

University of South Wales Prifysgol De Cymru



Proffesiynol
Professional



Ymatebol
Responsive



Creadigol
Creative



Ysbrydoledig
Inspiring



Cydweithredol
Collaborative

USW CARBON STRATEGY 2020 - 2030

Estates and Facilities

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Executive Summary

Climate change is widely accepted as one of the greatest challenges facing the world today. The University of South Wales (USW) like all institutions has a responsibility to address decarbonisation and to meet the UK and Welsh Government's decarbonisation targets. Our carbon strategy has been produced to complement our USW 2030 strategy and will enable the university to achieve our vision to be carbon neutral by 2040.

This strategy proposes that:

- A sustainability committee is formed to enable carbon reduction activity to be resourced, measured and reduced throughout the university.
- Targets are set for each university activity measured within our carbon footprint.
- We deliver these targets and achieve our vision for carbon neutrality by following the USW Carbon Roadmap.
- A focus is placed on procurement, electricity and gas consumption, which create our largest emissions and will therefore require the most ambitious targets over the next 10 years.
- We continue to build on the positive progress made since the 2012/13 base year which has seen our Scope 1 and 2 (mainly gas and electricity) emissions reduced by 32%
- Each year our carbon footprint is updated to measure our emissions and the progress made to reduce them.
- Our achievements and institution emissions data is communicated annually to USW's board of governors, and published online for internal and external stakeholders to view.

Introduction

USW is a major player in UK higher education with campuses in Cardiff, Pontypridd and Newport. As a major university, we are aware of the significant carbon impact we can create on the local areas where our campuses are situated as well as the regional and global impact we create from our operations. Decarbonisation is recognised as an essential requirement to operate and maintain a sustainable university environment for all. The university, like all institutions has a responsibility to address decarbonisation and to meet the UK and Welsh Government's targets. We recognise this, and we are working to reduce our carbon emissions wherever possible.

In 2015 our USW Environmental Strategy was created and endorsed by our Vice Chancellor which set reduction targets against our energy, water, waste, travel, procurement, biodiversity, community involvement, construction and refurbishment, and emissions and discharge activities. Since its creation, we have achieved many reductions as outlined within this document. Our environmental strategy now requires review to ensure it is aligned with our recently created carbon footprint as well as UK and Welsh Government legislation. Therefore, it has been agreed that our environmental strategy will be replaced by our carbon strategy which will set strategic targets against the activities that need most focus on our journey to decarbonisation. This strategy will form the overarching governance of our carbon reduction activities and will enable a 10-year carbon roadmap to be produced that complements our USW 2030 Strategy. The roadmap will take direction from our carbon footprint and outline

clear, feasible and cost-effective actions the university can take to advance sustainability across our estate, governance, teaching and engagement, and respond impactfully to the climate emergency. The carbon roadmap accompanied by subsequent policies will provide more detail on how we plan to achieve our strategic targets over the next 10 years.

Legislative Drivers

The Welsh Government introduced the Environment Act 2016 with the intention to position Wales as a low carbon, green economy, ready to adapt to the impacts of climate change. Part 2 of this legislation focuses on climate change and carbon budgets, and includes a statutory emission reduction target. The Welsh Government has accepted a 95% reduction in greenhouse gas emissions by 2050 relative to 1990 emission levels, but wants to go further and achieve net zero by 2050, in line with the UK Government's Climate Change Act 2008 commitment. Furthermore, the Welsh Government has communicated its ambition for all public sector organisations to achieve net zero by 2030 and is therefore looking at this sector to drive Wales into a low carbon future.

Alongside the Environment Act, the Wellbeing of Future Generations Act 2015 and the Welsh Government's "Prosperity for All: A Low Carbon Wales" guidance sets out their approach to cut emissions and increase efficiency to maximise wider benefits for Wales, ensuring a fairer and healthier society by improving the social, economic, environmental and cultural well-being of Wales. The guidance includes over 100 policies and proposals that directly reduce emissions and support the growth of the low carbon economy.

The university supports the Welsh and UK Government Acts and the carbon management activities needed to decarbonise are embedded within our core values: to be professional, responsive, inspiring, creative and collaborative. Furthermore, our USW 2030 Strategy focuses on adding value to lives, communities and the economy, which aligns itself with the Welsh Governments proposals and the UN Sustainable Development Goals.

Governance and Roles

USW recognises that robust engagement with stakeholders from across the university will be crucial for successful climate action implementation. The Board of Governors holds ultimate responsibility for the university's carbon footprint. The Director of Estates will report on the carbon footprint and associated environmental performance to the Board annually. The delivery of this strategy will be led by the Energy and Sustainability Manager with support as required by the Head of Estates Development and Maintenance.

A Sustainability Committee will be established comprised of key university stakeholders. The Sustainability Committee along with all Faculties and Departments will be responsible for engaging in and promoting sustainable and energy efficient behaviours for the strategy to be successful. Internal and external resources will be engaged where relevant and as identified, to assist in delivering our targets.

Our Vision

We will be carbon neutral by 2040

Net zero, or carbon neutrality, includes sequestering or offsetting carbon, where every effort is made to reduce operational emissions and only unavoidable emissions are offset. As part of a global community working to address the challenge of climate change, we will demonstrate our commitment through our research, our teaching, and the management of our operations and investments to achieve a carbon neutral university by 2040. Following an extensive review of the university's emissions, this strategy identifies key drivers that require the most focus, investment and ambitious targets over the next 10 years to ensure we remain on track to achieve net zero.

Our Carbon Footprint

In 2020, the university's first carbon footprint was produced using 2018/19 financial year data. This footprint is available as a separate document and outlines the footprint boundary, the methodology used to capture our emissions, any omitted data and a breakdown of all measured emissions. It will be used as a baseline for future emission reductions and will provide focus for which activities need to be prioritised on our journey to decarbonisation.

The footprint boundary encompasses the activities of the entire institution and has been calculated according to the World Resources Institute (WRI) Greenhouse Gas (GHG) Protocol, and includes emissions for the majority of our Scope 1, 2 and 3 activities. We are currently measuring the majority of our emissions, however the creation of our footprint has highlighted that a small number of activities are not recorded and as a result, they have not been included. Therefore, the reduction targets contained within this strategy are applicable to all recorded scope 1, 2 and 3 emissions. Targets will be created ensure any missing data is obtained so future carbon footprints can capture these additional emissions.

Greenhouse Gas Protocol

The Greenhouse Gas (GHG) Protocol has established a set of global standardised frameworks to manage and measure greenhouse gas emissions. It is the most widely used greenhouse gas accounting standard and provides the accounting platform for virtually every corporate GHG reporting program in the world. The standard classifies GHG emissions into three 'scopes':

Scope 1 - emissions are direct emissions from owned or controlled sources. E.g., emissions from combustion in owned or controlled boilers and vehicles.

Scope 2 - emissions are indirect emissions from the generation of purchased energy. E.g. our purchased electricity

Scope 3 - emissions are all indirect emissions (not included in scope 2) that occur in the value chain of the reporting company, including both upstream and downstream emissions. E.g. water, waste, business travel, student & staff commuting, and procurement.

Direct emissions are from activities owned or controlled by the university

Indirect emissions are a consequence of the activities of the university, but occur at sources owned or controlled by another entity

Our 2018/19 Footprint is calculated to be 28,480 tCO₂e and it has been found that 98% of our total footprint are created by three key emission categories:

- Procurement contracts to university suppliers (19,217 tCO₂e)
- Electricity consumption in buildings (5,550 tCO₂e)
- Gas consumption in buildings (3,071 tCO₂e)

Therefore, it is these three key areas that require the most focus, investment and ambitious targets over the next 10 years. Nevertheless, we are in the early stages of identifying and understanding our emissions from our activities, and to achieve net zero by 2040, changes will be required throughout all of our operations and this can only be met through a collaborative partnership across all levels of the university, including senior leadership and stakeholder engagement. Therefore, the targets set in this document reach wider than just these three areas.

Scope and Methodology

Our carbon strategy covers the period 1st August 2020 to 31st July 2030. It forms the overarching governance of our carbon reduction activities, committing to carbon reduction targets and building on the university's preceding environmental strategy which concluded in August 2020. The university was formed in 2013, therefore the 2012/13 financial year has been chosen as our base year for comparisons to be made against, as this is our first year of data as USW. The Higher Education Statistical Agency (HESA) Estates Management Record (EMR) submissions have been used for all previous carbon reporting. The table below

illustrates the university carbon footprint (tCO₂e) from the baseline year 2012/13 as reported in our EMR submissions.

As can be seen in the table, the university emitted 11,375 tCO₂e during 2012/2013. The biggest emitting activities are largely the result of consuming natural gas for heating and electricity consumption. This trend has followed year on year, with those two activities creating the biggest impact. However, it is worth noting that up to and including the 2018/19 EMR submission, very few of our scope 3 emissions have been measured. This is demonstrated by the disparity between our EMR submission for 2018/19 and our 2018/19 carbon footprint. Therefore monitoring of any future emissions will be obtained from annual carbon footprint reports as these provide a more accurate measure of our emissions. Nevertheless, 2012/13 will still stand as a base year for comparisons to be made against for the scope 1 and 2 emissions as these have been accurately recorded for the entire university since this base year. Over the coming years, we will have improved data on our scope 3 carbon emissions. Therefore, in the immediate future, we are expecting our carbon emissions to increase as our data quality increases.

Measure (KPI)	2012/13 (baseline)	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	Change from baseline year %
Total Estate size (GIA /m2)	151,599	222,672	215,795	215,762	220,637	220,720	220,413	45%
Total number of car parking spaces	2,390	3,246	3,246	3,246	3,246	3,371	3,371	41%
Total number of cycle spaces	354	494	497	497	497	260	260	-27%
Total percentage of renewable energy purchased through green tariffs (%)	25	80	80	80	100	100	100	300%
Energy consumption natural gas (tCO _{2e})	4,156	5,234	4,647	4,030	3,326	3,486	3,093	-26%
Fuel used in HEP owned vehicles diesel (tCO _{2e})	24	67	70	49	50	35	39	64%
Fuel used in HEP owned vehicles petrol (tCO _{2e})	0.13	1	-	3	3	-	8	5732%
Energy consumption grid electricity (tCO _{2e})	6,868	8,740	11,995	8,413	7,098	6,070	4,385	-36%
Energy consumption onsite photovoltaic (tCO _{2e})	0.69	1	1	1	1	32	23	3164%
Total water consumption (tCO _{2e})	104	121	135	132	126	121	113	9%
Total hazardous waste (tCO _{2e})	0.86	0.02	0.01	0.20	0.32	0.07	0.04	-95%
Total waste mass landfill (tCO _{2e})	212	113	97	117	117	51	6	-97%
Total waste mass recycled (tCO _{2e})	9	10	17	19	107	5	10	4%
Total waste mass incineration (tCO _{2e})	-	4	-	0.03	0.19	0.01	5	35%
Total waste mass anaerobic digestion (tCO _{2e})	-	0.3	1	0.3	0.2	0.7	0.1	-44%
Total (tCO _{2e})	11,375	14,293	16,962	12,765	10,829	9,801	7,680	-32%

Current Achievements

For many years, the university has been working towards reducing our adverse impact on the environment. We have made good progress since 2012/13 and implemented many initiatives including:

- The installation of an **Electric Vehicle (EV) charging stations** at Treforest, Sports Park and Cardiff Campuses.
- **LED lighting** upgrades are included in all refurbishments and upgrades. We recently installed LED lighting at Stilts, Ferndale and Treforest Sports Centre, saving 15 tCO₂ each year.
- The installation of **renewable technology** at our Treforest and Sports Park campuses. A 100 kW solar photovoltaic (PV) array was installed on Treforest Sports Centre roof during the summer 2020 which will help us save around 21 tCO₂. We also have PV arrays on Pen Y Fan halls of residence roof and Sports Park 2 building and solar thermal arrays on Treforest Student Union and Sports Park 1 building which provide annual savings of c.6 tCO₂.
- Purchasing **100% of our electricity from renewable energy generation.**
- Installing and logging almost **400 utility sub meters** across the university estate to enable monitoring and targeting of unusual trends, leaks and usage within our buildings. This is critical to maintain best practice and reduce our Scope 1 and 2 carbon emissions.
- Upgrading our campus waste bins, **introducing new waste streams** including separation of liquid, cups, general waste, dry mixed recycling and food waste to improve segregation of waste, and reduce waste to landfill. Since 2012/13 we have reduced the amount of waste from our operations by 790 tonnes and we have **successfully diverted 97% of waste from landfill** through increasing recycling and incineration of waste. All of our incinerated waste goes to a waste to energy plant which generates electricity from the waste materials.
- **Reducing our single use plastic** and swapping disposables for higher quality recyclable solutions. A **25p levy** has been applied to disposables to encourage the use of reusable alternatives.
- **Engaging with our staff and students** to increase awareness of sustainability initiatives and carbon reduction across the university.
- Founding an **Environmental Champions group** providing staff and students the opportunity to share thoughts, ideas and help promote sustainability across the university.

- Consideration of our catering supply chain and **switching to a local sandwich supplier** saving 47,000 road miles and c. 60 tCO₂ annually.
- **Divestment from fossil fuels**, transferring university funds into an environmentally aware investment product which prohibits investment in issuers which derive a significant part of their income from the production or supply of controversial weapons, fossil fuels, thermal coal, nuclear energy, civilian firearms, tar/oil sands and tobacco.
- **Enhancing biodiversity** through creating soft landscaping areas in place of demolished buildings. These areas include grass, plants, cherry laurel and field maples, improving the visual environment and creating habitats to support increased biodiversity on Treforest campus.

Progress

As can be seen in Figure 1, since our base year, the university's scope 1 and 2 emissions have seen an overall reduction of around 32% despite the size of our university estate increasing 45% over this time. This reduction is the result of a number of improvements in plant and equipment, investment in energy efficiency measures and better working practices through more control of our Building Management System (BMS), which has reduced our overall utility consumption. Further carbon reduction has then been experienced as a result of the grid carbon factor reducing due to the decarbonisation of the grid.

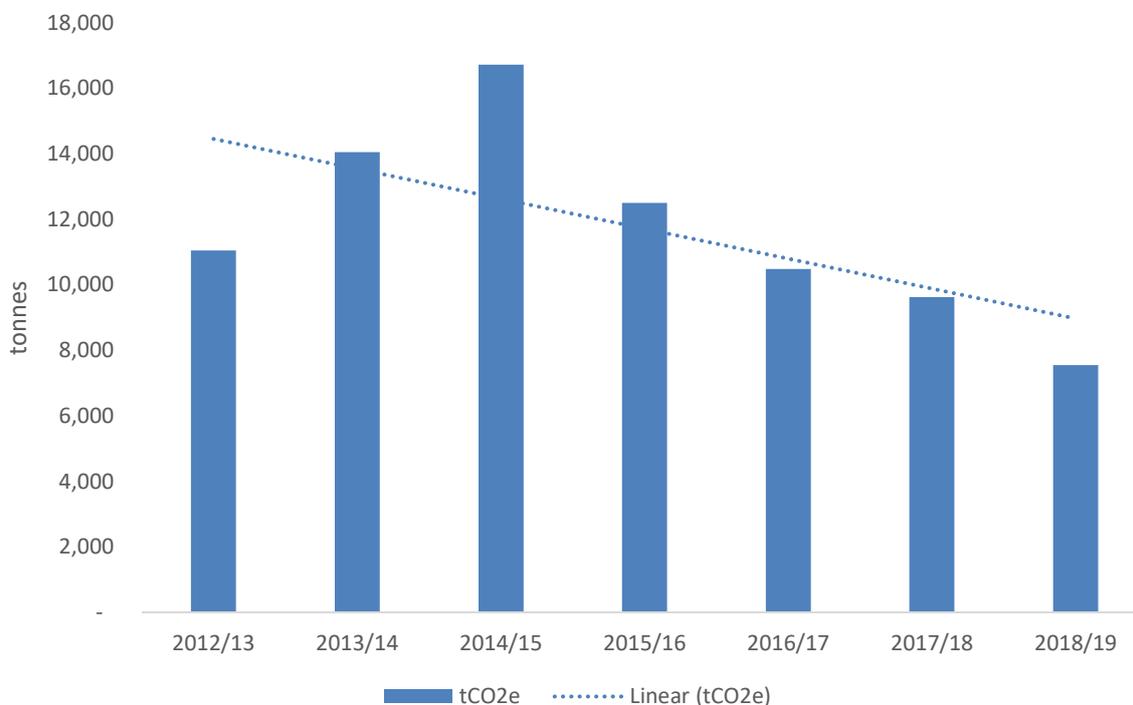


Figure 1. USW annual scope 1 and 2 emissions tCO₂e

As mentioned previously, very few of our scope 3 emissions have been measured prior to our 2018/19 Carbon Footprint. Therefore, we are unable to monitor any progress towards

reducing these emissions at present. Our Carbon Footprint calculates our 2018/19 scope 3 emissions as 21,276 tCO₂e. This level of emissions will be used as the baseline to measure future progress against our scope 3 activities.

Strategy Targets

Our vision is to be carbon neutral by 2040 and therefore the targets proposed in this strategy will ensure the measures we implement over the next 10 years will keep the university on track to achieve net zero. Our 2018/19 footprint is calculated to be 28,480 tCO₂e and 97% of our total footprint are created by three key emission categories: procurement, electricity consumption and gas consumption. Therefore, it is these three key areas that require the most focus, investment and ambitious targets over the next 10 years. Emissions from our other activities will not require as large a focus but will still need to be considered and reduced. Targets for these have also been set.

1. Procurement and supply chain

Our procurement activities create our largest carbon emissions. Our carbon footprint has identified the biggest sources of contract emissions and these will be the focus for future emission reductions. Prior to the creation of our footprint, the emissions associated with our supply chain were unknown. Therefore, over the next 10 years, the university commits to working with its suppliers to challenge the efficiency of their supply chains. As the emissions from the supply chain can be difficult to calculate and our current calculations are based on proxy factors, we will work with the key suppliers that create the biggest impact to obtain accurate emission data from their operations. Our biggest contract emissions are capital goods and paper. These will be focused on as a priority for emission reductions.

2. Electricity and gas consumption in buildings

Our electricity and consumption accounts for c. 30% of our Footprint. Over the next 10 years, we will reduce our absolute scope 1 and 2 carbon emissions by 50%. This will be achieved through a combination of energy efficiency measures, commissioning feasibility studies into the electrification of heating or switching to low/zero carbon fuels, considering alternative heating in any new builds, investment in onsite renewables and increased monitoring and targeting to minimise wastage.

3. Water consumption in buildings

Water makes up one of the smallest contributions to our carbon emissions. Over the next 10 years, we will reduce our water consumption by 10%. This will be achieved through water efficiency measures and close monitoring to ensure leaks are reported and fixed quickly.

4. Emissions from waste

Emissions from waste create a small impact to our overall Carbon Footprint. However not all waste data is currently recorded and therefore the impact could be bigger than thought. Over the next year, the university will create a process to collate all university waste data. The Welsh Government's has set a target of recycling 70% of municipal waste and 50% reduction in avoidable food waste by 2025. Our challenge over the next 5 years will be to divert our waste that is currently sent to energy recovery to a recycling facility. Over the next 10 years, we will recycle at least 80% of our waste and avoid 80% of unnecessary food waste. These targets have been set in alignment with the Welsh Governments Circular Economy timeline. We will achieve this through effective waste management techniques and engagement.

5. Business travel and low carbon travel

Emissions from these activities are very low in our current carbon footprint. Business travel data is largely available but commuting data is not currently collected and staff expenses claims do not consider the mode of transport used. Therefore, over the next year the university commits to creating the processes required to capture and measure this data so the impact of travel is better understood and appropriate targets can be set against this activity. Our carbon footprint identifies that we have a high proportion of domestic air travel. Reducing this will be a focus over the next couple of years.

6. Policy and behavioural change

Communication across the university will be essential to ensuring our success. All of our policy objectives rely upon positive engagement with our community, and many will require action to be taken by staff and students themselves. Over the next year a communication plan will need to be developed with both an internal and external focus, reflecting the multiple and diverse range of stakeholders concerned with the carbon strategy. This plan will be developed in collaboration with our Marketing team.

Implementation and monitoring

We are committed to achieving decarbonisation through a whole institution approach that relies on a wide range of effective actions across our estate, governance, teaching and engagement activities. The university has produced a carbon roadmap to set out the critical steps and timelines for the programmes integral to achieving our carbon strategy. We will work towards the USW Key Milestones and actions in outlined our carbon roadmap to ensure that we remain on track, and we are taking the necessary measures to achieve carbon neutrality. Performance will be monitored through the production of an annual carbon footprint to show consistent, measured changes as we work through our carbon reduction activities. We will report annually on our carbon emissions internally and externally to communicate our achievements, and undertake a mid-point review to ensure the carbon reduction measures outlined in this strategy are still relevant.

Appendices:

USW 2030 Carbon Roadmap

USW Carbon Footprint Report 2018/19