Public Sector Bodies have highly varied operations, sizes, staff numbers etc. This is reflected in the range of total emissions, from >0.1 ktCO₂e to 291 ktCO₂e. The breakdown of emissions across Other Public Sector Bodies is presented below. For most organisations, supply chain emissions contribute the largest proportion of the total footprint.

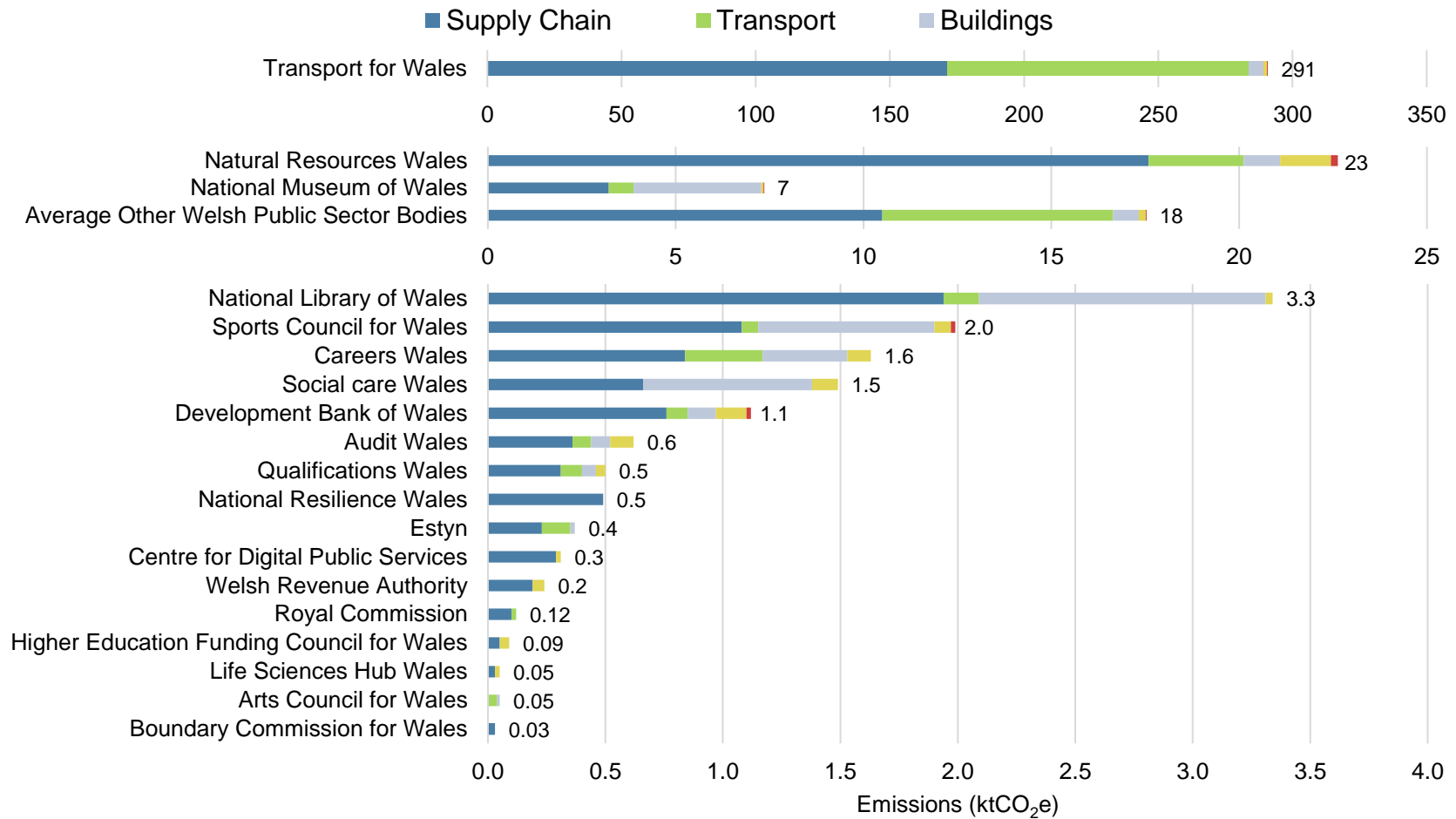


Figure 85 - 2023 emissions (ktCO₂e) by Other Public Sector Body and emissions category (note different axis scales)

Buildings

This sub-section covers emissions sources including energy consumption, water usage, and refrigerants. The majority of building emissions arise from electricity consumption, followed closely by fossil fuel usage for heating and hot water. Fossil fuel usage is almost exclusively from natural gas use. However, several organisations use gas oil, kerosene, or LPG.

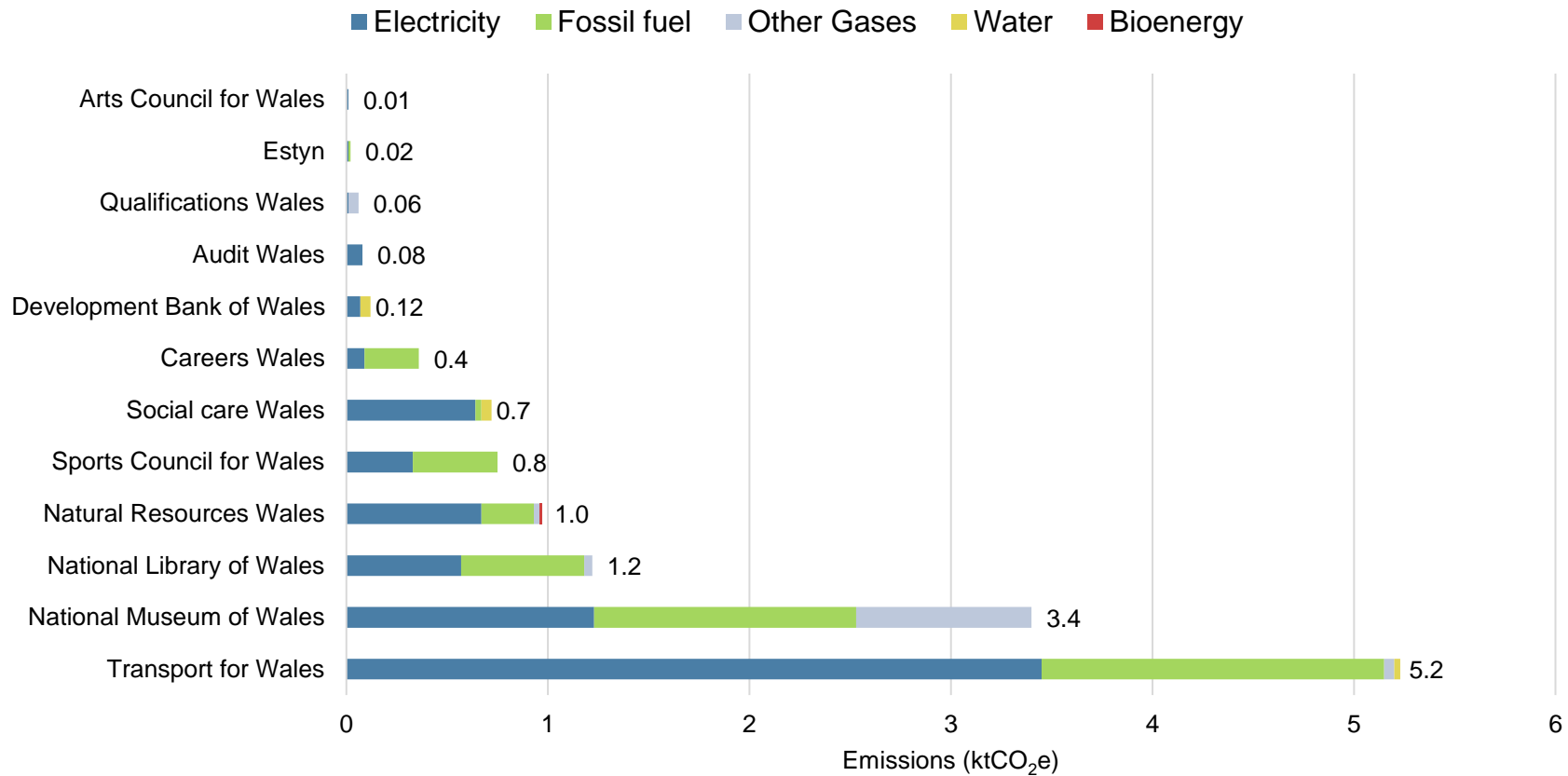


Figure 86 - 2023 Building related emissions (ktCO₂e) for Other Public Sector Bodies by emissions sub-category

Building related emissions for Other Public Sector Bodies decreased slightly between 2023 and the previous reporting year by 0.06 ktCO₂e, or <1%. Associated scope 3 emissions arise from upstream activities linked with the production and distribution of natural gas and electricity.

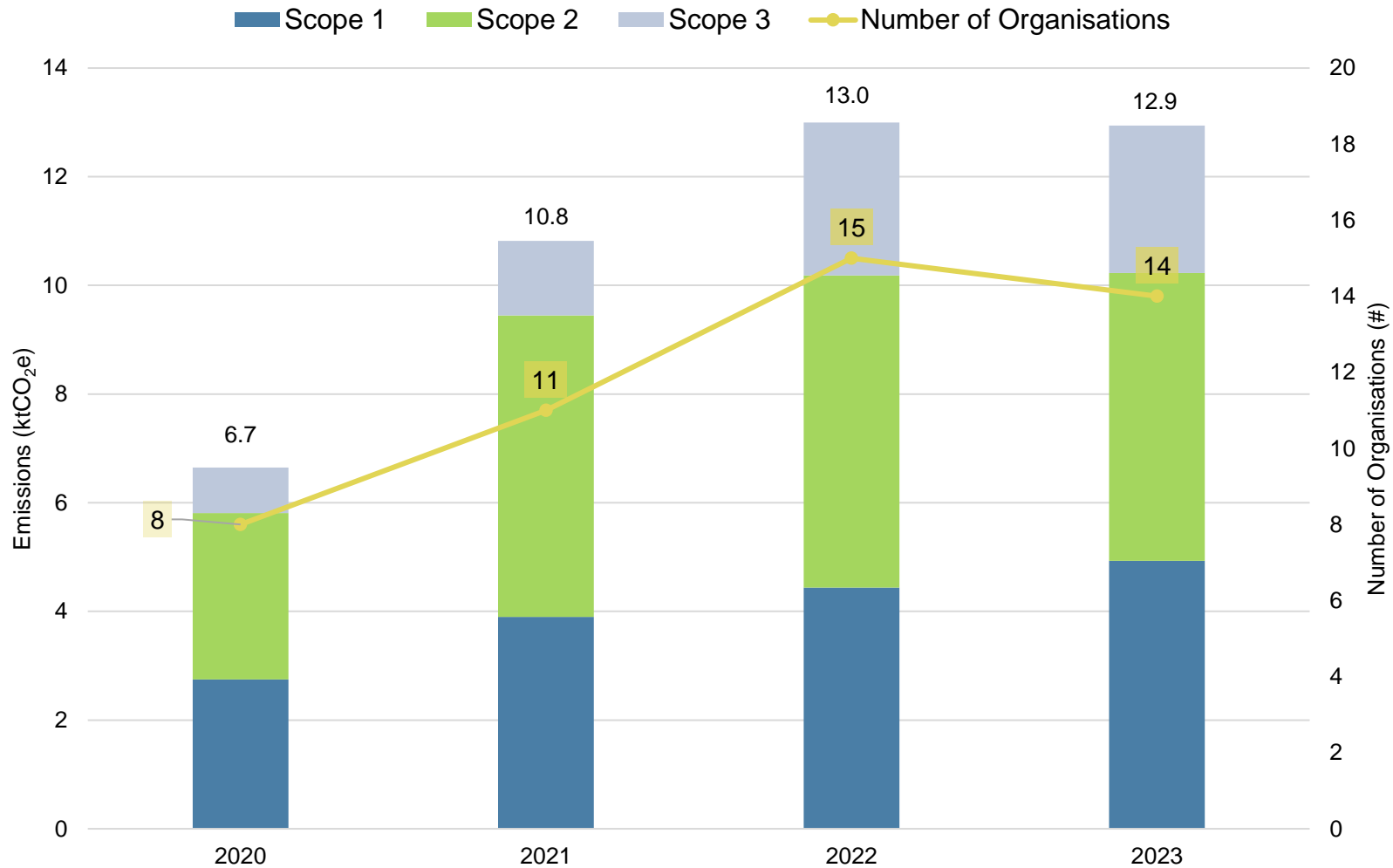


Figure 87 - Time Series of Other Public Sector Bodies building emissions (ktCO₂e) by emissions scope

Transport

This sub-section covers emissions sources from fleet, business travel, commuting, and homeworking. The relative contribution of the different transport emissions sources varies greatly between organisations. In some instances, there are potential gaps e.g., not all organisations report emissions sources such as homeworking and business travel. The breakdown of emissions across Other Public Sector Bodies is presented below.

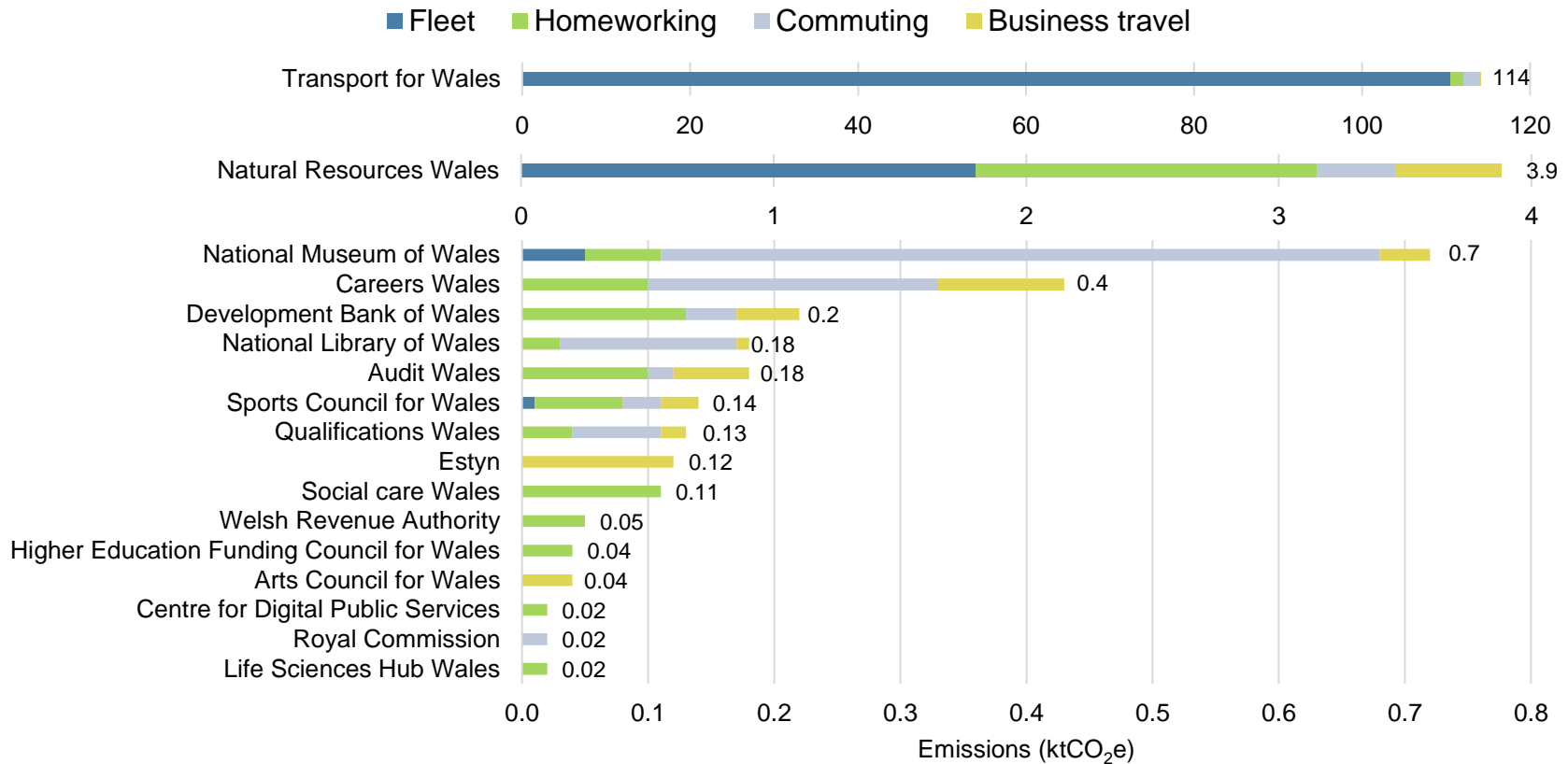


Figure 88 - 2023 Transport related emissions (ktCO₂e) by Other Public Sector Body and emissions sub-category (note different axis scales)

Transport related emissions for Other Public Sector Bodies have increased between 2023 and 2022 by 16 ktCO₂e, or +16%. This has been driven by an increase in Scope 1 and Scope 3 emissions, mainly by Transport for Wales.

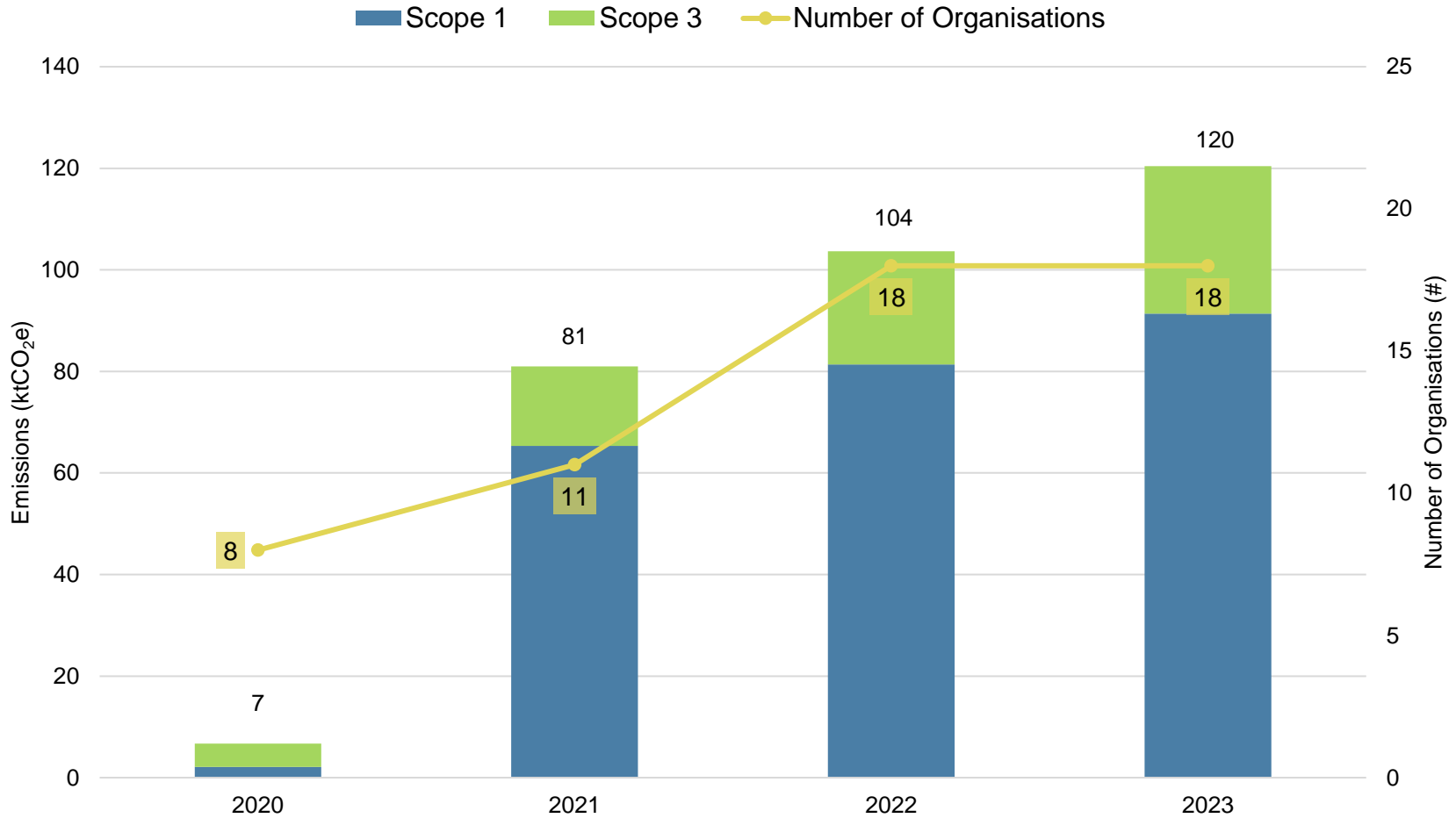


Figure 89 - Annual transport related emissions (ktCO₂e) for all Other Public Sector Bodies by emissions sub-category

Waste

This sub-section covers emissions arising from waste. Of the nineteen Other Public Sector Bodies, five reported waste data in 2023. Waste has been categorised into 'Project', 'Organisational' and 'Municipal'. This is presented as waste treatment method as opposed to its type or source. Most emissions arising from waste lie within the disposal routes of landfill or recycling.

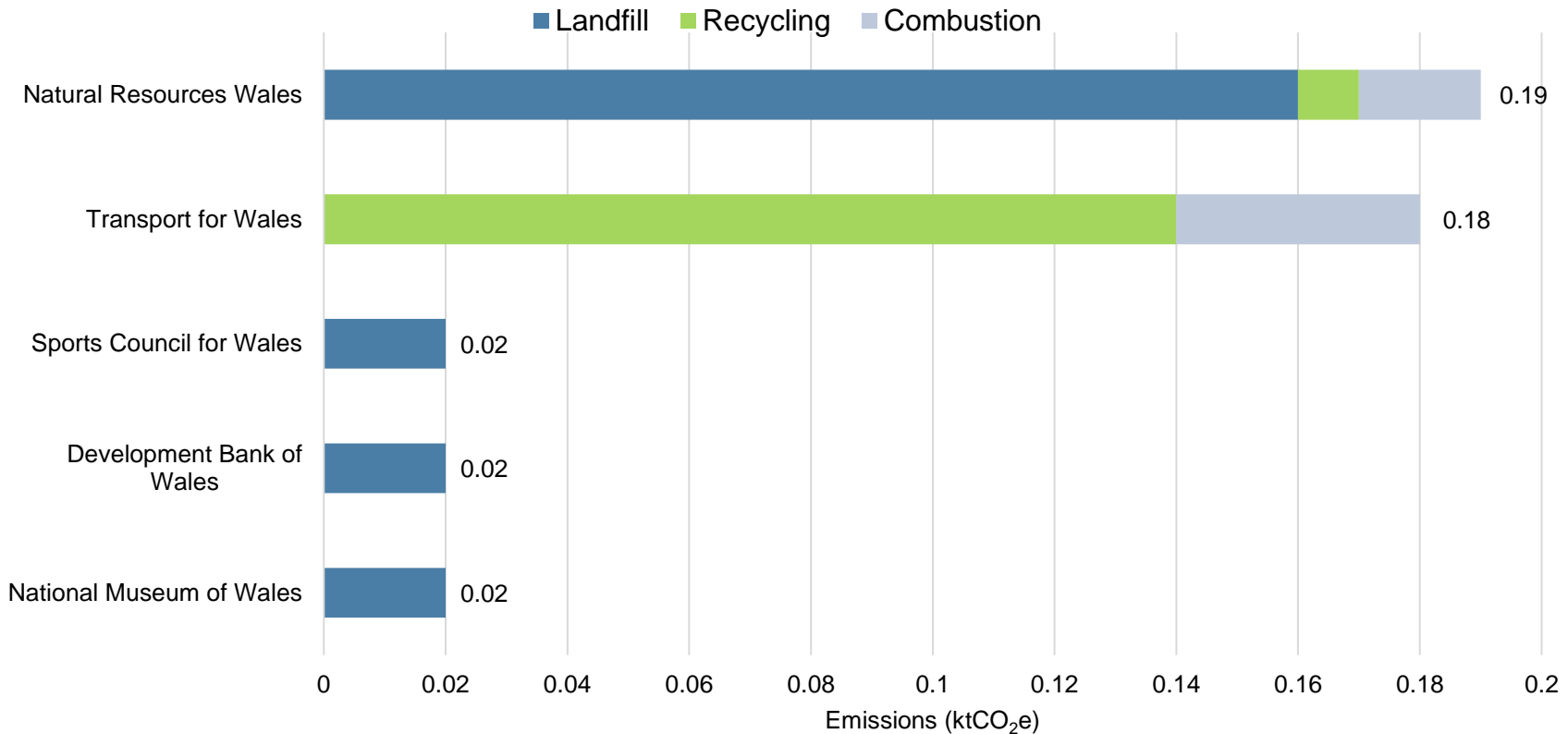


Figure 90 - 2023 Waste related emissions by Other Public Sector Body and emissions sub-category

Other Public Sector Bodies waste related emissions have decreased between 2023 and the previous reporting year by 0.4 ktCO₂e, or -50%.

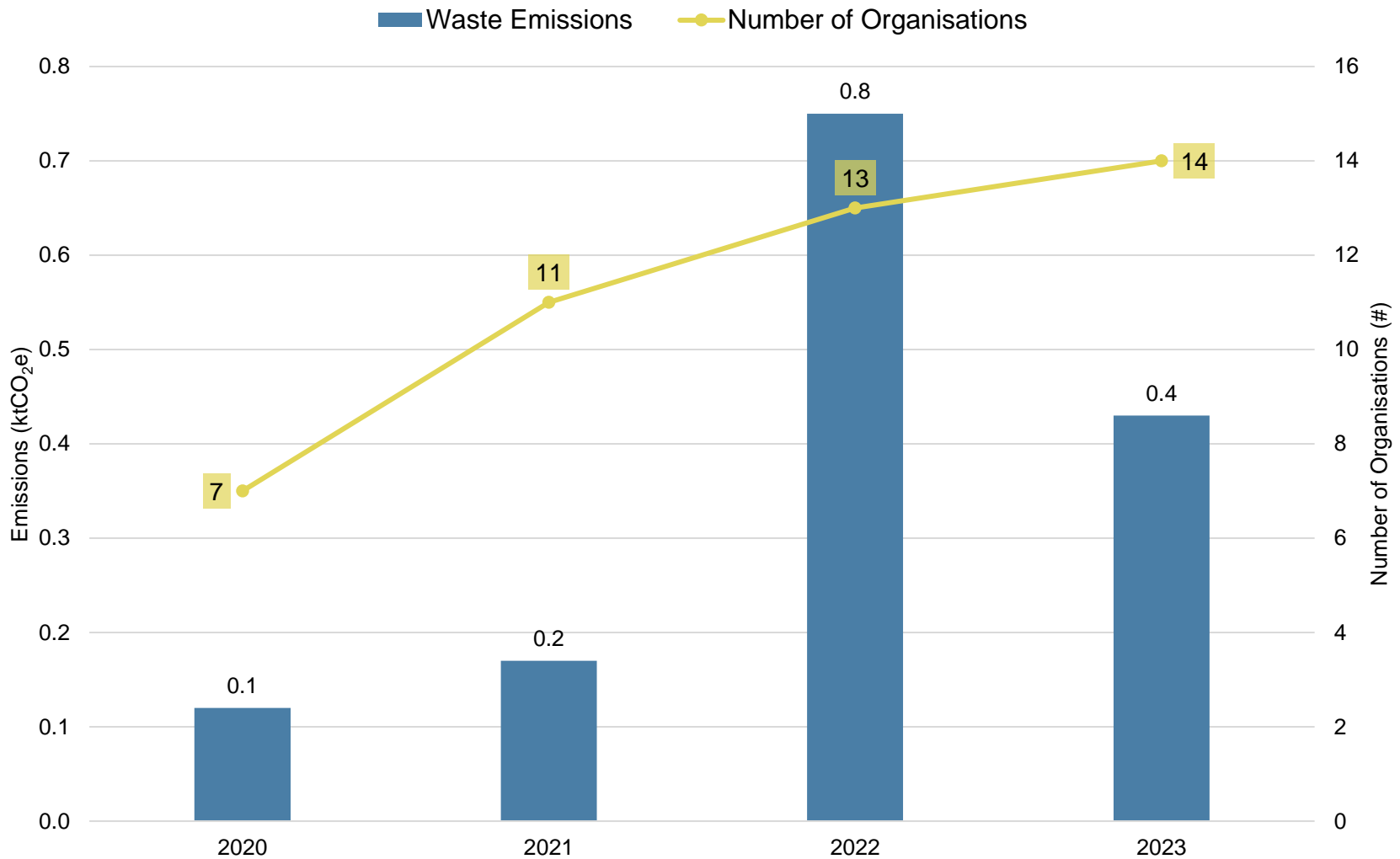


Figure 91 - Annual waste related emissions (ktCO₂e) for all Other Public Sector Bodies

Supply Chain

This following sub-section covers emissions arising from the supply chain. Other Public Sector Body emissions have remained stable between 2022 to 2023, at ~199 ktCO₂e. Over this same period, spend on goods and services has increased by 43%. An update in emissions factors between 2022 and 2023 has resulted in the minor increase of 0.4 ktCO₂e.



Figure 92 – Other Public Sector Body supply chain spend (£) and emissions (ktCO₂e)

The chart (below) shows the top five emitting categories within the Other Public Sector Bodies supply chain for 2023. All other categories beyond the top five have been aggregated within the 'Remainder' category. The same top five categories from 2023 are also displayed across the previous reporting years. 'Construction', 'Transportation and Storage', and 'Professional, Scientific and Technical Services' emissions have all increased between 2022 and 2023, while 'Manufacturing' and 'Administrative and Support Service Activities' emissions have decreased.

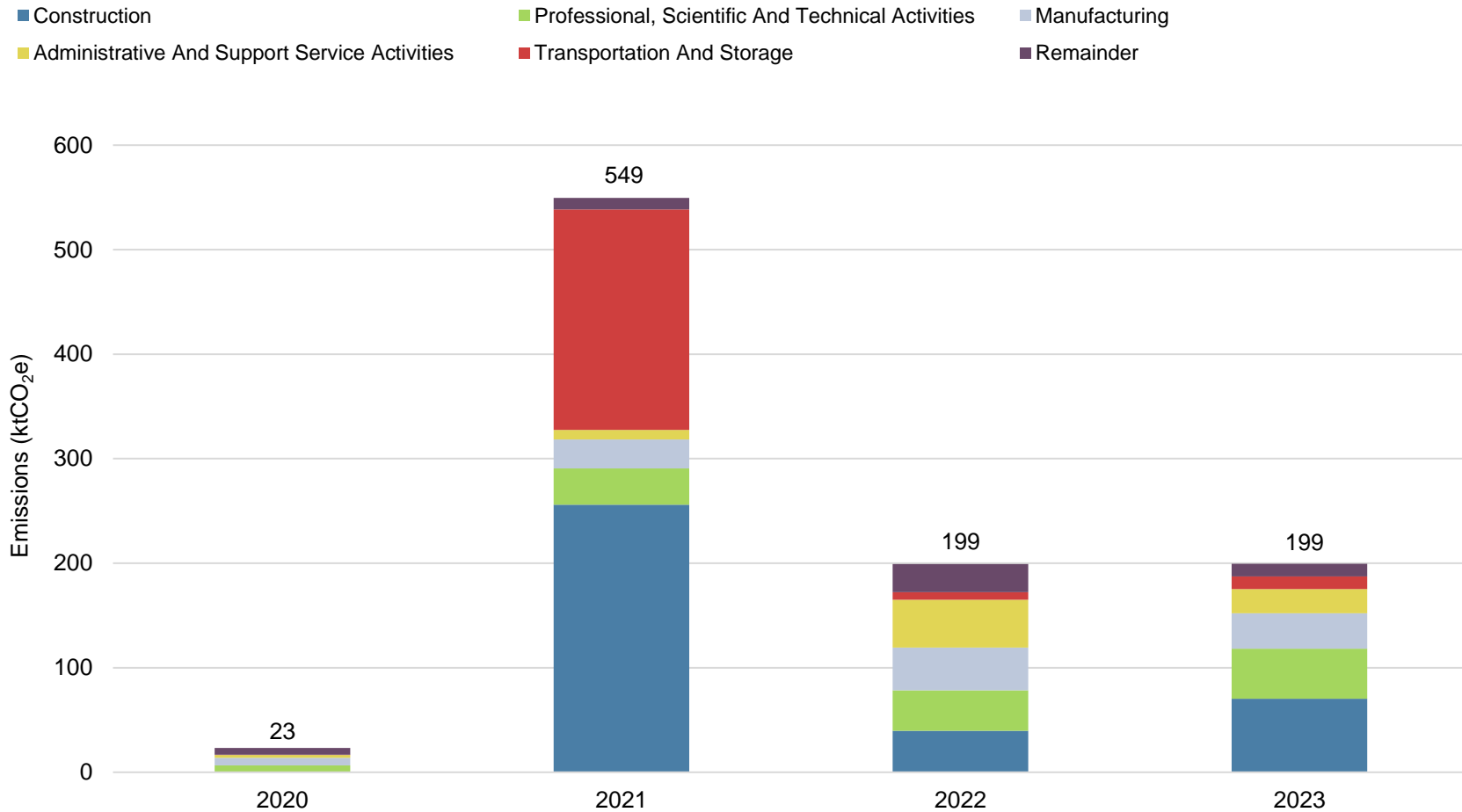


Figure 93 - Annual Other Public Sector Body supply chain emissions (ktCO₂e) by top emitting categories of 2023

Land Use

This sub-section covers emissions arising from land. Not all Other Public Sector Bodies report land usage, those that do are shown in the chart below. For 2023, total emissions produced from land use change equated to 0.6 ktCO₂e and removals from land use equated to -393 ktCO₂e. This provides a net emissions removal from land use change of 392 ktCO₂e in 2023.

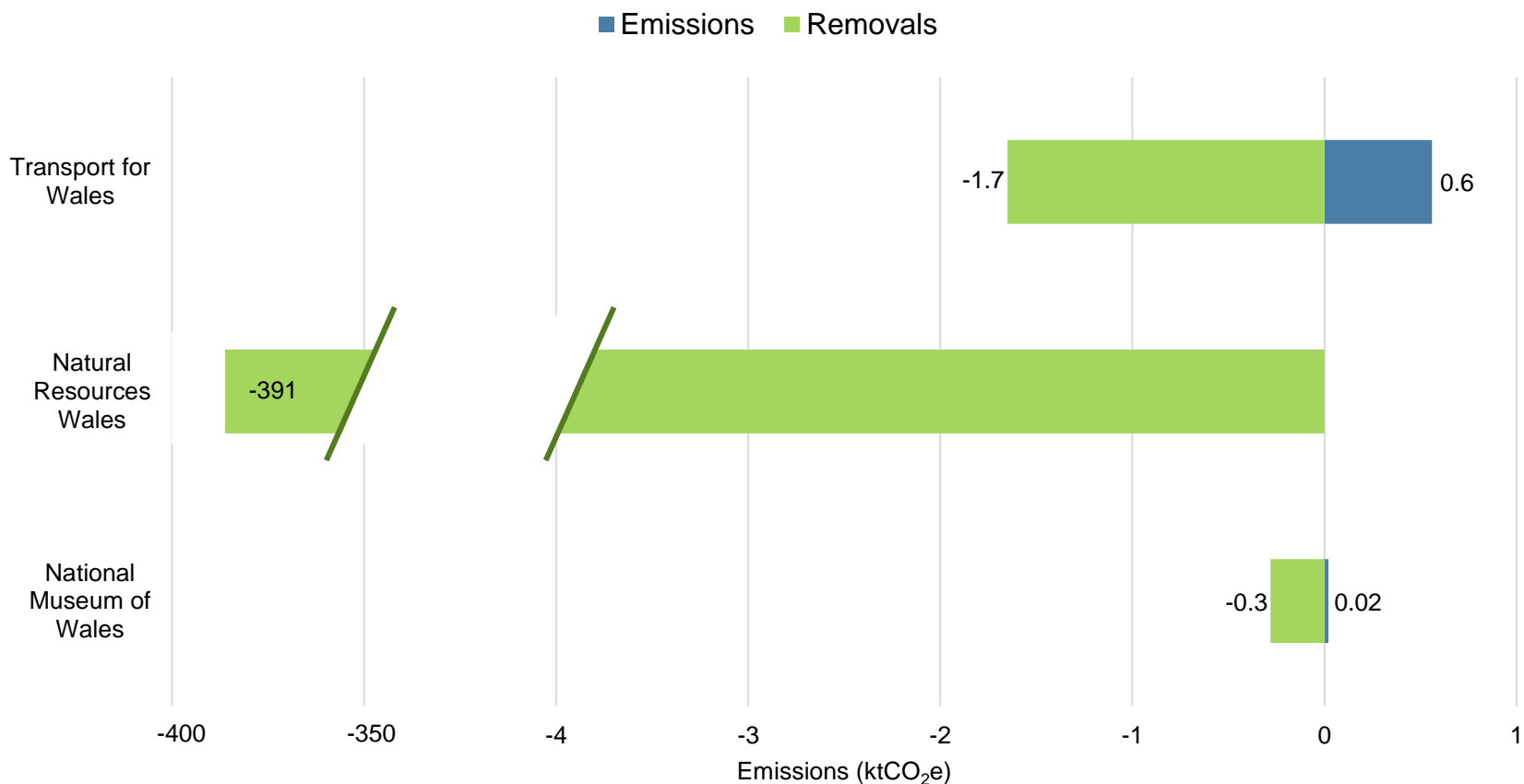


Figure 94 – Other Public Sector Body 2023 emissions (ktCO₂e) from land use

Net emissions from land use have decreased slightly between 2022 and 2023 but have remained stable between -391 ktCO₂e and -392 ktCO₂e since reporting began in 2020.

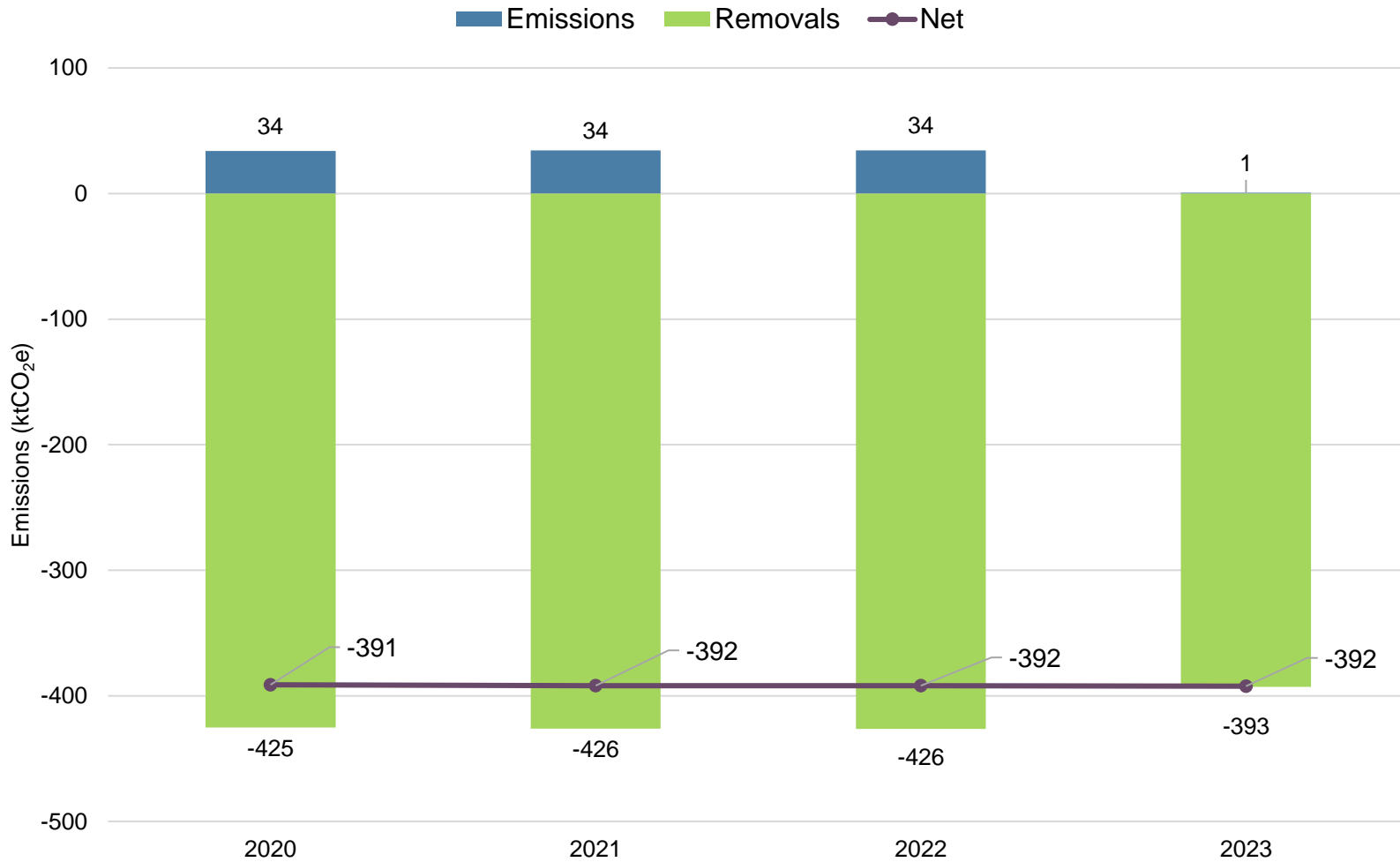


Figure 95 - Annual Other Public Sector Body emissions (ktCO₂e) from land use change

Renewables

In 2023 five Other Public Sector Bodies reported renewable generation. Combined, these organisations generated over 322 MWh of renewable electricity from solar PV. These five organisations also procure electricity through renewable procurement mechanisms, including green tariffs, PPAs and REGOs. This is not shown on the graph below.

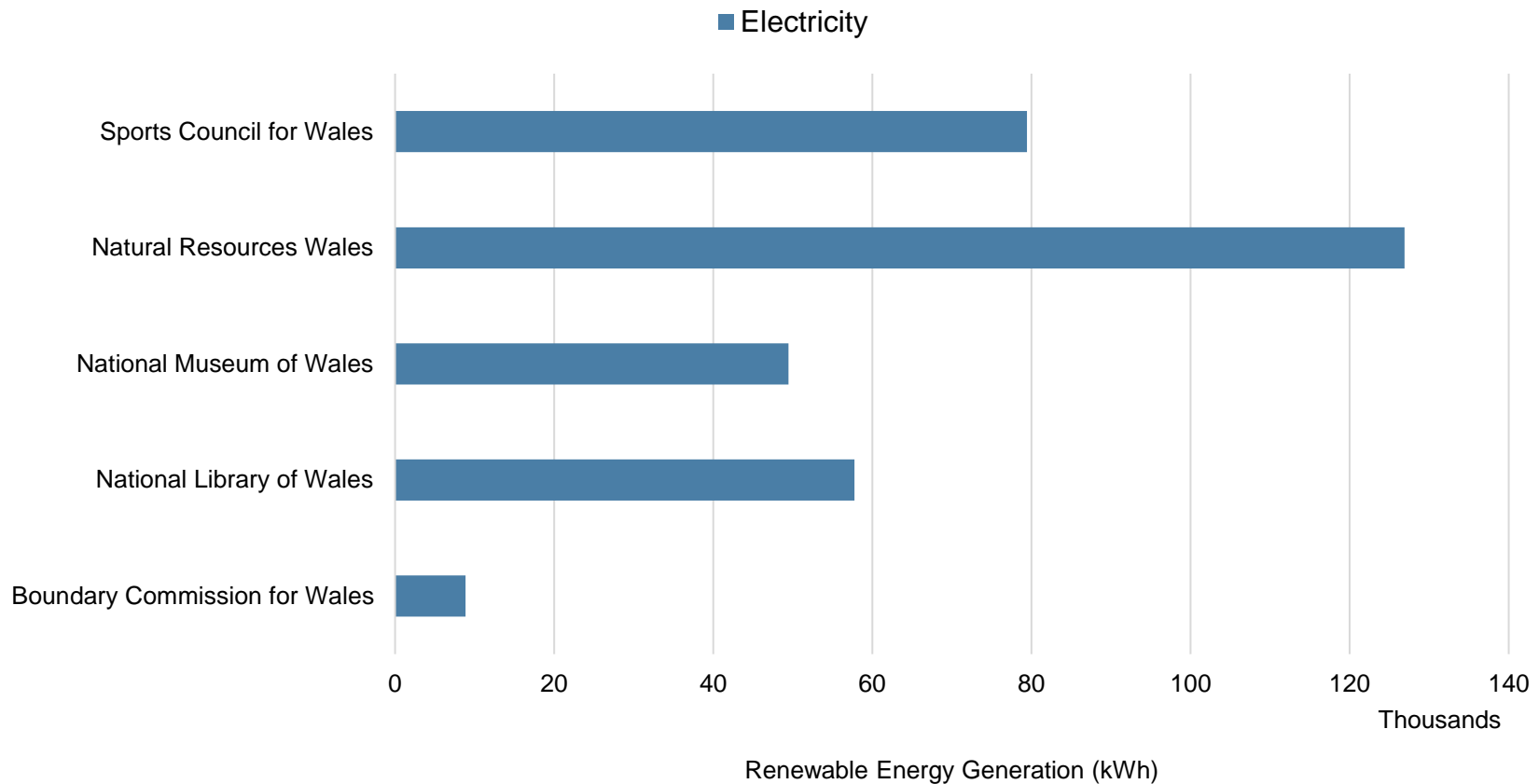


Figure 96 – Other Public Sector Body renewable electricity and heat generation (kWh) in 2023

Appendices

A.1. Data coverage for 22/23

The following tables highlight the coverage of data for all Public Sector Bodies.

A.1.1. NHS Wales

	Natural gas	Bioenergy	Fossil Fuel	Electricity	Other Gases	Water	Heat and Steam	Homeworking	Business Travel	Commuting	Fleet	Supply Chain	Waste	Land	Agriculture
Aneurin Bevan University Health Board	✓			✓	✓	✓			✓		✓	✓	✓		
Betsi Cadwaladr University Health Board	✓		✓	✓		✓			✓		✓	✓	✓	✓	
Cardiff and Vale University Health Board	✓		✓	✓	✓	✓			✓	✓	✓	✓	✓		
Cwm Taf Morgannwg University Health Board	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	
Digital Health and Care Wales	✓			✓	✓	✓		✓	✓	✓	✓	✓	✓		
Health Education and Improvement Wales	✓			✓		✓		✓	✓	✓		✓	✓		
Hywel Dda University Health Board	✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓		
NWSSP	✓			✓		✓			✓		✓	✓	✓		
Powys Teaching Health Board	✓		✓	✓	✓	✓			✓		✓	✓	✓		
Public Health Wales NHS Trust								✓	✓		✓	✓	✓		
Swansea Bay University Health Board	✓		✓	✓	✓	✓			✓	✓	✓	✓	✓		
Velindre University NHS Trust	✓			✓		✓			✓		✓	✓	✓	✓	
Welsh Ambulance Services NHS Trust	✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓		

A.1.2. Local Authorities

	Natural gas	Bioenergy	Fossil Fuel	Electricity	Other Gases	Water	Heat and Steam	Homeworking	Business Travel	Commuting	Fleet	Supply Chain	Waste	Land	Agriculture
Blaenau Gwent County Borough Council	✓	✓		✓		✓		✓	✓	✓	✓	✓	✓	✓	
Bridgend County Borough Council	✓		✓	✓		✓		✓	✓	✓	✓	✓	✓		
Caerphilly County Borough Council	✓	✓		✓	✓			✓	✓	✓	✓	✓	✓	✓	✓
Cardiff Council	✓		✓	✓		✓		✓	✓	✓	✓	✓	✓	✓	
Carmarthenshire County Council	✓	✓	✓	✓		✓		✓	✓	✓	✓	✓	✓	✓	
Ceredigion County Council	✓	✓	✓	✓				✓	✓	✓	✓	✓			
Conwy County Borough Council	✓		✓	✓		✓		✓	✓	✓	✓	✓	✓	✓	
Denbighshire County Council	✓		✓	✓		✓		✓	✓	✓	✓	✓	✓		
Flintshire County Council	✓	✓	✓	✓		✓		✓	✓	✓	✓	✓	✓	✓	
Gwynedd Council	✓	✓	✓	✓				✓	✓	✓	✓	✓	✓	✓	
Isle of Anglesey County Council	✓		✓	✓		✓		✓	✓		✓	✓	✓	✓	
Merthyr Tydfil County Borough Council	✓		✓	✓		✓		✓	✓	✓	✓	✓	✓	✓	
Monmouthshire County Council	✓		✓	✓		✓		✓	✓	✓	✓	✓	✓	✓	
Neath Port Talbot County Borough Council	✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	
Newport City Council	✓		✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	
Pembrokeshire County Council	✓	✓	✓	✓		✓		✓	✓	✓	✓	✓	✓	✓	
Powys County Council	✓	✓	✓	✓		✓		✓	✓	✓	✓	✓	✓	✓	
Rhondda Cynon Taf County Borough Council	✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	
Swansea Council	✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	
Torfaen County Borough Council	✓		✓	✓		✓		✓	✓	✓	✓	✓	✓	✓	✓
Vale of Glamorgan Council	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	
Wrexham County Borough Council	✓	✓	✓	✓				✓	✓	✓	✓	✓	✓	✓	

A.1.3. Universities and Colleges

	Natural gas	Bioenergy	Fossil Fuel	Electricity	Other Gases	Water	Heat and Steam	Homeworking	Business Travel	Commuting	Fleet	Supply Chain	Waste	Land	Agriculture
Aberystwyth University	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓		✓
Bangor University	✓		✓	✓	✓	✓		✓	✓		✓	✓	✓	✓	✓
Bridgend College (<i>New to 2023</i>)	✓			✓		✓			✓		✓		✓	✓	
Cardiff Metropolitan University	✓			✓					✓	✓	✓	✓	✓	✓	
Cardiff University	✓			✓	✓	✓		✓	✓	✓	✓	✓	✓		
Glyndwr Wrexham University	✓			✓	✓						✓		✓	✓	
Pembrokeshire College	✓			✓		✓			✓	✓	✓		✓		
Swansea University	✓		✓	✓	✓	✓		✓	✓	✓	✓		✓	✓	
University of South Wales	✓			✓		✓		✓	✓	✓	✓	✓	✓	✓	
University of Wales Trinity Saint David	✓			✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	

A.1.4. Fire and Rescue Authorities

	Natural gas	Bioenergy	Fossil Fuel	Electricity	Other Gases	Water	Heat and Steam	Homeworking	Business Travel	Commuting	Fleet	Supply Chain	Waste	Land	Agriculture
Mid and West Wales Fire and Rescue Service	✓		✓	✓				✓	✓		✓	✓	✓		
North Wales Fire and Rescue Service	✓		✓	✓		✓		✓	✓		✓	✓	✓		
South Wales Fire and Rescue Service	✓		✓	✓	✓			✓	✓	✓	✓	✓		✓	

A.1.5. Other Public Sector Bodies

	Natural gas	Bioenergy	Fossil Fuel	Electricity	Other Gases	Water	Heat and Steam	Homeworking	Business Travel	Commuting	Fleet	Supply Chain	Waste	Land	Agriculture
Arts Council for Wales	✓			✓					✓				✓		
Audit Wales	✓			✓		✓		✓	✓	✓		✓	✓		
Boundary Commission for Wales				✓		✓		✓	✓	✓		✓	✓		
Careers Wales	✓			✓				✓	✓	✓		✓	✓	✓	
Centre for Digital Public Services								✓	✓			✓			
Development Bank of Wales				✓		✓		✓	✓	✓		✓	✓		
Estyn	✓			✓		✓			✓			✓	✓		
Higher Education Funding Council for Wales								✓				✓			
Life Sciences Hub Wales								✓	✓	✓		✓			
National Library of Wales	✓			✓	✓	✓		✓	✓	✓		✓	✓	✓	
National Museum of Wales	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓
National Resilience Wales (<i>New to 2023</i>)												✓			
Natural Resources Wales	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓
Qualifications Wales				✓	✓	✓		✓	✓	✓		✓	✓		
Royal Commission								✓	✓	✓		✓			
Social care Wales	✓			✓		✓		✓	✓	✓		✓	✓		
Sports Council for Wales	✓		✓	✓		✓		✓	✓	✓	✓	✓	✓		
Transport for Wales	✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	
Welsh Revenue Authority								✓	✓	✓		✓			

A.1.6. Welsh Government

	Natural gas	Bioenergy	Fossil Fuel	Electricity	Other Gases	Water	Heat and Steam	Homeworking	Business Travel	Commuting	Fleet	Supply Chain	Waste	Land	Agriculture
Welsh Government	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	

A.1.7. National Park Authorities

	Natural gas	Bioenergy	Fossil Fuel	Electricity	Other Gases	Water	Heat and Steam	Homeworking	Business Travel	Commuting	Fleet	Supply Chain	Waste	Land	Agriculture
Brecon Beacons National Park Authority	✓		✓	✓		✓		✓	✓	✓	✓	✓	✓	✓	
Pembrokeshire Coast National Park Authority	✓	✓	✓	✓		✓		✓	✓	✓	✓	✓		✓	
Snowdonia National Park Authority	✓		✓	✓				✓	✓	✓	✓	✓	✓		

A.2. Areas for Improvement

A.2.1. Template improvements

Various areas for improvement to the data collection template have been identified. These will be addressed in future versions of the form and currently include:

- Ensuring medical gas data can be supplied in litres
- Including Entonox as an available option for medical gas submission (and a review for inclusion of Pentrox)
- Annually updated SIC code emission factors for supply chain footprinting
- Inclusion of HVO fuel emissions factors
- Expanded refrigerant / F-gas options
- Realigning data tables for ease of compiling
- Ensure dropdowns are fully functional

A.2.2. Methodological improvements

Methodological improvements are required across most emission categories. These are needed to progress accuracy, reliability, completeness, and transparency of the reported figures. Key improvement areas of focus are:

- Evolving the methods used to report scope 2 emissions, particularly focused on the complexities related to renewable energy procurement and development
- Facilitating the shift away from Tier 1 supply chain emissions reporting to higher accuracy methods
- Improvement in the accuracy for land-based emissions and removal estimation methods
- Introducing higher precision methods for assessing homeworking and commuting emissions
- Introducing higher granularity requirements around building and transport energy data to obtain greater levels of insight from submissions

A.3. Review of Data Processing

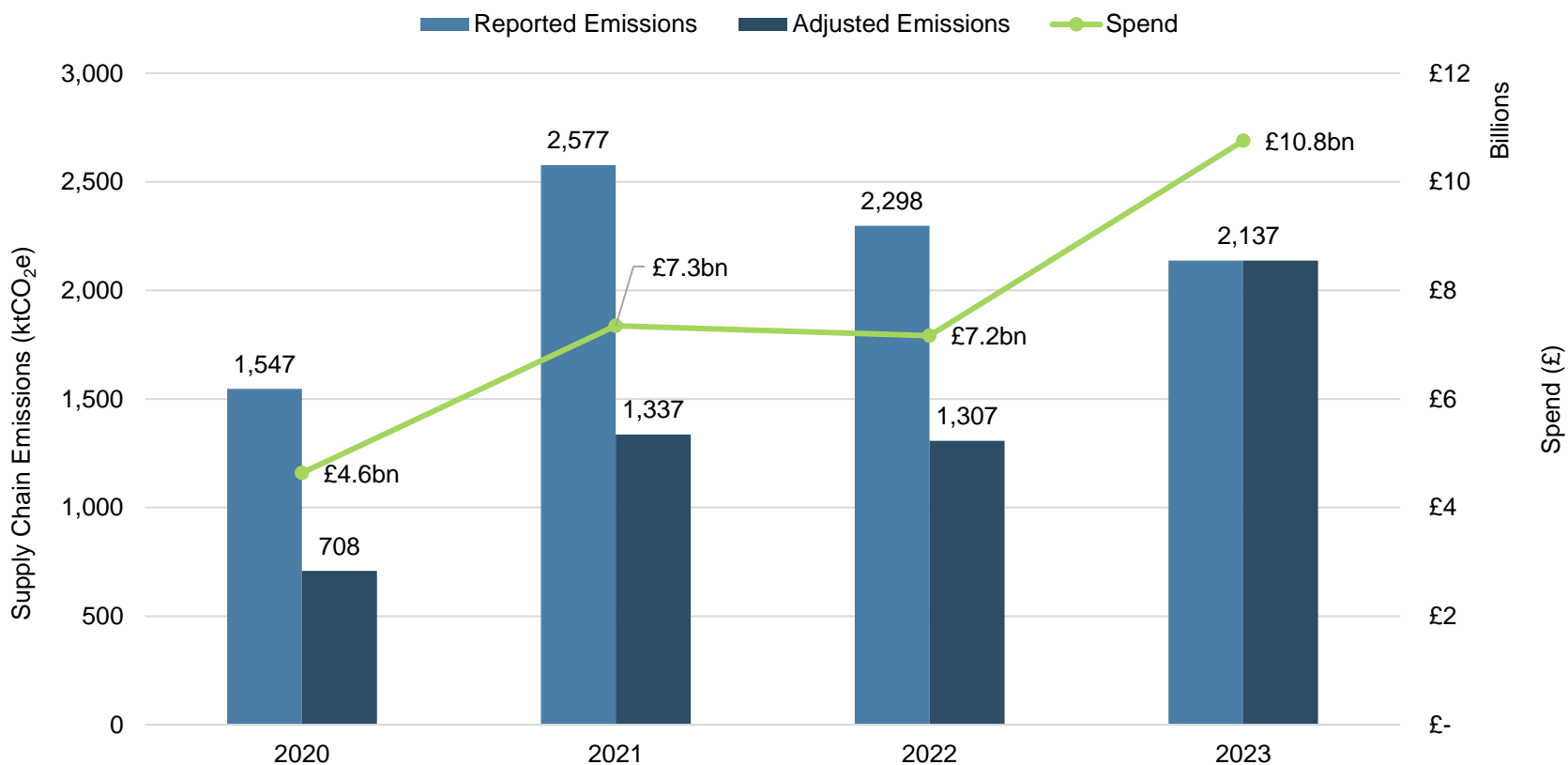
All data submissions were reviewed individually, with errors, double counts and data gaps flagged to be raised with the respective reporting organisation. Some issues were raised at this stage and include copy and paste errors, incomplete submissions, or incorrect values for submission. These issues were uncommon however, with most data submitted of high quality.

Submission data for 2023 then went through a process of mapping categories with data from previous reporting years. This allowed for the development of time series data analysis not provided previously. This allowed an additional check to be conducted to flag erroneous data, where submissions significantly varied year on year.

All data submitted from the first reporting year to up to 2023 was then compiled into a centralised database. This facilitated the development of individual public body reports. This will also facilitate the development of an accessible online dashboard for Public Sector Net Zero Reporting.

A.4. SIC Emission Factor Adjustment Review

Through engagement with stakeholders, a request was made to understand the impact of the updated SIC emissions factors on purchased goods and service emissions if applied to previous years. The chart below highlights previously reported emissions alongside an adjusted value based on using the most recent year's SIC emissions factors. Adjusted emissions for each previous year uses the 2023 data collection form emissions factors. The chart highlights the sensitivity of the estimated emissions to the emissions factor.





Gwasanaeth Ynni Energy Service

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