

University of South Wales

Carbon Footprint Report 2020/21

September 2021



University of
South Wales
Prifysgol
De Cymru





Context

Growing acknowledgement of the latest science and recommendations from the Climate Change Committee (CCC) has resulted in unprecedented recognition of the global climate emergency, and the need to act urgently in order to reduce carbon emissions to limit further global warming and associated environmental impacts. Global initiatives are now focused on limiting warming to well below 2°C, aligning to the pledges outlined in the Paris Agreement. Despite this, warming continues, with the impacts being felt both nationally and internationally. Across the UK, continued warming is projected to make winters warmer and summers hotter and drier. Sea levels will also continue to rise and threaten many coastal communities across the country. Many industrial and farming processes will also be affected by a continuation of rising temperatures, exacerbating impacts that warming will have on communities across the UK.

The Welsh Government declared a climate emergency in 2019 and accepted the recommendations from the CCC to target a 95% reduction in greenhouse gas emissions by 2050 relative to 1990. After the Welsh Government accepted the CCC's recommended target, it presented in parallel an ambitious plan to go further and reach "net zero" by 2050. Wales had already announced in 2017 their ambitions for the Welsh public sector as a whole to be net zero by 2030.

The University of South Wales recognises the significant role it can play in helping to accelerate the national transition towards developing a low carbon economy. The University has set its own target to be carbon neutral by 2040. This report was commissioned by the University as it continues its pathway to net zero emissions.

Drivers for Decarbonisation

Legislation

Well-being of Future Generations (Wales)
Act 2015

The Climate Change (Wales) Regulations
2021

Net Zero Wales by 2050

Strategy

Prosperity for All – Economic
Action Plan (2017)

Prosperity for All – A Low
Carbon Wales (2019)

Prosperity for All - A Climate
Conscious Wales (2019)

Programme for Government
2021 – 2026 (2021)

Ministerial ambition

Net zero Public Sector by 2030








70% of Wales electricity
consumption to be renewable by
2030

1GW of electricity generated in Wales to
be locally owned by 2030

All new energy developments by 2020 to
have an element of local ownership

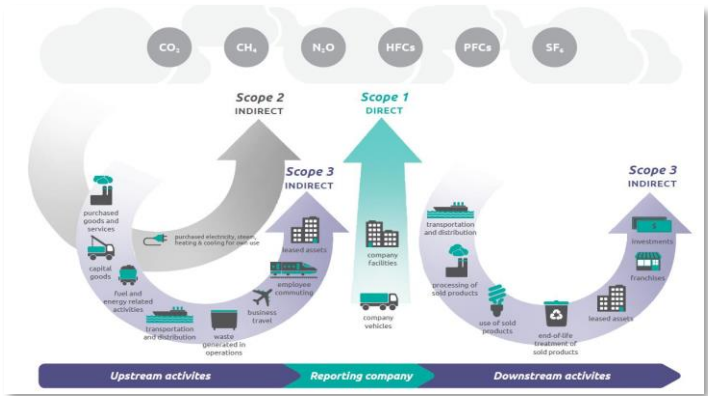
Welsh Government & Senedd Climate Emergency Declaration (2019)

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Executive Summary

- This Carbon Footprint report forms a key step in University of South Wales (USW) climate emergency response and sets out a number of strategic actions that USW should work towards in order to achieve their carbon reduction ambitions. Welsh Government (WG) have a desire for a net zero public sector in Wales by 2030 and USW has set its own goal to be solely carbon neutral by 2040.
- In order to achieve this ambition, USW will need to ensure further follow-on activity is undertaken such as formal carbon strategies, project identification, pathway modelling and continued improved carbon footprinting.
- Since the last carbon footprint was undertaken, WG released the Public Sector Net Zero Reporting Guide. This excluded some emission categories from Welsh public sector organisations reporting boundaries. Exclusions included fugitive and investment emissions. An action from the last carbon footprint report was to include these emissions categories moving forward, this is no longer required.



Overview of the World Resource Institutes GHG Protocol accounting methodology

Emissions included within the carbon footprint:

Scope 1

- Natural gas consumption
- Other fuel consumption

- University fleet fuel consumption

Scope 2

- Electricity consumption in buildings

Scope 3

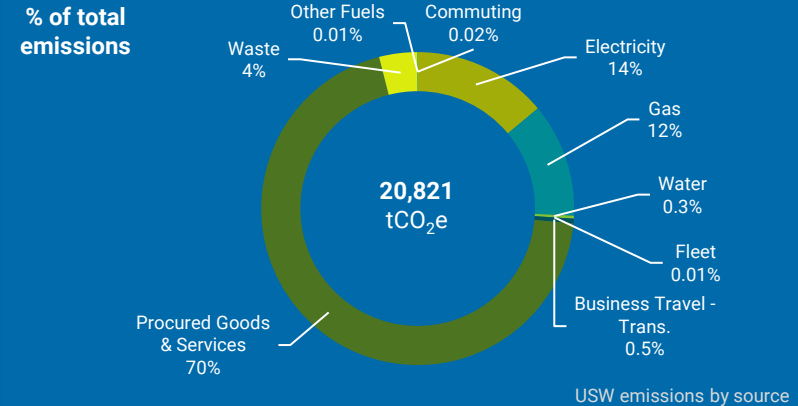
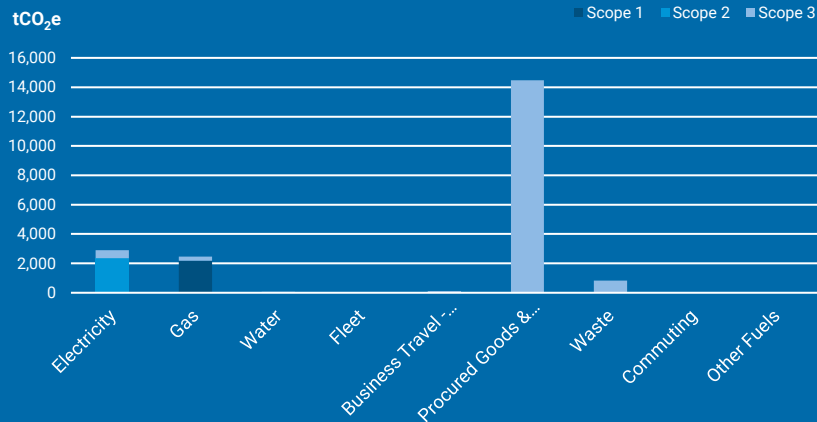
- Staff commuting emissions
- Business travel by air, train and non-university vehicles
- Services and goods procured from suppliers (contracts)
- Upstream emissions from natural gas, vehicle fuel & electricity

- Third-party disposal and treatment of waste generated in University-controlled operations
- Supply and subsequent treatment of water consumed during University's operations

Carbon Footprint Overview

University of South Wales' footprint for the FY 2020/21 was calculated to be **20,821 tCO₂e**. Three key emission categories make up 95% of the total footprint:

1. **Procurement contracts** with university suppliers (14,472 tCO₂e)
2. **Electricity consumption** in buildings (2,904 tCO₂e)
3. **Gas consumption** in buildings (2,453 tCO₂e)



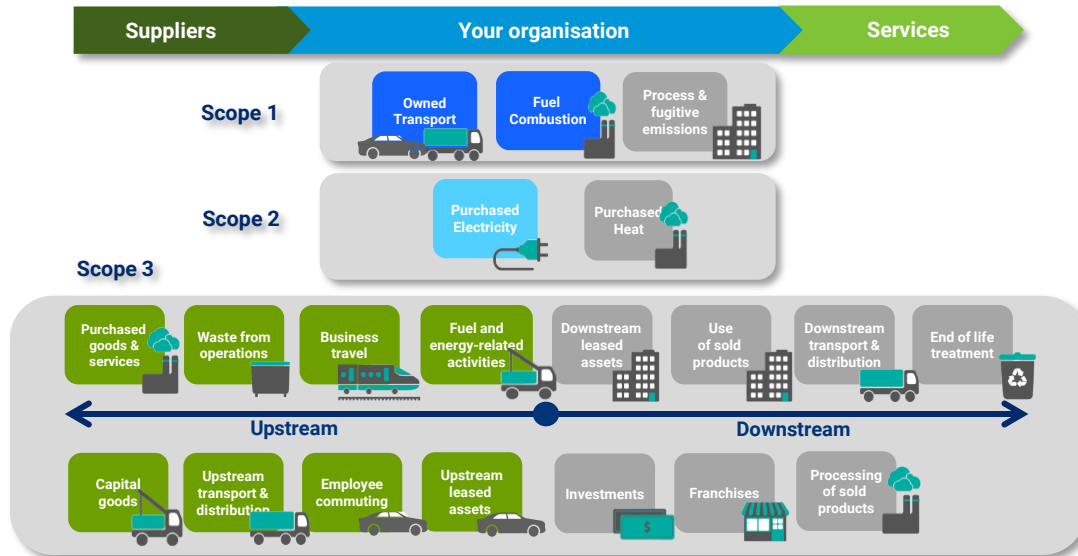
- Scope 3 emissions make up 78% of the total footprint. The university will therefore have to integrate carbon management in its interactions with contractors and operators to achieve its decarbonisation targets, as well as focusing on the assets under their operational control.
- Procured Goods & Services account for 70% of all emissions, it should be noted that emissions generated from commuting when understood properly could make a significant difference to the overall footprint.

Section 1: Carbon Footprint Boundary

USW's footprint has been calculated according to the World Resources Institute (WRI) Greenhouse Gas (GHG) Protocol, and aligns to the following accounting definitions:

- Direct GHG emissions are emissions from sources that are owned or controlled by the reporting entity
- Indirect GHG emissions are emissions that are a consequence of the activities of the reporting entity, but occur at sources owned or controlled by another entity

The GHG Protocol further categorises these direct and indirect organisational emissions into three broad scopes (see figure below):



- **Scope 1:** All direct GHG emissions.
- **Scope 2:** Indirect GHG emissions from consumption of purchased electricity, heat or steam.
- **Scope 3:** Other indirect emissions, such as the extraction and production of purchased materials and fuels, transport-related activities in vehicles not owned or controlled by the reporting entity, electricity-related activities (e.g. transmission and distribution (T&D) losses) not covered in Scope 2, outsourced activities, waste disposal, etc.

Section 1: Carbon Footprint Boundary

This section provides an inventory of USW's greenhouse gas emissions for the financial year 2020/21 – the 'baseline' against which future progress will be evaluated.

University of South Wales Emissions

Scope 1

Scope 2

Scope 3

Natural Gas &
Other fuels

Fleet

Electricity

Water

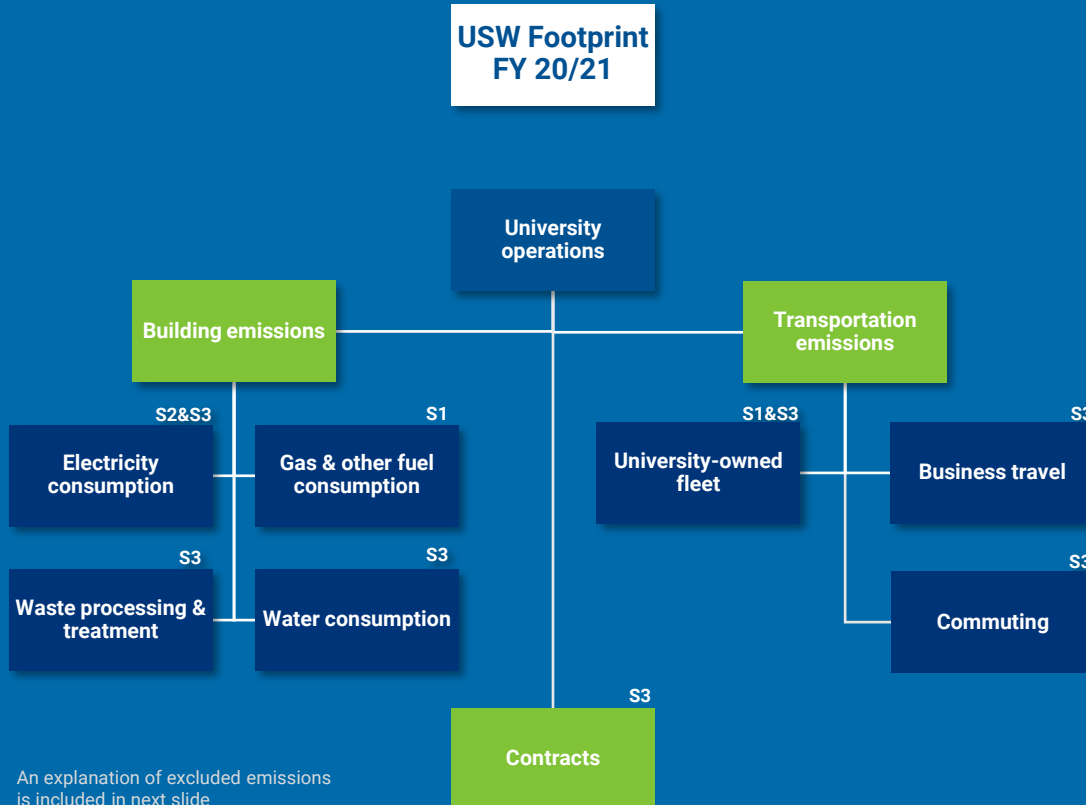
Commuting

Contracts

Business
Travel

Waste

Section 1: Carbon Footprint Boundary - Scope



An explanation of excluded emissions is included in next slide

Scope 1 emissions [S1]:

- Gas consumption, typically space and water heating in buildings
- University fleet fuel consumption

Scope 2 emissions [S2]:

- Electricity consumption in buildings

Scope 3 emissions [S3]:

- Business travel in non-university fleet vehicles
- Staff commuting emissions
- Third-party disposal and treatment of waste generated in University-controlled operations
- Supply and subsequent treatment of water consumed during University's operations
- Emissions associated with procured goods & services (contracts)
- Upstream Well-to-Tank (WTT) emissions for Natural Gas & Electricity
- Upstream Transmission & Distribution (T&D) losses associated with electricity use

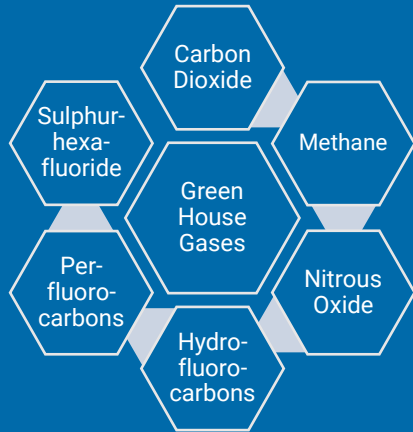
Section 1: Carbon Footprint Boundary - Excluded Emission Sources

Some emission categories are not relevant to USW's operations and have therefore been excluded from this footprint.

In future, USW should consider expanding its footprint to include further emissions categories where appropriate. The emissions sources not included in this edition of the carbon footprint were excluded mainly due to the absence of appropriate data and under the new WG reporting guidance.

Scope	Emission Source	Reason for Exclusion	Data required
1	Refrigerants	Excluded through WG Public sector net zero reporting guide	Record of refrigerant recharges due to system leakages, detailing refrigerant type and amount in kg.
3	Employee commuting	Data not available at this time, benchmarking approach undertaken.	Mileage and transport type of students and staff. Survey questions provided by Carbon Trust.
3	Franchises	Out of scope: No franchises controlled by the University	-
3	Investments	Excluded through WG Public sector net zero reporting guide	The total value of each investment or fund. The sectoral % split of those funds (This usually follows GICS - Global Industry Classification Standard).
3	Processing of sold products	Out of scope: Not applicable to the University's operations	-
3	Use of sold products	Out of scope: Not applicable to the University's operations	-
3	End-of-life treatment of sold products	Out of scope: Not applicable to the University's operations	-

- Carbon dioxide is not the only green house gas. There are five other key green house gas types that contribute to global warming (shown below).
- Each gas has its own global warming potential (GWP). By comparing each gas's GWP to that of carbon dioxide (CO₂) we are able to derive a carbon dioxide equivalent value (CO₂e).



Section 2: Carbon Footprint Methodology

A carbon footprint is calculated by multiplying activity data (e.g. litres of vehicle fuel, kWh of electricity/gas) by an associated emissions factor:

- Where possible, real activity data should be collected throughout the reporting period for use in the footprint calculation.
- Emission factors are updated annually and published by the UK Government's department for Business, Energy and Industrial Strategy (BEIS).

If activity data is not available, various benchmarks and proxies can be used:

- Benchmarks can be used to approximate activity data. For example, typical electricity consumption per m² of a building.
- When input data is scarce, proxy factors can be used in place of the BEIS factors to approximate emissions from the available input data (e.g. contract value).

Emissions are calculated by multiplying activity data by an emissions factor: 

Input/ activity data x **Carbon factor** = **Carbon emissions (kgCO₂e)**

- | | |
|--|---|
| <ul style="list-style-type: none"> kWh (utilities) Litres or km (fuel) | <ul style="list-style-type: none"> BEIS factor (kgCO₂e/unit) |
| <ul style="list-style-type: none"> £ (contract value) m² (floor area) | <ul style="list-style-type: none"> Proxy factor e.g. (kgCO₂e/£ spent) |

General calculation methodology to calculate carbon emissions

Section 2: Carbon Footprint Methodology

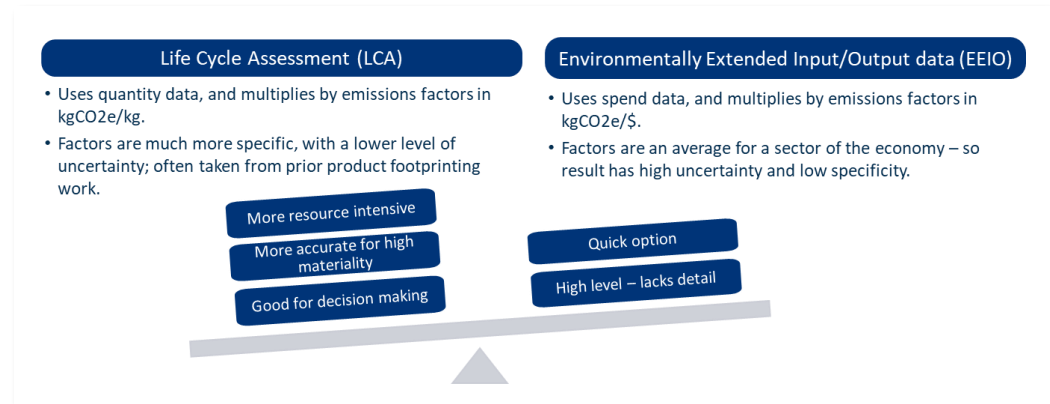


If there is good volumetric data and LCA emission factors, these will be used in preference to spend data and EEIO factors. However, for areas of lower materiality, it will be acceptable to use spend based data.

Overall, most of the data provided for the USW's carbon footprint was sourced from direct activity data. Contracts and commuting were the only categories where proxy factors and benchmarks were used to calculate emissions. This is common practice when undertaking a first carbon footprint.

The carbon footprint is calculated by multiplying the spend data on each contract (e.g. staff recruitment, stationary) by an associated Environmentally Extended Input / Output data (EEIO) emissions factor. EEIO uses the OPEN IO database originally developed by the University of Arkansas and further developed by the Carbon Trust.

Utilising EEIO proxy factors allows USW to gain an initial understanding of the highest impact contracts have on scope 3 emissions. The University can then target these contracts for enhanced scope 3 footprinting (more detail in next steps) in the future, working with suppliers to understand 'true' emissions from a contract or service and instilling good practice to decrease the carbon footprint.

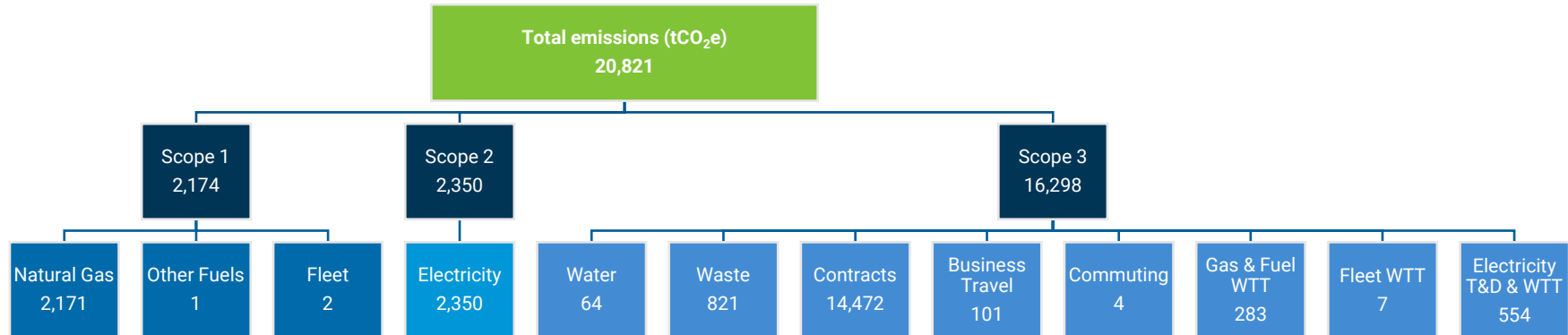


Section 3: University of South Wales Footprint FY 20/21

In the 12 month period Apr' 2020 – Mar' 2021, **20,821 tCO₂e** were emitted from the University's own operations and associated activities.

- **Scope 1:** gas and other fuels (primarily for heating buildings) and transport fuel consumption in the University's own fleet;
- **Scope 2:** electricity consumption within USW buildings used by USW staff and students;
- **Scope 3:** waste generation, water supply and treatment (arising from USW operated buildings), business travel (arising from journeys completed by USW staff and post vehicles), commuting and procured services and products (i.e. contracts).

There is a breakdown analysis for each category in the following slides.

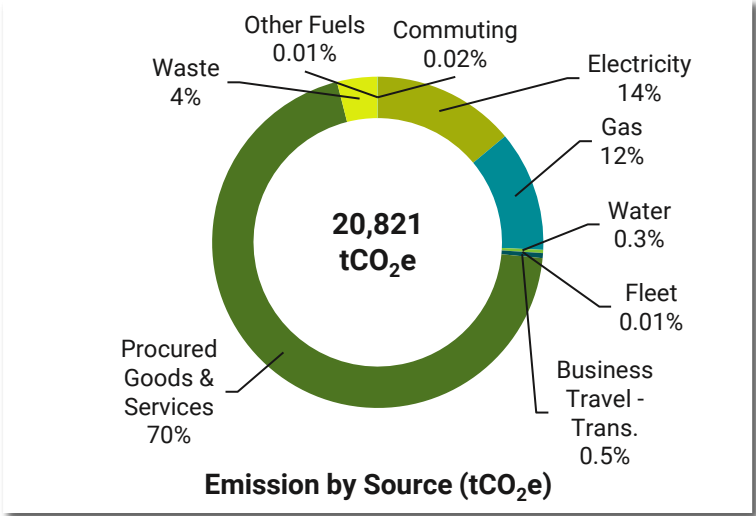
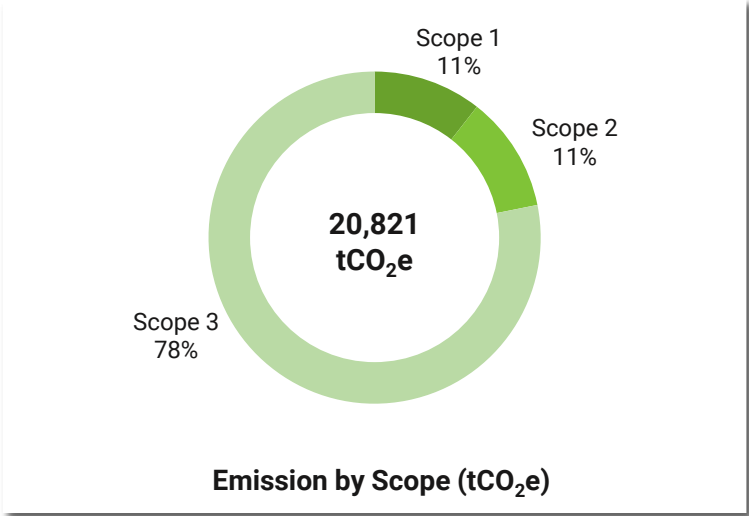


Section 3: University of South Wales Footprint FY 20/21

USW's footprint is primarily made up from three emission categories, so-called emission hotspots:

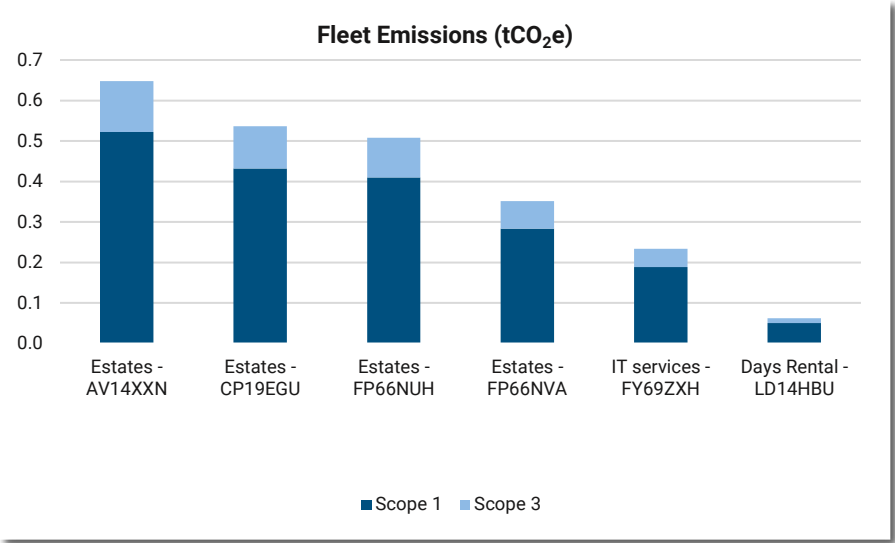
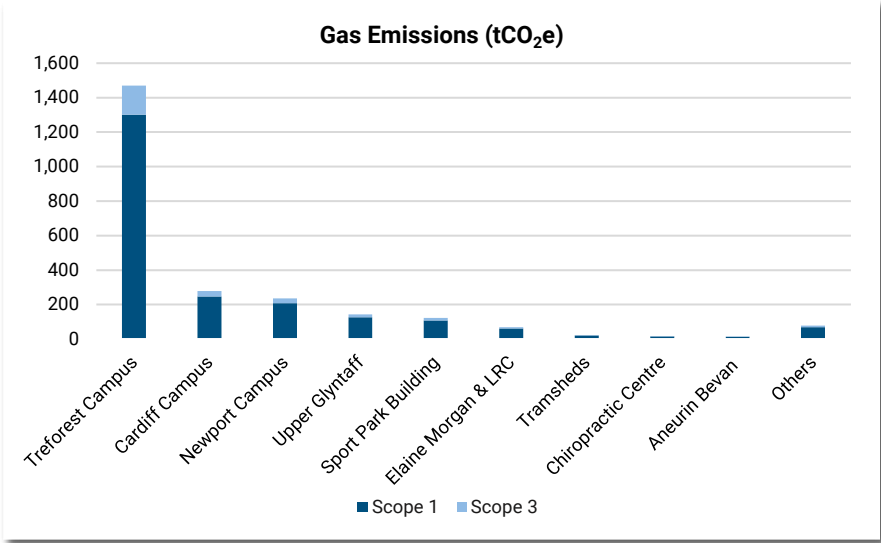
- 70% of emissions are associated with Procured Goods and Services for university operations
- 14% of emissions from electricity consumption in the university-controlled buildings
- 12% of emissions come from gas consumption used mainly for heating the university-controlled buildings

These emission hotspots could be the priority for the university to consider initial reduction activities.



Section 3: Emissions Breakdown – Natural Gas, Other Fuels & Fleet (Scope 1)

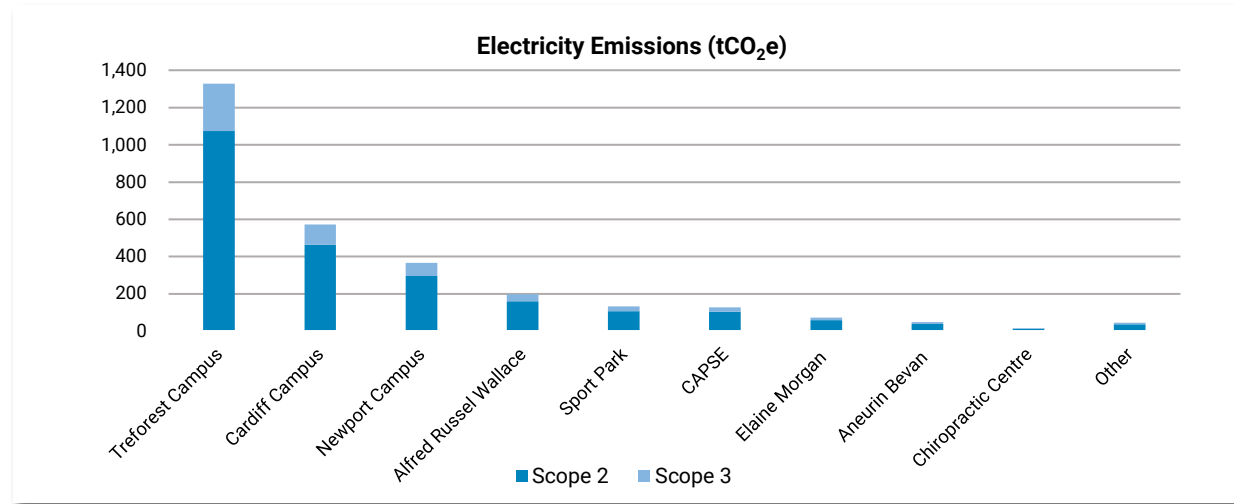
- Scope 1 emissions are a result of the direct burning of fossil fuels by the university.
- This arises from the owned fleet which burn petrol and diesel, as well as heating university operated buildings.
- **Total scope 1 emissions are 2,174 tCO₂e.**
- Associated scope 3 well-to-tank (WTT) emissions are also included in tables below.
- Electrification of heating or switching to low / zero carbon fuels for the university owned transport fleet will be the main option to move towards carbon neutrality in this area.
- It should be noted that 1.6 tCO₂e were also emitted this year from temporary diesel generators.





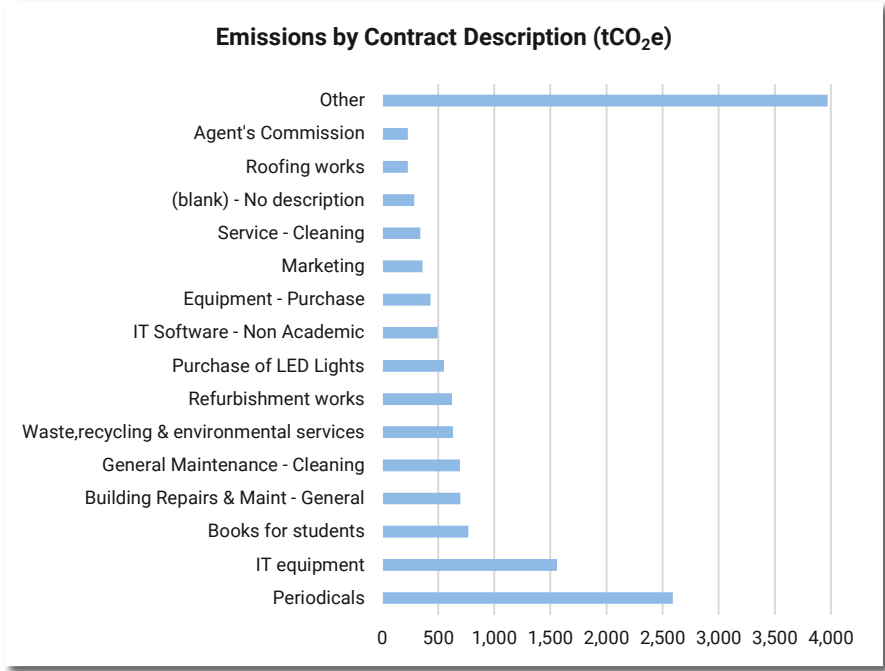
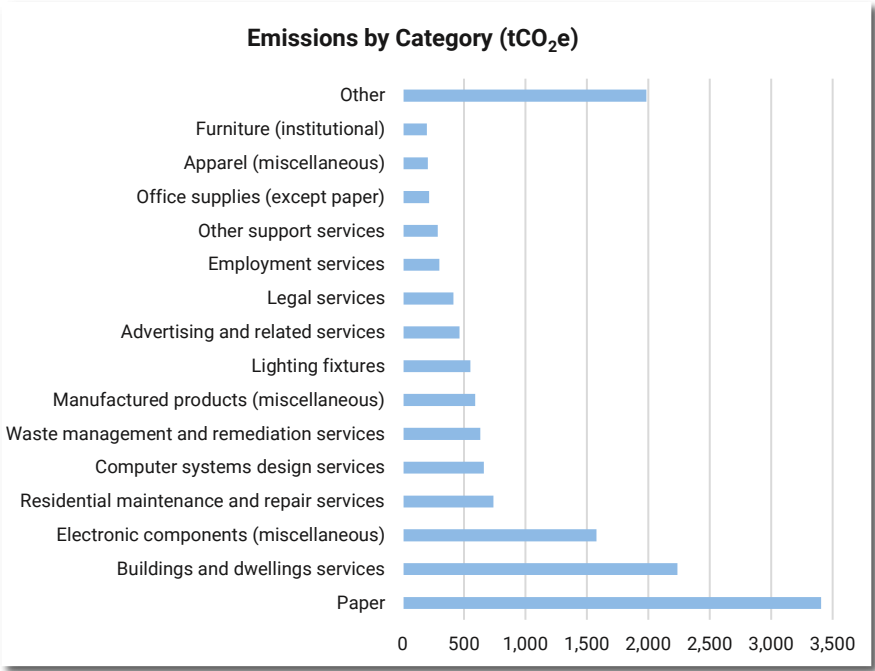
Section 3: Emissions Breakdown – Electricity (Scope 2)

- Scope 2 emissions are a result of electricity consumption by the university.
- The emissions are associated with the generation, transmission and distribution (T&D) of electricity.
- Associated scope 3 emissions from T&D losses and WTT footprint are also included in the graph below.
- Scope 2 emissions will naturally decrease over time as a result of the ongoing decarbonisation of the electricity in the grid. However, further efforts to reduce scope 2 emissions from on site renewables and energy efficiency measures are important to reduce stress on the national grid, speed up decarbonisation and help to mitigate any increases in electricity prices.
- **Total scope 2 emissions are 2,350 tCO₂e.**



Section 3: Emissions Breakdown – Contracts (Scope 3)

- It is not uncommon for emissions associated with contracts to contribute to a high proportion of scope 3 emissions. Most organisations undertaking scope 3 measurements will see that procured goods and services (contracts) emissions are the highest contributor.
- Despite being an indirect source, the university is still able to influence contractual emissions. This can be achieved through requiring minimum sustainability/environmental standards when procuring contracts; it is advised that sustainability be a core metric to consider when renewing all contracts.
- Total scope 3 emissions from procured goods and services are 14,472 tCO₂e.**



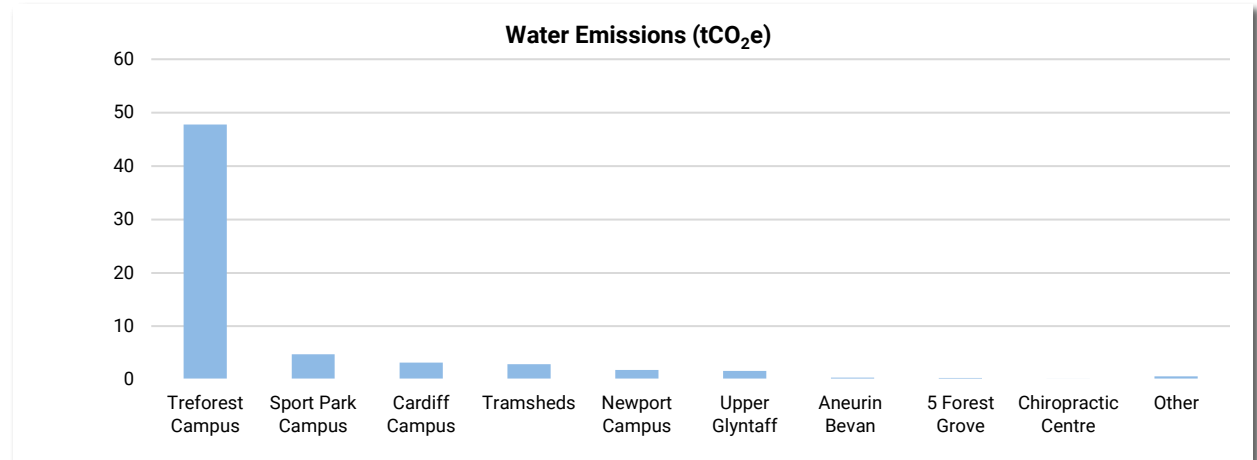
Section 3: Emissions Breakdown – Water (Scope 3)

Water emissions are produced by the direct supply of water to university buildings and the treatment of water after being used on site.

Simple water efficiency measures can be put in place to reduce water demand:

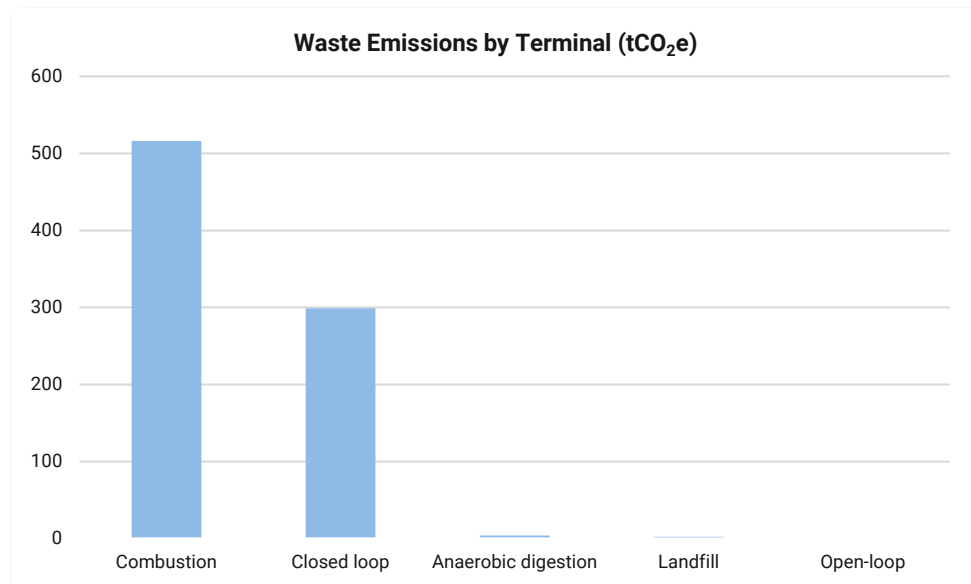
- low-flow toilets,
- push button/sensor taps,
- tap and showerhead aerators,
- rainwater harvesting.

Total scope 3 emissions from water usage is 64 tCO₂e.



Section 3: Emissions Breakdown – Waste (Scope 3)

- Waste emissions are caused by the type and amount of a waste stream and its waste terminal (AD, incineration, recycling, landfill etc.). Sending waste to landfill has the highest associated emission factor.
- To reduce emissions from waste disposal, an effective waste management protocol needs to be put in place. This should follow the waste hierarchy of 'Reduce, Reuse, Recycle' across all forms of waste.
- The data collection has been improved this year and that is reflected in the increased associated emissions from waste.
- Total scope 3 emissions from waste is 821 tCO₂e.**



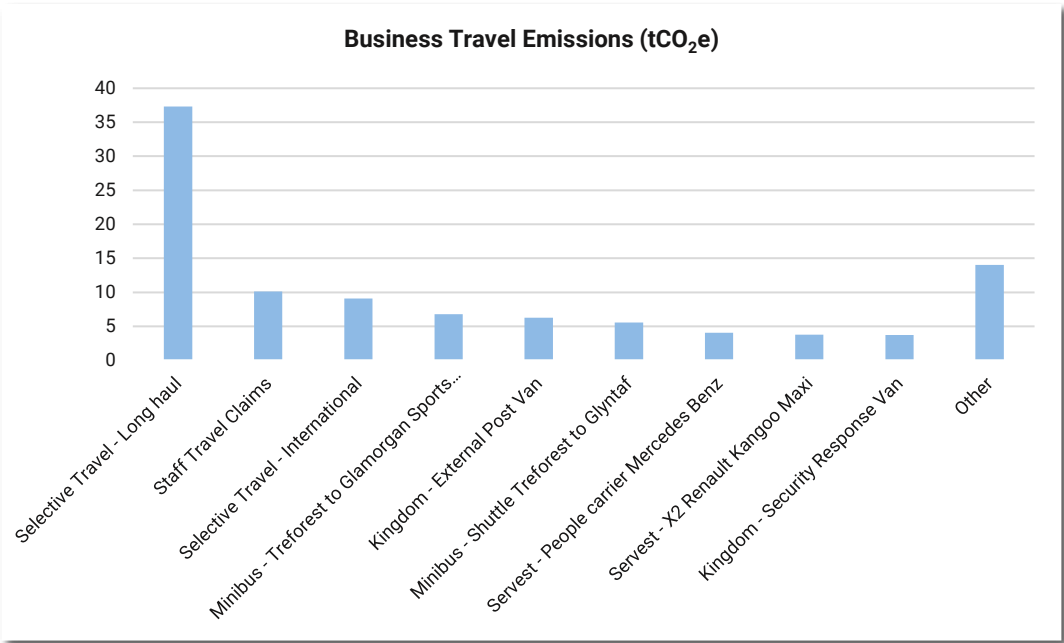
Waste Terminal	Sum of Mass (kg)
Combustion	24,214,807
Closed Loop Recycling	14,022,089
Anaerobic Digestion	384,727
Landfill	5,000
Open Loop Recycling	3,568



Section 3: Emissions Breakdown – Business Travel

Business travel emissions have decreased considerably since the last carbon footprint was undertaken. The primary reason being the shutdown during the pandemic. However, it should be noted that a lot of the suggested solutions to reduce carbon emissions in this area – remote working, online meetings – have been naturally accelerated as a normal process in most organisations. USW should be mindful of this change and keep these processes in place as we move out of the pandemic, as well as looking to develop them further.

Total scope 3 emissions from business travel is 101 tCO₂e.



Remote working



Encourage use of public transport



Car sharing incentives



Video conferencing



Employee engagement



Electric vehicle charging points

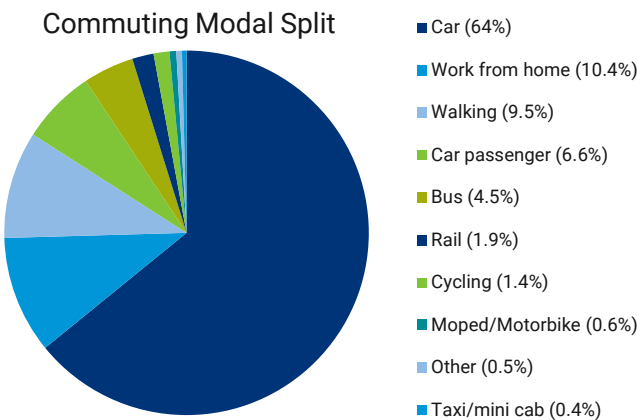




Section 3: Emissions Breakdown – Commuting

Staff commuting data was unavailable at the time of the footprint, so commuting benchmarks published in the Welsh Public Sector Net Zero Carbon Reporting Guide were used. These base mileages on an average commuting mileage in Wales of 9.5 miles and average modal splits shown in the graph below. Based on this methodology, it is estimated that staff commuting contributed **4 tCO₂e** to the overall footprint. Going forward, USW should improve this emission calculation through undertaking an annual staff survey to obtain relevant and accurate data.

In light of the pandemic, Welsh Government have set a long-term ambition for 30% of Welsh workers to work from home or close to home. USW should where possible, look to continue with working practices adopted during the pandemic and re-evaluate the need for staff to always work onsite. Where commuting cannot be avoided, measures to tackle these emissions include encouraging staff to change their mode of transport. This can be achieved through providing and encouraging use of a cycle to work scheme and facilitating access to public transport services and EV charge points. **It should be noted that commuting emissions from students has been excluded under the new reporting guidance.**



Section 4: Next Steps - Monitoring and Reporting

Once a carbon footprint has been measured and a target set, measuring progress is an important part of implementation. Monitoring and reporting are essential activities that should be undertaken at least annually between the baseline year and target year, and beyond. Welsh public sector organisations are now required to submit their carbon footprint to Welsh Government on an annual basis, following the release of the 'Public Sector Net Zero Reporting Guide' in May 2021.

Monitoring

Collecting the data should be completed internally on a regular basis. This process should become streamlined as the necessary data sources and associated contacts / owners become familiar with the process and adopt best practice data management.

As USW becomes increasingly familiar with the process required to complete a carbon footprint, and is able to instil a strong data collection framework, they can begin to look to expand their footprint to cover all emission sources and revisit existing sources to make them more accurate and less reliant on benchmarks and estimates.

Not only does the footprint need to be monitored but progress with implementing carbon reduction opportunities should be actively monitored too, including implementation year, energy reduction and cost savings. In this way, successful projects can be reported on in a quantitative as well as a qualitative way. This can help to drive momentum and support securing budget towards future measures.

In addition to monitoring the footprint itself, USW should continually monitor how local plans and policies will affect USW's footprint and affect USW's ability to reach respective carbon reduction targets. This will help the project team to identify other potential carbon reduction opportunities and ensure that any carbon reduction co-benefits of specific policies can be delivered.



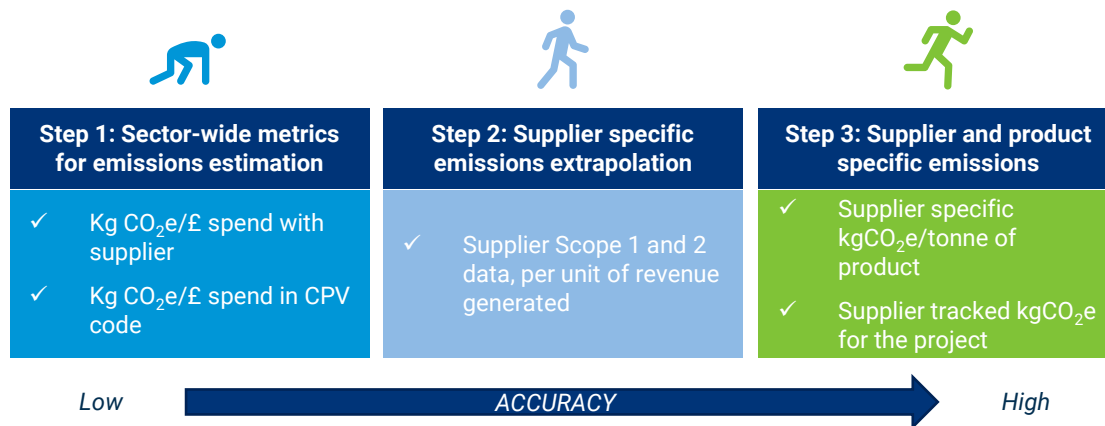
Next Steps – Enhanced Footprinting

Future carbon footprinting carried out by USW should look to extend the footprint boundary to accurately include all scope 3 emissions (e.g. staff commuting).

USW can also aim to enhance their scope 3 footprint by moving away from proxy values (EEIO and benchmarks of kgCO₂e/£ spent) to real, more precise data, as shown in the schematic below.

Emission factors can be developed from scope 1 and 2 footprint of individual contractors and suppliers. This creates an inventory of supply chain emissions, which can be updated at regular intervals.

Furthermore, USW could look to develop appropriate metrics for measuring the performance of key suppliers dependent on their service/product. For example, the performance metric for construction could be kgCO₂e/km of road laid or m² of building completed.



Develop a process to actively reduce contract emissions

USW should actively engage with contractors and the supply chain to:

- Start documenting their carbon footprints
- Ask contractors to set emissions reduction targets
- Assess the necessity of certain suppliers/contractors

Furthermore, USW should set criteria when determining future contractors and suppliers. Examples may include:

- Mandatory reporting of Scope 1 & 2 emissions
- Suppliers must have emission reduction targets
- Suppliers must hold environmental/sustainability standards e.g. ISO 50001 (Energy Management), ISO14001 (Environmental Management) ISO 20121 (Sustainable Events), PAS 2050 and/or 2060, or Green Dragon
- Use of the Better Buying Index

Reference Material

- Energy, vehicle mileage, utilities data, contract values – University of South Wales
- Emission Factors – BEIS <https://www.gov.uk/government/collections/government-conversion-factors-for-company-reporting>
- GHG Protocol scope 3 guidance https://ghgprotocol.org/sites/default/files/standards/Scope3_Calculation_Guidance_0.pdf
- UK consumption and emission factors projections – National Grid Future Energy Scenarios <https://www.nationalgrideso.com/future-energy/future-energy-scenarios>
- Policies – Climate Change Committee <https://www.theccc.org.uk/publication/net-zero-the-uks-contribution-to-stopping-global-warming/>
- Policies - Welsh Government <https://gov.wales/welsh-public-sector-be-carbon-neutral-2030>
- Welsh Carbon Reporting Guidance – Welsh Government: <https://gov.wales/public-sector-net-zero-reporting-guide>

Appendix – Carbon Inventory

Natural Gas

ID	Site	Scope 1 (tCO ₂)	Scope 3 (tCO ₂)	Total (tCO ₂)
1	Treforest Campus	1,300.6	169.1	1,469.8
2	Cardiff Campus	247.4	32.2	279.5
3	Newport Campus	208.6	27.1	235.7
4	Anzani House	129.8	16.9	146.6
5	Sport Park Building	108.8	14.1	122.9
6	Upper Glyntaff	61.0	7.9	69.0
7	Tramsheds	20.1	2.6	22.7
8	Chiropractic Centre	15.2	2.0	17.2
9	Aneurin Bevan	12.8	1.7	14.5
10	Innovation House	10.6	1.4	12.0
11	Endeavour House	8.0	1.0	9.0
12	8 Forest Grove	6.8	0.9	7.7
13	Prospect House	5.9	0.8	6.6
14	6 Forest Grove	5.6	0.7	6.3
15	3 Forest Grove	4.6	0.6	5.2
16	1 Llantwit Road	3.9	0.5	4.4
17	Baglan Hydrogen Centre	3.7	0.5	4.2
18	3 Llantwit Road	3.4	0.4	3.8
19	5 Llantwit Road	3.2	0.4	3.7
20	4 Forest Grove	2.3	0.3	2.6
21	7 Forest Grove	2.3	0.3	2.6
22	Professor Bernard Knight	2.0	0.3	2.3
23	2 Forest Grove	1.9	0.2	2.1
24	5 Forest Grove	1.7	0.2	1.9
25	Elaine Morgan Kitchen	0.8	0.1	0.9

Appendix – Carbon Inventory

Fleet

ID	Type	Scope 1 (tCO ₂)	Scope 3 (tCO ₂)	Total (tCO ₂)
1	Estates - AV14XXN	0.52	0.13	0.65
2	Estates - CP19EGU	0.43	0.10	0.54
3	Estates - FP66NUH	0.41	0.10	0.51
4	Estates - FP66NVA	0.28	0.07	0.35
5	IT services - FY69ZXH	0.19	0.05	0.23
6	Days Rental - LD14HBU	0.05	0.01	0.06

Other Fuels

ID	Type	Scope 1 (tCO ₂)	Scope 3 (tCO ₂)	Total (tCO ₂)
1	Hired Generator for Newport Campus	0.7	0.2	0.9
2	Hired Generator for CAPSE	0.6	0.1	0.7

Appendix – Carbon Inventory

Electricity

ID	Type	Scope 2 (tCO ₂)	Scope 3 (tCO ₂)	Total (tCO ₂)
1	Treforest Campus	1,074.3	253.4	1,327.7
2	Cardiff Campus	463.4	109.3	572.7
3	Newport Campus	295.7	69.8	365.5
4	Alfred Russel Wallace	159.8	37.7	197.5
5	Sport Park	107.5	25.4	132.9
6	CAPSE	103.2	24.3	127.5
7	Elaine Morgan	58.3	13.8	72.1
8	Aneurin Bevan	38.6	9.1	47.8
9	Chiropractic Centre	12.1	2.9	15.0
10	Tramsheds	9.5	2.2	11.7
11	8 Forest Grove	6.0	1.4	7.5
12	Innovation House	3.2	0.7	3.9
13	Anzani House	2.5	0.6	3.1
14	Prospect House	2.4	0.6	3.0
15	Students Car Park	2.1	0.5	2.6
16	Baglan Hydrogen Centre	1.7	0.4	2.1
17	1 Llantwit Road	1.7	0.4	2.1
18	7 Forest Grove	1.6	0.4	2.0
19	4 Forest Grove	1.3	0.3	1.6
20	2 Forest Grove	1.0	0.2	1.2
21	3 Forest Grove	0.8	0.2	1.0
22	5 Llantwit Road	0.7	0.2	0.9
23	6 Forest Grove	0.7	0.2	0.9
24	Professor Bernard Knight	0.6	0.1	0.7
25	5 Forest Grove	0.4	0.1	0.5
26	3 Llantwit Road	0.3	0.1	0.3
27	1 Forest Grove	0.02	0.01	0.03

Appendix – Carbon Inventory

Water

ID	Type	Scope 3 (tCO ₂)	Total (tCO ₂)
1	Treforest Campus	47.8	47.8
2	Sport Park Campus	4.8	4.8
3	Cardiff Campus	3.2	3.2
4	Tramsheds	2.9	2.9
5	Newport Campus	1.8	1.8
6	Upper Glyntaff	1.7	1.7
7	Aneurin Bevan	0.3	0.3
8	5 Forest Grove	0.3	0.3
9	Chiropractic Centre	0.1	0.1
10	6 Forest Grove	0.1	0.1
11	3 Forest Grove	0.1	0.1
12	Endeavour House	0.1	0.1
13	Anzani House	0.1	0.1
14	8 Forest Grove	0.05	0.05
15	7 Forest Grove	0.04	0.04
16	1 Llantwit Road	0.04	0.04
17	Innovation House	0.03	0.03
18	Prospect House	0.03	0.03
19	Baglan Hydrogen Centre	0.03	0.03
20	2 Forest Grove	0.02	0.02
21	5 Llantwit Road	0.02	0.02
22	3 Llantwit Road	0.01	0.01
23	4 Forest Grove	0.01	0.01
24	1 Forest Grove	-	-

Appendix – Carbon Inventory

Contracts

ID	Category	Contract Description	Scope 3 (tCO ₂)	Total (tCO ₂)
1	Paper	Periodicals	2,590.3	2,590.3
2	Electronic components (miscellaneous)	IT equipment	1,558.8	1,558.8
3	Paper	Books for students	769.8	769.8
4	Buildings and dwellings services	Building Repairs & Maint - General	698.8	698.8
5	Residential maintenance and repair services	General Maintenance - Cleaning	694.3	694.3
6	Waste management and remediation services	Waste, recycling & environmental services	633.2	633.2
7	Buildings and dwellings services	Refurbishment works	622.6	622.6
8	Lighting fixtures	Purchase of LED Lights	553.0	553.0
9	Computer systems design services	IT Software - Non Academic	494.4	494.4
10	Manufactured products (miscellaneous)	Equipment - Purchase	433.6	433.6
11	Advertising and related services	Marketing	361.6	361.6
12	Buildings and dwellings services	Service - Cleaning	340.1	340.1
13	Other support services	(blank) - No description	287.6	287.6
14	Buildings and dwellings services	Roofing works	231.0	231.0
15	Employment services	Agent's Commission	230.7	230.7
16	Legal services	Franchise Fees - Home	215.4	215.4
17	Buildings and dwellings services	Construction works	201.7	201.7
18	Office supplies (except paper)	Consumables Academic	197.3	197.3
19	Computer systems design services	IT Software - Academic	167.7	167.7
20	Manufactured products (miscellaneous)	Miscellaneous	157.9	157.9
21	Furniture (institutional)	Furniture	148.7	148.7
22	Buildings and dwellings services	Building surveys	142.8	142.8
23	Laboratory instruments (analytical)	Lab Equipment	138.4	138.4
24	Securities, commodity contracts, investments, and related activities	Security services - General	127.1	127.1
25	Professional, scientific, and technical services (miscellaneous)	Subscriptions	125.7	125.7

Appendix – Carbon Inventory

Contracts

ID	Category	Description	Scope 3 (tCO ₂)	Total (tCO ₂)
26	Audio and video equipment	Audio equipment	105.4	105.4
27	Apparel (miscellaneous)	Protected Personal Equipment	98.3	98.3
28	Legal services	Legal and Professional fees	91.6	91.6
29	Electrical equipment and components (miscellaneous)	EV Charger	91.1	91.1
30	Computer related services, including facilities management	IT Equipment maintenance	89.6	89.6
31	Management, scientific, and technical consulting services	Consultancy	87.0	87.0
32	Commercial and industrial machinery and equipment rental and leasing services	Equipment maintenance	85.1	85.1
33	Mineral wool (Insulation)	Pipe insulation	82.8	82.8
34	Apparel (miscellaneous)	Health and safety materials	80.6	80.6
35	Computer related services, including facilities management	IT Hardware - Non Academic	78.7	78.7
36	Advertising and related services	Advertising	70.7	70.7
37	Stationery products	Stationery	65.0	65.0
38	Electronic and precision equipment repair and maintenance services	Mechanical and Electrical works	54.1	54.1
39	Employment services	Agency Staff	53.2	53.2
40	Funds, trusts, and other financial vehicles	Insurance	49.9	49.9
41	Mineral wool	Thermal insulation	48.1	48.1
42	Audio and video equipment	Camera equipment	48.0	48.0
43	Motorcycles, bicycles, and parts	Purchase of Bicycle	47.9	47.9
44	Paper	Books for general use	46.1	46.1
45	Automobiles	EV car purchase	44.8	44.8
46	Residential maintenance and repair services	General Maintenance - Grounds	41.2	41.2
47	Legal services	Franchise Fees – Part Time Credits	40.3	40.3
48	Batteries (storage)	Battery	40.0	40.0
49	Software publishers	Software Licence	39.0	39.0
50	Furniture (institutional)	Massage table	32.6	32.6

Appendix – Carbon Inventory

Contracts

ID	Category	Description	Scope 3 (tCO ₂)	Total (tCO ₂)
51	Flat glass	Glass Door	32.1	32.1
52	Advertising and related services	Publicity and Sponsorship	29.3	29.3
53	Apparel (miscellaneous)	Staff Uniforms	26.9	26.9
54	Legal services	Copyright Licences	25.6	25.6
55	Sporting and athletic goods	Student Sport Kit Cost	24.2	24.2
56	Computer related services, including facilities management	IT Hardware - Academic	23.9	23.9
57	Grantmaking, giving, and social advocacy organizations	Student related fees payable	23.5	23.5
58	Postal services	Postage	21.7	21.7
59	Office administrative services	Licences	21.1	21.1
60	Food (miscellaneous)	Catering - Provisions	20.5	20.5
61	Soft drinks and ice	Catering - Soft Drinks	20.3	20.3
62	Educational services	Fees Payable - External Lecturers	20.3	20.3
63	Grantmaking, giving, and social advocacy organizations	Student Placement Fees	19.9	19.9
64	Electronic components (miscellaneous)	Electrical equipment	19.8	19.8
65	Air conditioning, refrigeration, and warm air heating equipment	Air Conditioning	18.3	18.3
66	Office supplies (except paper)	Consumables Non Academic	18.2	18.2
67	Legal services	Registration fees	17.0	17.0
68	Furniture (institutional)	Non capital - Furniture	17.0	17.0
69	Legal services	Franchise Fees - Overseas	17.0	17.0
70	Commercial and industrial machinery and equipment repair and maintenance services	Air Con Servicing Misc	16.3	16.3
71	Professional, scientific, and technical services (miscellaneous)	Non Academic Staff Development - Home	15.9	15.9
72	Plastics products (miscellaneous)	Medical dummy (Plastic)	11.2	11.2
73	Automotive repair and maintenance, except car washes	Auto Door Maintenance Misc	11.0	11.0
74	Commercial and industrial machinery and equipment rental and leasing services	Equipment Hire	10.9	10.9
75	Travel arrangement and reservation services	Travel and Subsistence - Overseas	10.4	10.4

Appendix – Carbon Inventory

Contracts

ID	Category	Description	Scope 3 (tCO ₂)	Total (tCO ₂)
76	Telecommunications services	Mobile Communications	10.2	10.2
77	Employment services	Agency Employment	10.0	10.0
78	Electronic and precision equipment repair and maintenance services	Lift Maintenance Contract	9.9	9.9
79	Environmental and other technical consulting services	Service - Consultant	9.4	9.4
80	Accounting, tax preparation, bookkeeping, and payroll services	Audit Fees	9.4	9.4
81	Professional, scientific, and technical services (miscellaneous)	Translation Costs	9.3	9.3
82	Data processing, hosting, and related services	Data Comms - Rental	9.2	9.2
83	Food (miscellaneous)	Catering - Disposables	8.8	8.8
84	Environmental and other technical consulting services	Legionella Contract	8.5	8.5
85	Telecommunications services	Telephone	8.3	8.3
86	Educational services	Academic Staff Development - Home	8.0	8.0
87	Accommodation services	Residential Cost	6.9	6.9
88	Legal services	Accreditation Fees	6.7	6.7
89	Printing services	Printing	6.6	6.6
90	Environmental and other technical consulting services	Consultant	6.5	6.5
91	Oil and gas operations support activities	Gas Servicing Contract	6.1	6.1
92	Travel arrangement and reservation services	Travel and Subsistence - Home	6.0	6.0
93	Religious organizations	Religious services	6.0	6.0
94	Electronic and precision equipment repair and maintenance services	Lift Maintenance Misc	5.9	5.9
95	Commercial and industrial machinery and equipment repair and maintenance services	Air Con Servicing Contract	5.9	5.9
96	Securities, commodity contracts, investments, and related activities	Investment Fees	5.6	5.6
97	Travel arrangement and reservation services	Field Trips - UK	5.6	5.6
98	Independent artists, writers, and performers	Artwork and Design including Printing	5.5	5.5
99	Employment services	Staff Recruitment	5.3	5.3
100	Scientific research and development services	Research overheads - Recoverable	4.7	4.7

Appendix – Carbon Inventory

Contracts

ID	Category	Description	Scope 3 (tCO ₂)	Total (tCO ₂)
101	Facilities support services	Telephone Maintenance and Installation	4.0	4.0
102	Educational services	External Examiner expenses	3.5	3.5
103	Automotive repair and maintenance, except car washes	Vehicle Costs - Repairs & Maintenance	3.4	3.4
104	Biological products (except diagnostic)	Catering - Chemicals	3.3	3.3
105	Data processing, hosting, and related services	Data Comms - Maintenance & Installation	3.3	3.3
106	Automotive equipment rental and leasing services	Hire of facilities	2.8	2.8
107	Advertising and related services	Staff recruitment - advertising	2.7	2.7
108	Facilities support services	External works	2.6	2.6
109	Environmental and other technical consulting services	Legionella Misc	2.5	2.5
110	Residential maintenance and repair services	Plumbing works	2.4	2.4
111	Accounting, tax preparation, bookkeeping, and payroll services	Debt Recovery	1.9	1.9
112	Data processing, hosting, and related services	Non Book Materials	1.9	1.9
113	Travel arrangement and reservation services	Field Trips - Overseas	1.8	1.8
114	Educational services	Student Training Allowances	1.8	1.8
115	Electrical equipment and components (miscellaneous)	Alarms	1.6	1.6
116	Residential maintenance and repair services	Carpentry works	1.6	1.6
117	Office administrative services	Retirement Admin Fees	1.5	1.5
118	Architectural, engineering, and related services	Contractor - Project Management	1.4	1.4
119	Hotels and motels, including casino hotels	Hospitality	1.4	1.4
120	Travel arrangement and reservation services	Industrial training visits	1.4	1.4
121	Paints and coatings	Glazing	1.4	1.4
122	Performing arts services	Performing Arts & Entertainment Services	1.3	1.3
123	Educational services	Students Union Subvention	1.2	1.2
124	Semiconductor and related devices	Access control	1.1	1.1
125	Automotive repair and maintenance, except car washes	Auto Door Maintenance Contract	1.0	1.0

Appendix – Carbon Inventory

Contracts

ID	Category	Description	Scope 3 (tCO ₂)	Total (tCO ₂)
126	Confectionery from purchased chocolate	Catering - Confectionery	0.9	0.9
127	Dry-cleaning and laundry services	Laundry	0.9	0.9
128	Grantmaking, giving, and social advocacy organizations	Prize Award Payments	0.9	0.9
129	Educational services	External Examiners Costs	0.7	0.7
130	Electronic and precision equipment repair and maintenance services	PAT Testing	0.6	0.6
131	Oil and gas operations support activities	Gas Servicing Misc.	0.6	0.6
132	Electronic components (miscellaneous)	Electronics	0.5	0.5
133	Educational services	Academic Staff Development - Overseas	0.4	0.4
134	Environmental and other technical consulting services	Lighting work	0.4	0.4
135	Educational services	Training	0.4	0.4
136	Grantmaking, giving, and social advocacy organizations	Welsh National Bursary Scheme	0.3	0.3
137	Soft drinks and ice	Catering - Vending Machine Supplies	0.3	0.3
138	Handtools (power driven)	Work tools	0.3	0.3
139	Residential maintenance and repair services	Decoration works	0.3	0.3
140	Securities, commodity contracts, investments, and related activities	Security call outs	0.2	0.2
141	Food services and drinking places	Catering - Charges	0.2	0.2
142	Food services and drinking places	Catering	0.2	0.2
143	Investigation and security services	Mansafe Servicing Misc	0.2	0.2
144	Amusement and recreation industries	Arts and collectables	0.1	0.1
145	Grantmaking, giving, and social advocacy organizations	Student Bursaries and Contribution	0.1	0.1
146	Monetary authorities and depository credit intermediation	Foreign Exchange Differences	0.1	0.1
147	Environmental and other technical consulting services	Environmental consultancy	0.1	0.1
148	Food (miscellaneous)	Retail stock for resale	0.1	0.1
149	Facilities support services	Use of Conference Centre	0.1	0.1
150	Automotive equipment rental and leasing services	Vehicle Costs - Vehicle licences	0.1	0.1

Appendix – Carbon Inventory

Contracts

ID	Category	Description	Scope 3 (tCO ₂)	Total (tCO ₂)
151	Independent artists, writers, and performers	Artwork and Design	0.1	0.1
152	Other support services	Consultancy	0.03	0.03
153	Grantmaking, giving, and social advocacy organizations	Tuition Fee - Discounts Allowed	0.02	0.02
154	Accounting, tax preparation, bookkeeping, and payroll services	Bank Charges	0.003	0.003

Business Travel

ID	Type	Scope 3 (tCO ₂)	Total (tCO ₂)
1	Selective Travel - Long haul	37.31	37.31
2	Staff Travel Claims	10.11	10.11
3	Selective Travel - International	9.10	9.10
4	Minibus - Treforest to Glamorgan Sports Park	6.79	6.79
5	Kingdom - External Post Van	6.29	6.29
6	Minibus - Shuttle Treforest to Glyntaf	5.55	5.55
7	Servest - People carrier Mercedes Benz	4.08	4.08
8	Servest - X2 Renault Kangoo Maxi	3.77	3.77
9	Kingdom - Security Response Van	3.71	3.71
10	Fuel Card - Diesel	3.53	3.53
11	Day Rentals	3.42	3.42
12	Servest - Ford Transit	1.90	1.90
13	Key travel - Long haul	1.70	1.70
14	Kingdom - Internal Post Van	1.51	1.51
15	Selective Travel - Short Haul	1.26	1.26
16	Fuel Card - Unleaded	0.72	0.72

Appendix – Carbon Inventory

Waste

ID	Site	Terminal	Scope 3 (tCO ₂)	Total (tCO ₂)
1	Accommodation	Combustion	485.5	485.5
2	CAPSE Baverstock	Closed Loop	181.4	181.4
3	Accommodation	Closed Loop	105.0	105.0
4	Treforest	Combustion	16.3	16.3
5	Sports Park	Combustion	9.3	9.3
6	Treforest	Closed Loop	5.2	5.2
7	Sports Park	Closed Loop	4.6	4.6
8	Accommodation	Anaerobic digestion	3.9	3.9
9	CAPSE Baverstock	Combustion	2.6	2.6
10	Chiropractic Clinic	Closed Loop	2.6	2.6
11	CAPSE Baverstock	Landfill	2.3	2.3
12	Chiropractic Clinic	Combustion	1.9	1.9
13	Cardiff Atrium	Combustion	0.2	0.2
14	Glyntaff	Combustion	0.2	0.2
15	Cardiff Atrium	Closed Loop	0.2	0.2
16	Various - WEEE	Open-loop	0.1	0.1
17	Newport	Combustion	0.1	0.1
18	CAPSE Baverstock	Anaerobic digestion	0.1	0.1
19	Newport	Closed Loop	0.04	0.04
20	Treforest	Anaerobic digestion	0.02	0.02
21	Glyntaff	Anaerobic digestion	0.003	0.003
22	Newport	Anaerobic digestion	0.001	0.001
23	Cardiff Atrium	Anaerobic digestion	0.0004	0.0004

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