



Climate Action

ANNUAL CLIMATE ACTION REPORT: 2022

Covering carbon emissions for AY 2020/21

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1. Scope of this Report

- Describes progress on our whole institution response to climate change up to March 2022
- Reports University of Bath's carbon emissions for academic year 2020/21.

2. Executive Summary

 <p>The logo is circular with a green background. It features a central tree icon. Surrounding the tree are four quadrants with icons: 'Education' (book), 'Research' (microscope), 'Sustainability' (puzzle pieces), and 'Teaching' (footprints). Below the circle, it says 'Climate Action' and 'WHOLE UNIVERSITY RESPONSE'.</p>	<ul style="list-style-type: none"> • In May 2020, the University Council declared a Climate Emergency and approved the adoption of the 11 Climate Action Framework (CAF) Principles to guide our response. • The CAF Principles include challenging carbon targets commensurate with the timescales required to address the Climate Emergency: <ul style="list-style-type: none"> ○ Being Net Zero Carbon in its Scope 1 and 2 emissions by 2030. ○ A 50% reduction in its Scope 3 emissions by 2030. ○ Being Net Zero Carbon in its Scope 1, 2 and 3 emissions by 2040. • The University has embraced the concept of 'whole institution' change, focussing on the four themes; education, research, reducing our carbon footprint, and partnering with other institutions to develop solutions to the climate crisis.
 <p>A green square containing a white icon of an open book. Below the icon, the word 'Education' is written in white.</p>	<ul style="list-style-type: none"> • We are on a journey to embed climate change across our education framework, with the aim of equipping our graduates with the knowledge, confidence, and skills to conserve and protect our planet. • Our approach to embedding has three distinct elements: <ul style="list-style-type: none"> ○ supporting students in understanding the basics of the climate emergency and mitigation approaches through our Climate Literacy programme ○ embedding relevant climate content in our existing courses through our Citizenship and Sustainability principle ○ Developing new programmes specifically focussed on sustainability and climate change. • Alongside the formal curriculum, we are also creating innovative informal educational initiatives for students to engage with the climate agenda. These include Vertically Integrated Projects, One World Bath, the Climate Leaders programme and supporting students to take climate action during their time at Bath. • The SU and Climate Action team have embarked on the SOS-UK supported initiative, Responsible Futures, a structured framework of criteria to encourage action on embedding sustainability.
 <p>A green square containing a white icon of a microscope. Below the icon, the word 'Research' is written in white.</p>	<ul style="list-style-type: none"> • Outside of our impact as an organisation, our research also makes significant contributions to reducing carbon emissions in wider society. • The University of Bath has a number of world leading research centres addressing challenges related to climate change. These include CSCT, IAAPS, IPR, IMI, CAST, IDRIC and iCAST. • We are directing research funding towards major challenges - the multidisciplinary Bath Beacons initiative empowers our research community to tackle major global challenges by building consortia for large-scale funding. The first Beacons selected for a one-year pilot included a number related to the climate agenda • In November 2021, the GW4 Climate Alliance was launched, this seeks to lead the regional response to the climate emergency, and build a community of climate expertise within the South West England and South Wales region and beyond, using a whole systems approach • Alongside the content and impact of our research, we are also considering the carbon impact of the way we conduct our research, and have launched a pilot of the Laboratory Efficiency Assessment Framework

	<ul style="list-style-type: none"> • This year, we have produced a detailed carbon footprint calculation for 2019/20, plus a draft calculation for 2020/21. This updated version has seen an expansion of the boundaries for the scope 3 footprint calculation • Our total CO₂ emissions in 2019/20, across all scopes, were approximately 116,000 tCO₂e. • The draft CO₂ for 2020/21 is 103,000 tCO₂e, which indicates a reduction of 11% over the previous year. However, the level of confidence in this value is low, as the Scope 3 component includes a mixture of broad estimates, extrapolations, and some 2019/20 figures where data is not yet available. • The main comments on the changes in the 2020/21 figures are: <ul style="list-style-type: none"> ○ Scope 1 & 2 emissions increased by 24% - the majority of this was due to increased gas consumption. ○ Business travel emissions reduced by more than 95% owing to Covid-19, although this is anticipated to bounce back in 2021/22. ○ New building emissions reduced by approximately 40% predominantly caused by completion of the main construction on IAAPs • Meeting our carbon targets requires major reductions in the energy demands of our campus and buildings, supported by the provision or purchase of energy from renewable sources. To understand how the former can be achieved, we have commissioned a detailed heat decarbonisation study of our campus, funded through a £144,000 grant from the Salix Public Sector Decarbonisation Fund.
	<ul style="list-style-type: none"> • As an anchor institution in our community the University has an opportunity to develop meaningful collaborative partnerships which help to address the Climate Emergency. We work with institutions across the HE Sector, nationally and internationally but also form more local place-based relationships with WECA and BANES. • COP 26: Across the University, our experts engaged with this global climate conference, providing expert input, commentary and joining the debate to encourage the negotiators to deliver an ambitious agreement that was commensurate with the climate crisis.

3. Whole University Approach

In May 2020, the University Council declared a Climate Emergency, and committed to [11 CAF Principles](#) which guide our decision-making and underpin our response to the Climate Emergency.

This includes challenging carbon targets commensurate with the timescales required to address the Climate Emergency. Whilst these targets are important, our unique position as a university means we can have a more significant transformational impact that is wider than our own campus and community;

- through our students and the skills and knowledge they take into the world.
- through the impact of our research in supporting the transition to a low carbon economy and developing solutions which address adaptation.

Work is going on across the University as we implement our Climate Action Principles and begin the transformational journey towards a university aligned with a 1.5°C world. The University has embraced the concept of 'whole institution' change, focussing on the four themes; education, research, reducing our carbon footprint, and partnering with other institutions to develop solutions to the climate crisis.



UNIVERSITY OF BATH CLIMATE ACTION FRAMEWORK PRINCIPLES

The University of Bath commits to:

CARBON EMISSIONS REDUCTION

1.
 - Being Net Zero Carbon in its Scope 1 and 2 emissions by 2030.
 - A 50% reduction in its Scope 3 emissions by 2030.
 - Being Net Zero Carbon in its Scope 1, 2 and 3 emissions by 2040.

2. **RESEARCH AND INNOVATION:** Supporting world-class research activities at the University of Bath, and in wider collaborations, to deliver impactful research and innovation supporting the transition to the net zero carbon economy.

3. **LEARNING AND TEACHING:** Developing educational initiatives to build a world class reputation for high quality education on climate related issues with global reach and scale, for example by: providing opportunities for every student to study and work on climate related issues; delivering programmes with a sustainability agenda; delivering pedagogically innovative teaching practices to reduce carbon emissions.

4. **UNIVERSITY STRATEGY:** Supporting the transition to the net zero carbon economy through the university's strategy, sub-strategies and its core decision making, and throughout its core values and its commitments.

5. **UNIVERSITY GOVERNANCE:** Ensuring there is clear leadership and governance for implementation of the Climate Action Framework, with public accountability through transparent disclosure of progress against our principles.

UNIVERSITY CAMPUS EMISSIONS REDUCTION AND CLIMATE CHANGE

6. **ADAPTATION:** Reducing all university campus carbon emissions, in a manner that is consistent with the broader principles of sustainability and in a Just Transition. Understanding and responding to the consequences of climate change adaptation on the campus and the university's supply chain.

7. **INTERNATIONALISATION STRATEGY:** Supporting and encouraging carbon responsible international engagement to ensure sustainable collaborations that meet our strategic internationalisation goals.

8. **CARBON MANAGEMENT:** Improving the data quality relating to the university's carbon emissions, recognising that this is a strategic tool to understand and systematically reduce its carbon footprint.

9. **UNIVERSITY FINANCES:** Taking the principles of the Climate Action Framework into account in all key funding and investment decisions.

10. **UNIVERSITY COMMUNITY AWARENESS AND ACTION:** Supporting behavioural and cultural changes to enable carbon reduction targets through engagement with the university community.

11. **UNIVERSITY OF BATH: LOCAL LEADER AND PARTNER:** Working with key partners from the local community, industry, public sector bodies and third sector organisations, to support the transition to the net zero carbon economy

4. The Climate Action Project

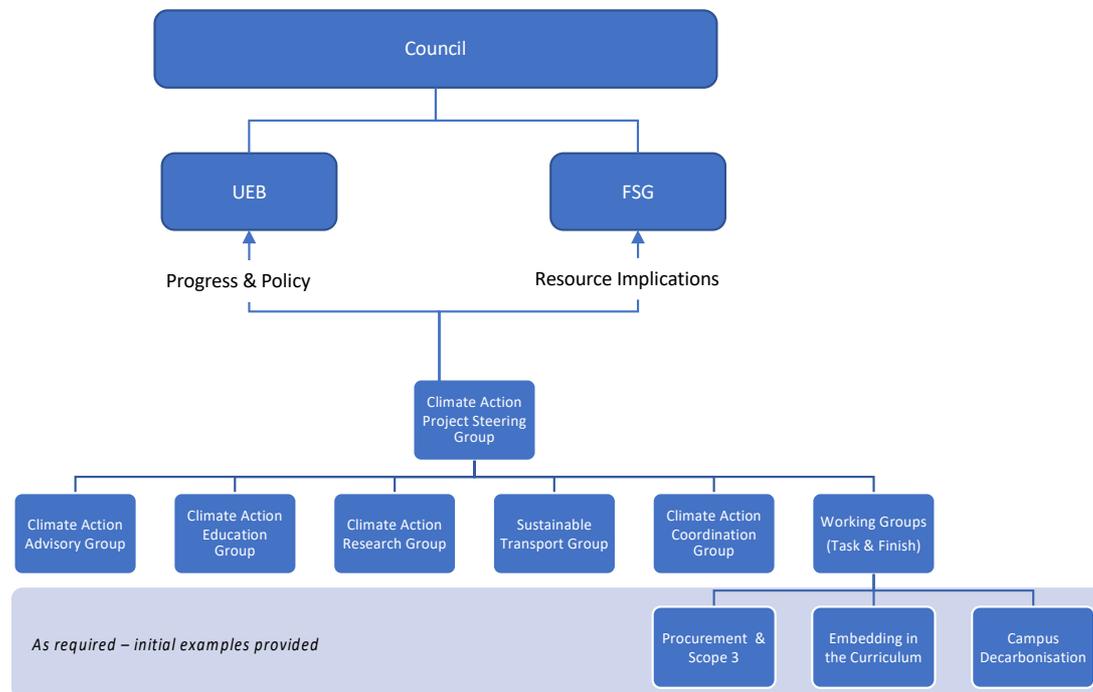
In March 2021 the Climate Action Project team was established to work with teams throughout the University to address how it transitions to a zero-carbon campus, tackles Scope 3 emissions, and supports staff and students to make low carbon decisions easier. In parallel, the team helps the University embed net zero thinking into all policies and aspects of the organisation, whilst building on internal, local and regional partnerships to develop a collaborative approach.

4.1. Climate Action Project Team

The team structure reflects our focus on a whole university response:

- Professor Pete Walker, Chair
- Peter Phelps, Lead
- Shannon Carr-Shand, Project Manager
- Dr Steve Cayzer, Learning & Teaching Liaison
- Mark Whiteley, Scope 3 Data Officer
- Vacant, Behaviour Change Specialist

4.2. Governance and a Participatory Process



Transitioning to a carbon conscious university requires the engagement of the entire University community; it will impact choices and decisions, academically and operationally, and success is dependent, to some extent, on the community's support for the process.

The Climate Action Steering Group is responsible for over-seeing governance and implementation of the Climate Action Project and comprise members of the University Executive Board and the Climate Action project team.

Building on the successful co-creation of the CAF Principles, the Climate Action project has continued to be an intentionally participatory process. Our governance structure includes several working groups which meet regularly, enabling the co-creation and sharing of knowledge, building community support for whole institution change and challenging the project to deliver on our ambitions. These working groups include a wide cross spectrum of our community:

- professional services staff,
- academics from the 3 faculties and School,
- Union representation,
- SU and student representatives

The working groups have the following remit:

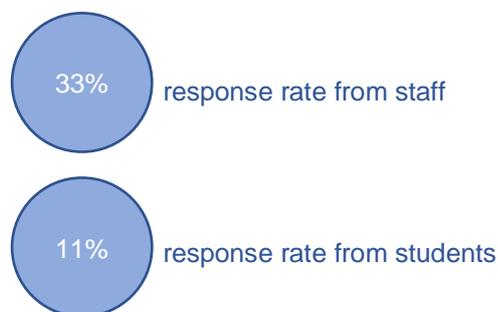
- **Climate Action Advisory Group** - to provide broader representation and advice on proposed project activities across the wider University community.
- **Climate Action Education Group** – to develop and progress learning and teaching activities.
- **Climate Action Research Group** – to develop and progress research related activities
- **Sustainable Transport Group** – to consider all transport related impacts, develop a Sustainable Transport Policy, and implementation plan.
- **Climate Action Coordination Group** – to co-ordinate voluntary University groups towards collaborative effort around a shared plan
- **Working Groups (Task & Finish)** – to bring together key individuals to consider specific identified issues and develop recommendations.

Case Study: Climate Action Survey



Our first annual Climate Action survey ran in November 2021. This was a deep dive into the knowledge and views of our community, exploring how well our community understood the climate agenda and the materiality of mitigation actions in different areas, their openness to change, and their views on different areas, including:

- Footprint: Energy, Purchasing, Diet, Travel, Investment,
- Directing Research towards climate action,
- Embedding climate action in Education.



The impressive 33% response rate from staff and significant 11% from students was truly representative and will give us great insight into our community.

Analysis is currently underway led by Professor Lorraine Whitmarsh (Director of the Centre for Climate Change and Social Transformations, CAST) and her team working with the Climate Action team.

The survey has captured a baseline of climate related knowledge in staff and students, as well as openness to change. It has also sought input on staff and student views on the University of Bath's action on climate, and on what stakeholders feel the right scale and urgency of action should be.

Preliminary analysis suggests the results will be really useful, both in informing future policy related decisions, and in gauging the effectiveness of student and staff engagement on these issues going forward.

We intend to use the survey results as the basis of an ongoing conversation with our community, exploring their responses to thematic issues, alongside a discussion of our progress and plans in that area.

4.3. Embedding in University procedures and decision-making

The transition to a low carbon University requires the consideration of climate impacts to be embedded throughout the University's policies, procedures and decision making. This is an ongoing aspect of the Climate Action project, both proactively facilitating discussions on climate issues in key material areas alongside influencing key strategies and policies during normal review cycles.

Recent examples include:

- Considering how our commitment to the 11 CAF Principles influence our approach to local planning consultations,
- Inclusion of climate adaptation on the University's risk register, and development of an approach to address adaptation concerns.
- Supporting University departments in considering how climate action could be addressed and incorporated in strategy and policy development. Examples include Digital Strategy, Business and Travel Expenses Policy, Faculty Research policies, and carbon footprint of investments.

4.4. Climate Action Graphic

To highlight and tie together the wide range of climate action work at the University, in September 2021, we launched a [climate action graphic](#).

A lot of thought was put into developing the graphic, and we have developed a supporting narrative to encourage conversation and engagement:

- The graphic represents both the challenge of a labyrinth and the solution of collective thinking. The tree resemblance reminds us that alongside the people and communities which will suffer from the devastating effects of climate change, nature will also be impacted should we not take the urgent action required.
- Tackling climate change is like navigating a labyrinth. It is immensely challenging and complex, and there are myriad decisions that we must urgently make to avoid the worst impacts.
- A university though is uniquely well-placed to navigate this labyrinth, through the collaborative brainpower of its academics and students. Delivering education that empowers students to become future leaders and innovators in our response to the climate crisis and undertaking research that enables the transition to a low carbon future and delivers solutions for adaptation at pace.
- Our collective thought leadership stimulates local, national and international responses.
- It is this approach, and working together as a community, that will allow us to meet the greatest challenge we have faced.



5. Education

The Climate Action Framework expresses a desire to build a world class reputation for high quality education on climate related issues with global reach and scale.

To achieve this, we will deliver education that empowers students to become future leaders and innovators in our response to the climate crisis by:

- providing opportunities for every student to study and work on climate related issues;
- delivering programmes with a sustainability agenda;
- exploring pedagogically innovative teaching practices to reduce carbon emissions.



5.1. Embedding Climate Change Education

We are on a journey to embed climate change across our education framework, with the aim of equipping our graduates with the knowledge, confidence, and skills to conserve and protect our planet, through learning, research and action projects.

Our approach to embedding has three distinct elements:

- supporting students in understanding the basics of the climate emergency and mitigation approaches, and through this considering the impact of their personal choices and behaviours through our Climate Literacy programme (see case study box).
- embedding relevant climate content in our courses through our Citizenship and Sustainability principle. We are currently exploring how we can best support staff with embedding, options

include design review, staff training, sharing of best practice and the development of a resource hub.

- Developing new programmes specifically focussed on sustainability and climate change. In particular, we have a new MSc Zero Carbon Futures in development which is expected to welcome its first cohort of students in 2023. Other programmes in this space are anticipated.

Case Study: Climate Literacy in induction for ALL incoming students



In Sep 2021, Bath became the first University to include Carbon Literacy in induction for all new students.

More than 5,000 students were given the opportunity to learn about the carbon intensity involved in everyday activities like travel, energy use and food consumption, and how to reduce emissions individually as well as across organisations and systems. They then had the opportunity to complete follow-up training with The Carbon Literacy Project to earn a Carbon Literacy certification.

20%

Of eligible students participated in the climate literacy training (a total of 1000 students)

100

students completed the follow-up training to earn Carbon Literacy certification

The roll-out of the scheme to all new undergraduate and postgraduate students followed a successful pilot project last year involving around 100 students. Returning second year students were also offered the chance to take the course.

Dr Steve Cayzer, Climate Action Learning & Teaching Liaison at the University, said: "We're delighted to roll this out to all our new students with the Carbon Literacy Project after it was so well received in last year's pilot.

"The idea came from the belief that every student coming to Bath should have a level of Carbon Literacy and that we wanted to weave that into the student experience and give everyone the chance to get involved.

"This is part of the University of Bath's whole-institution response to the climate emergency. We know that this is an issue that students care about passionately and is something that will have a bearing on the rest of their lives. By introducing Carbon Literacy right at the start of the University experience we begin to get people into that mindset and thinking straight away, as well as helping them develop knowledge and skills that will be valuable throughout their lives."

Elsa Swetenham is a Natural Sciences student who took the course as part of the pilot last year. She said: "The Carbon Literacy course was a great way for me to get thinking about what problems the world is facing in terms of the climate crisis and how Bath is responding to these challenges. It really inspired me to find out what the university is doing and how I could personally get involved in climate action at the University. I found the course engaging, the right length and it came at a good time. The course also encouraged me to look at what career I could have and how I can incorporate climate into it. Overall, has made me a lot more climate conscious with most decisions I make."

Building on the success of the Climate Literacy programme for students, pilot programmes are being run for professional services and academic staff.

5.2. Climate Action in the Informal Curriculum

Alongside embedding climate change in the formal curriculum, we are also creating innovative informal educational initiatives for students to engage with the climate agenda and further develop the skills and attributes they will need in a future climate-changed World. These include:

5.2.1. Vertically Integrated Projects

Since 2019/20, the University of Bath have been developing Vertically Integrated Projects (VIPs), which are innovative research and applied learning projects that enable inter-disciplinary, multi-level teams of students to work with a member of academic staff on long-term real-world projects which address global challenges often with a local focus.

VIPs are an attempt to create sustainable, research-engaged communities of staff and students - both undergraduate and postgraduate - who work collaboratively on live projects. Students come from a range disciplines or fields and from across year groups, enabling more experienced students to support other student team members, and allowing everyone involved to work closely with researchers or senior staff. The VIP concept was created by Professor Ed Coyle at Georgia Tech but has since extended to around 70 HE institutions all over the world.

The University of Bath is the first University in England to develop VIPs.

In academic year 2021/22 a number of these VIPS are climate focussed, including:

- Green Equity
- Creating carbon neutral communities (Farrington Gurney)
- Decarbonising Heat
- Students for Sustainable Food
- Community consultation for sustainability (naval facility)

We are currently undertaking a project, funded by the University's Teaching Development Fund, to map VIPS to the UN SDGs and student skills in order to more deeply understand their breadth and impact.

5.2.2. Climate Leaders Programme

The Climate Leaders programme is a voluntary project where a self-selected cohort of students are supported to achieve their own pathway to impact. In academic year 2021/22 this programme is focussing on exploring the hallmarks of an exemplar University research/education strategy to be sufficient to drive a University approach which is aligned with a 1.5C Future.

5.2.3. One Young World Bath

The annual [One Young World Bath caucus](#), organised by Bath students since 2017, was held online for the first time on 7th March 2021. Professor Rajani Naidoo, the Head of the University's Race Equality Taskforce opened the event and introduced keynote speaker and Black Lives Matter activist Patrick Hutchinson. The conference focused on three SDGs – Climate Action, Reduced Inequalities and Good Health and Wellbeing – with high profile speakers, interactive panels and online workshops to enable students from across the university to explore these topics and consider how they could contribute to positive environmental and social change.

5.2.4. Taking Action at Bath

Taking Action at Bath was an information and networking event held in semester 1 of academic year 21/22. It offered students the opportunity to explore how to get involved in extra-curricula activities and contribute to positive climate and social change. It formed part of the Climate Literacy induction course, and provided short information talks followed by refreshments and networking where students could meet like-minded people and get inspired. The talks highlighted University activities open to all students – including the Vertically Integrated Projects, One Young World, the Climate Leaders programme and relevant Students' Union groups and volunteering opportunities. Over 100 students attended to find out how they could make a difference during their time at Bath.

5.3. Responsible Futures

In December 2021 the SU and Climate Action team embarked on the SOS-UK supported initiative, Responsible Futures. This is a structured framework of criteria to encourage action on embedding sustainability, inclusive of climate justice, into formal and informal learning. This is the only framework of its kind that maps out the organisational innovation and enhancement required, spanning top down,

middle out and bottom-up level change, to achieve whole institution engagement with sustainability learning.

The Responsible Futures mark is awarded to institutions following their student-led audit in year two of the programme. This mark is a demonstrable commitment to embedding sustainability across all aspects of student learning.

5.4. Innovation in Teaching and Learning

We are exploring ways of reducing the carbon footprint of our education while increasing its beneficial impact (handprint) and maintaining, or even increasing, pedagogical (i.e. learning) quality. Various avenues being explored include flexible modes of teaching and assessment, digital resources (such as MOOCs), cross disciplinary activities and external engagement.

6. Research

Outside of our impact as an organisation, our research also makes significant contributions to reducing carbon emissions in wider society.

The University of Bath has a number of world leading research centres addressing challenges related to climate change:

- [Centre for Climate Change and Social Transformation \(CAST\)](#) is a global hub for understanding the systemic and society-wide transformations that are required to address climate change. It researches and develops the social transformations needed to produce a low-carbon and sustainable society; at the core of CAST's work is a fundamental question of enormous social significance: "How can we as a society live differently – and better – in ways that meet the urgent need for rapid and far-reaching emission reductions?"
- [Institute for Advanced Automotive Propulsion Systems \(IAAPS\)](#) is a world-leading centre of excellence for research, innovation, enterprise and education, supporting the future direction of the automotive industry.
- [Institute for Policy Research \(IPR\)](#) aims to further the public good through research into issues of significant relevance to policy debate and decision-making.
- [Institute for Mathematical Innovation](#) is leading the delivery of multi-disciplinary and mathematically grounded research contextualised by real-world, societal and industrial challenge.
- [Centre for Sustainable and Circular Technologies](#) brings together academic expertise from the University of Bath with international, industrial, academic and stakeholder partners to carry out research, training and outreach in sustainable and circular technologies. It is also a leading partner in the [Industrial Decarbonisation Research and Innovation Centre \(IDRIC\)](#) which will bring together industry and academia to cut industrial greenhouse gases, and hosts the [Innovation Centre for Applied Sustainable Technologies \(iCAST\)](#) which will help businesses to scale up new sustainable chemical technology research to help tackle the global challenges of the climate emergency, sustainable development and plastics pollution.
- [Centres for Innovative Construction Materials \(CICM\)](#), and [Energy and the Design of Environments \(EDEn\)](#). Both centres are based in Dept. Architecture & Civil Engineering: CICM conducts innovative research and consultancy in sustainable construction materials, building technologies, and structural engineering; EDEn conducts innovative research and consultancy in sustainable building design and environmental engineering, including renewable energy and energy efficiency.



We are also directing research funding towards major challenges - the multidisciplinary Bath Beacons initiative empowers our research community to tackle major global challenges by building consortia for large-scale funding. The first [Beacons selected for a one-year pilot](#) included the following related to the climate agenda:

- Sustainable and automated transport research - solving key problems facing sustainable transportation systems
- Living well now and by 2050 - Improving social and environmental justice by engendering new and inclusive practices of living well.
- Future fuels - building research capacity, facilities, and expertise across the University in the production, storage, distribution and end use of hydrogen and hydrogen carriers.

In November 2021, the [GW4 Climate Alliance](#) was launched. The GW4 Alliance brings together four of the most research-intensive and innovative universities in the UK: Bath, Bristol, Cardiff and Exeter. Through the climate alliance, GW4 is seeking to lead the regional response to the climate emergency, and build a community of climate expertise within the Southwest England and South Wales region and beyond, using a whole systems approach – working across different areas such as health, mobility, land use, food and energy – to find transformative solutions to the crisis. The challenge of climate change is global, but solutions need to work at the local and regional level. The GW4 Climate Alliance will connect researchers with policymakers, industry and the public to influence change through long-term partnerships.

Alongside the content and impact of our research, we are also considering the carbon impact of the way we conduct our research. In September 2021 we launched a pilot of the Laboratory Efficiency Assessment Framework working with labs from across our faculties. Building on the lessons we will learn from this initial phase we hope to start rolling this out across the University in AY 2022/23.

We have taken the opportunity to consider how carbon considerations are embedded in our research ethics approach and are looking to develop tools to support researchers to quantify and minimise the carbon emissions in preparation of research proposals.

Moving forward with implementation of the Climate Action Framework we continue to support and encourage use of the university campus and community in Living Lab research. The transition to a low carbon campus and the decarbonisation of our heating provide real life opportunities to benefit from our own research. In developing an approach to embedding low carbon in our building and refurbishment projects we have drawn on the depth and breadth of expertise in our own department of Architecture and Civil Engineering.

Case Study: Launch of the Laboratory Efficiency Assessment Framework Trial



The University joined the Laboratory Efficiency Assessment Framework this year, beginning a trial programme of work exploring the potential to reduce the environmental impacts of our laboratory work.

The [Laboratory Efficiency Assessment Framework \(LEAF\)](#) is a Bronze, Silver, Gold tiered accreditation process with clear and simple actions to work through as part of each level. It was created by the University College London and is currently being rolled out across over 60 UK Universities. As part of achieving accreditation laboratory teams work through a simple list of 13 actions as part of the Bronze award criteria, ensuring for example that:

- Appropriate recycling facilities where in place
- Fume cupboard sashes were closed when not in use
- Chemical compound samples are appropriately processed on the departure of any team member.

The teams use an online workbook, form, and pre-built calculators to quickly calculate the carbon footprint of aspects of their activities to set a baseline and demonstrate savings from additional activities undertaken.

James Taylor of the first team awarded as part of the trial said, “We’re delighted to receive this award in recognition of the teams work to minimise our environmental impacts and look forward



to working towards the Silver level of accreditation in the future. The process was really easy to work through, and well-tailored for a busy lab team”.

The Technical Supervisor of each key laboratory area are currently testing the programme with a small number of pilot laboratories, with a view to further roll-out should it prove pragmatic and successful. If successful, we may seek to work together for full accreditation, as the University of Bristol achieved this with [all 990 of its labs](#).

7. Our Carbon Footprint: Academic Year 2020/21

Carbon Reduction Targets:

- 1) Net zero carbon in scope 1 and 2 emissions by 2030
- 2) 50% reduction in scope 3 emissions by 2030
- 3) Net zero carbon in scope 1, 2 and 3 emissions by 2040

Baseline year for scope 3 emission reductions: 2019/20



7.1. Sources of Carbon Emissions

Greenhouse gas emissions are currently emitted from a range of on-campus and off-campus activities. To better understand the source of these emissions, and so take action to minimise them, they are broken down into three categories¹:

- **Scope 1** covers direct greenhouse gas emissions from sources owned or controlled by the University. This is mainly the gas used to power boilers, fuel used in university owned vehicles, but also includes emissions from fleet and fugitive emissions.
- **Scope 2** covers indirect emissions from electricity consumed by the University which it does not generate itself.
- **Scope 3** covers the other indirect emissions that occur upstream and downstream, associated with the University's activities, including carbon emissions generated from commuting, business travel, procurement, waste, water, construction and investments.

7.2. Carbon Footprint

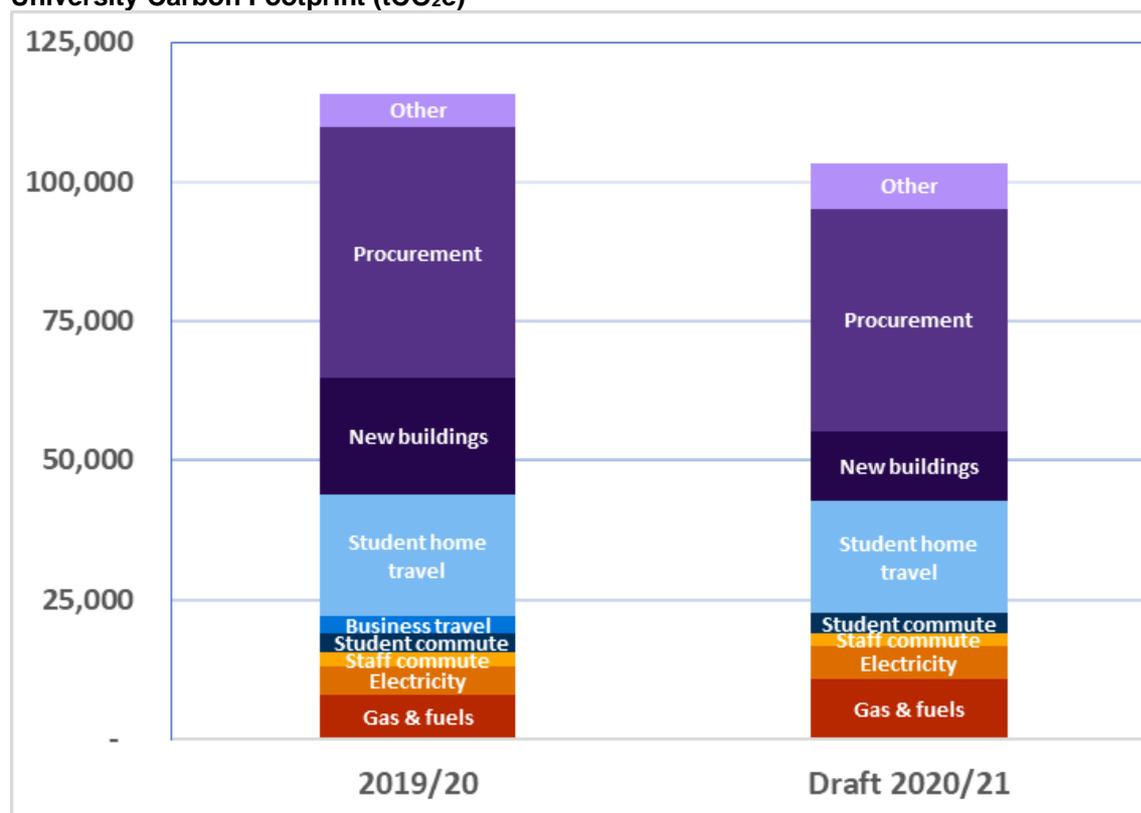
Since last year's version of this report, we have produced a carbon footprint calculation for 2019/20, plus a draft calculation for 2020/21. This updated version has also seen an expansion of the boundaries for the scope 3 footprint calculation (see Case Study: 2020-21 footprint boundaries and data accuracy box for further information), which now includes:

- Business travel within personal expense claims
- Purchased goods and services for the Student Union
- Waste generated by the University (incomplete data)
- Emissions arising from students travelling to and from their homes to Bath
- The University's managed investments portfolio
- The scope 3 element of fossil fuel and electricity consumption
- Our total CO₂ emissions in 2019/20, across all scopes, were approximately 116,000 tCO₂e.
- The draft CO₂ for 2020/21 is 103,000 tCO₂e, which indicates a reduction of 11% over the previous year. However, the level of confidence in this value is low, as the scope 3 component includes a mixture of broad estimates, extrapolations, and some 2019/20 figures where the data is not yet available.

¹ Greenhouse gas emissions are categorised into three groups or 'Scopes' by the most widely used international accounting tool, the Greenhouse Gas (GHG) Protocol.

- The main comments on the changes in the 2020/21 figures are:
 - Scope 1 & 2 emissions have increased by 24% (2,667t), as specified below.
 - Business travel emissions have reduced by more than 95% (3,000t) owing to Covid-19. This is anticipated to bounce back in 2021/22, ideally to a lower level than before, owing to the carbon reduction objectives of the University's revised Travel and Expenses Policy.
 - New building emissions reduced by approximately 40% (8,000t), predominantly caused by the completion of the main construction of IAAPS mid-year.
 - Other changes in the footprint cannot be reported owing to the lack of confidence in the 2020/21 figures (e.g., Procurement currently shows a 12% reduction, but a different methodology has been used to produce a draft value, with the values from the consistent methodology not yet being available).

University Carbon Footprint (tCO₂e)



7.2.1. Confidence in the data for the carbon footprint

There are three main factors that influence the level of confidence in the data:

- Completeness
- Accuracy
- Units used

The **completeness** relates to whether all the data within the footprint category is available. For example, a few of the University's off campus buildings are not included in the footprint so the database is incomplete. In this case though, as all the buildings are small, the impact on the confidence is also small. The **accuracy** relates to the how the data is recorded. For example, if the University's gas footprint was based upon estimated bills rather than actual meter readings, the confidence would be low. The **units used** for the data directly affects the accuracy of carbon footprint. For example, procurement data is currently based upon expenditure, which means that if two suppliers are supplying identical equipment, but one is 50% more expensive, then the carbon footprint of supplies from the dearer company would also be 50% greater, despite the equipment being the same.

A subjective assessment of the confidence in the data has been performed, which is displayed in the table below. This table provides the following information in each column:

- The scope 1, 2 & 3 data categories as specified within the GHG Protocol
- The proportion of the University's total carbon footprint in each category, also using a traffic light shading system 🚦 to indicate the level of the confidence in the data underlying the footprint
- An overview of the data's status, covering both the range of coverage of the category and quality of that data

GHG Protocol Category	Impact on footprint	Data Status
Scope 1 Natural gas	10%	- Good quality data - 100% coverage on campus - Close to 100% off-campus
Fuels	<0.1%	- Good quality data; some (small) items missing
Fugitive emissions	<0.1%	- Data not recorded yet
Scope 2 Electricity	5%	- Same as for <i>Natural gas</i> above
Scope 3 1. Purchased goods & services	39%	- Good data coverage (Agresso & Student Union databases). - Poor quality data for calculation (based on £ expenditure)
2. Capital goods	12%	- Good data coverage (Agresso) - Poor quality data for calculation (based on £ expenditure)
3. Fuel & energy related activities	4%	- Same as for <i>Natural gas</i> and <i>Fuels</i> above
4. Upstream transportation & distribution	0%	- No data on CO ₂ from deliveries. It may be possible to collect for purchases in the long term.
5. Waste generated in operations	<0.1%	- Good quality data, but only have limited coverage of all waste.
6. Business travel	0.1%	- Good quality data from Travel Management system - Personal expenses data (car use, taxis, buses, flights, etc), but major estimates required. - No data for visiting academics.
7. Employee commuting	26%	- Daily commute (staff & students): Poor out of date data for both staff & students; Weak analysis. - Home commute (students only): Robust estimate for overseas students (flights only); estimate for UK students. No data for students on placements.
8. Upstream leased assets	0%	- No data
15. Investments	4%	- Some data analysis by investment fund manager, but is limited to 8% of total portfolio

Case Study: 2020-21 footprint boundaries and data accuracy



A detailed scope 3 footprint was new to the University for the 2019-20 footprint, and it has been improved for 2020-21. One of the biggest challenges has been the decision-making process

behind the boundaries of the footprint – as in which emissions are included and which are not. As specified within the text of the Greenhouse Gas Protocol, the majority of the footprint comes under the “required” category, but there are some areas where an inclusion is optional, and the boundary can be pushed outwards.

Table 1 shows the footprint areas that are required for our carbon footprint, while table 2 shows those that are optional.

Table 1 – Required emissions data

GHG Protocol Category		Data sources
Scope 1	Natural gas	All on-campus consumption Off-campus owned buildings Rented buildings (if pay utilities) Nomination Agreements (if pay utilities)
	Fuels	Estates' vehicles (road and off-road) <i>Non-Estates vehicles</i> <i>Related research (e.g., IAAPS)</i>
	Fugitive emissions	<i>Refrigerant refills</i> <i>Greenhouse gas chemicals used on campus</i>
Scope 2	Electricity	Same as natural gas above
Scope 3	1. Purchased goods & services	University Procurement (suppliers >£2k) Student Union Procurement
	2. Capital goods	All building construction
	3. Fuel & energy related activities	Well-to-Tank for Scope 1 & 2 data Transport & Distribution for Scope 2 data
	4. Upstream transportation & distribution	<i>Delivery of supplier goods & services</i>
	5. Waste generated in operations	Waste & recycling collected by Council <i>Other collected waste</i>
	6. Business travel	Travel Management software journeys Staff personal expenses
	7. Employee commuting	Staff & student daily commute
	15. Investments	

Items in italics are not collected (at time of writing), but some of them are very small and can be excluded on a de minimis basis (e.g., fugitive emissions)

The Greenhouse Gas Protocol also allows for the optional inclusion of emissions, particularly within scope 3. These emissions are specified in the table below. Where the data is optional, three factors were considered when deciding whether to include them or not:

- Data availability
- Material impact
- Influence

Firstly, the **data availability** will determine whether to include optional emissions. If it is not available, then a review needs to be made to assess the potential for beginning to gather the data. The second factor is the **material impact** of the data, which relates to the size of the emissions arising from it. If an optional item is very small, then it reduces the need and incentive to include it. The final aspect is the **influence** that the University could have on those emissions. If it is low, this reduces the motivation to collect and record the relevant data.

For example, the emissions arising from students coming to Bath to study is an optional area that has been included with the footprint boundary (in table YY as *Student home commute (UK & Int'l)*). The reason for including this data is that it positively meets all three of the selection factors, as follows:

- Data availability: “Good”. The university has records of domicile data for all students, including the country of domicile for international students.
- Material impact: “High”. With more than 15,000 students, approximately a third of which are international students, the cumulative impact on the University’s carbon footprint is large.
- Influence: “High”. As the impact is large, the University can directly influence these emissions by changing the travel arrangements of all students coming to Bath.

For this example, the emissions analysis highlights a conflict with the University’s internationalisation strategy, but an open approach and dialogue can help to find ways to reduce these emissions.

Table 2 – Optional emissions data

GHG Protocol Category		Included	Excluded
Scope 1	Natural gas		Buildings where not pay utilities Off-campus student private accommodation
	Fuels		
	Fugitive emissions		
Scope 2	Electricity		Same as natural gas above
Scope 3	1. Purchased goods & services		
	2. Capital goods		
	3. Fuel & energy related activities		
	4. Upstream transportation & distribution		Life cycle CO ₂ of delivery vehicle manufacture, & infrastructure
	5. Waste generated in operations		Transportation of the waste
	6. Business travel	Hotel stays	<i>Visitors to campus (UK & Int'l)</i> Life cycle CO ₂ of transport vehicle manufacture, & infrastructure
	7. Employee commuting	Student home travel (UK & Int'l) Homeworking	<i>Student placements (UK & Int'l)</i> <i>Parental/family visits to Bath</i>
	15. Investments	Investment portfolio	<i>Owned research spin-off companies</i> <i>Pension funds</i> <i>Cash at bank</i>

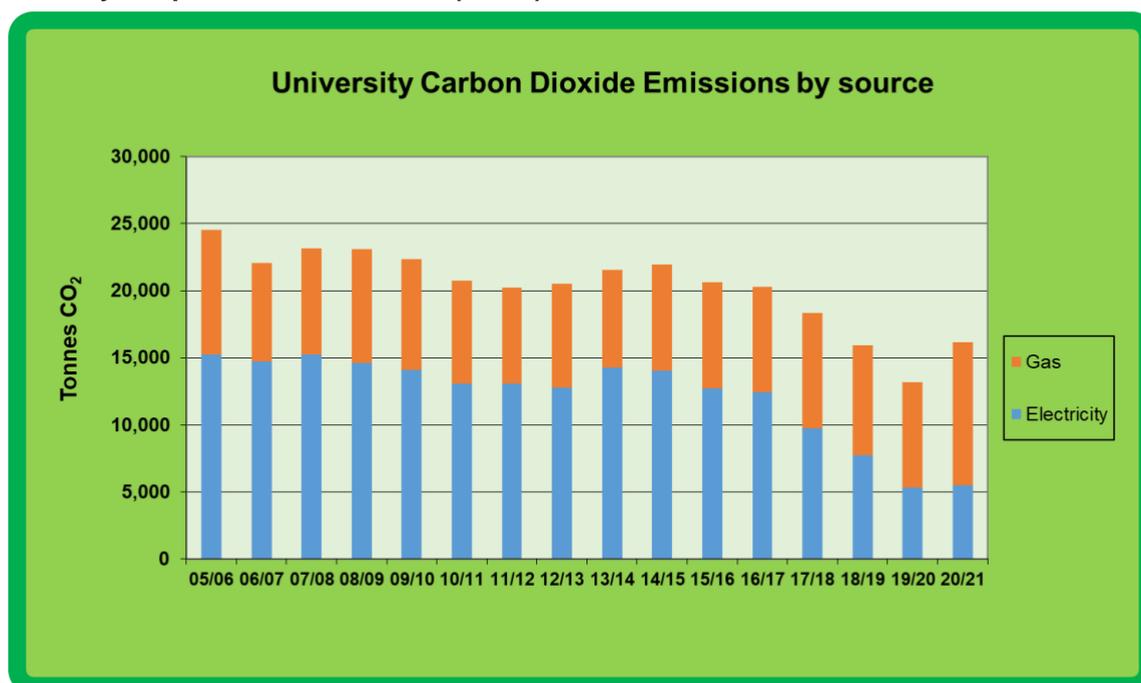
Items in italics are under consideration for inclusion in the footprint at a future date

7.3. Scope 1 and 2 Emissions (Gas & Electricity)

- We have been monitoring our scope 1 and 2 emissions since 2005/06.
- Owing to heating and ventilation requirements under Covid-19 rules, which led to the excessive heating of draughty buildings, the scope 1 & 2 carbon footprint saw one-off increases that will not be repeated in 2021/22.
- In 2020/21, these CO₂ emissions increased by 24%. The majority of this was due to increased gas consumption. The increase in electricity consumption was partially offset by reductions in the electricity conversion factors². Without this offset, the emissions increase would have been 28%.

² The UK emissions factor decreased by 8.9% over the previous year in the 2021 conversion factors. See section 7.11 for further explanation on the impact of grid factors.

University Scope 1 and 2 Emissions (tCO₂e)



	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21
Gas (kWh)	43,043,165	42,917,332	46,584,471	44,817,245	42,717,420	58,355,577
Electricity (kWh)	28,263,326	27,782,197	27,707,328	27,190,769	22,751,957	25,842,043
Total CO₂ (tonnes)	20,619	20,290	18,320	15,952	13,508	16,175
Reduction from 2005 baseline³	8%	9%	25%	35%	45%	34%
kg CO₂/m² (⁴)	83.2	77.5	70	58.3	47.4	58.2

- The University's 2011 Carbon Management Plan (CMP) set out the target "to reduce direct Scope 1 and 2 CO₂ emissions (due to electricity and gas use) by 43% by 2020 from a 2005 baseline." After having met the target in 2019/20, our emissions this year showed a net 34% reduction since the baseline year, meaning that we have failed the target. However, we anticipate that we will return to below 43% in 2021/22 and continue to meet the target thereafter, though it will become significantly harder once both IAAPS and the new School of Management come fully online.
- Achieving the absolute CMP target we set ourselves in 2005 has been achieved against a backdrop of significant expansion - over that period we have increased in size by 43% (by building floor area) which is the equivalent of 9 Chancellors' Buildings.
- In 2020/21, we expanded our scope 1 emissions calculation to include the fuel consumption of our own vehicles. The impact of including fuels has been to add 33 tCO₂e to our footprint, which adds 0.2% to the scope 1 & 2 footprint. This year, we will be looking to extend our scope 1 data capture further, to include, fugitive emissions, fuel usage during research, and laboratory chemicals.

7.4. Scope 3 emissions

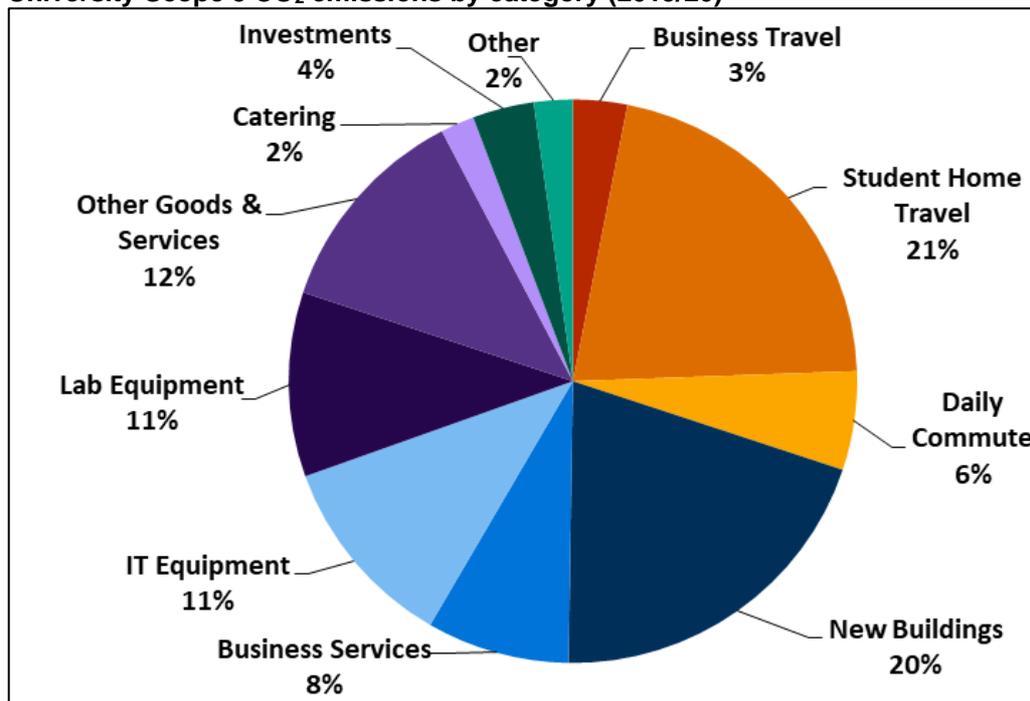
- Our Scope 3 emissions were approximately 87,000 tCO₂e in 2020/21, against 102,645 tCO₂e the previous year, representing a 16% decrease.
- The major components of our Scope 3 emissions are travel (business travel and commuting – 30% of Scope 3), and the procurement of goods & services (including new building construction – 60%).
- Our current procurement data spreads across several different categories (New Buildings to Catering), as shown in the graph below (2019/20 figures).

³ 2005 was the baseline year for the Carbon Management Plan, with a total CO₂ of 24,513 tonnes.

⁴ Relative reductions are useful to understand underlying trends and carbon efficiency, however the challenge of reaching net zero requires a focus on absolute annual emissions, in line with our new carbon targets.

- The impact of Covid-19 on commuting emissions have been modelled for 2019/20, as the first lockdown only affected four months at the end of the academic year. The effect of homeworking decreased travel emissions, but increased household emissions as staff and students consumed energy at home. The estimated net effect was a small reduction in emissions, as there were no space heating requirements during the period.
- The impact of Covid-19 on 2020/21 is likely to be significant, as it has also affected Student home travel. This additional impact will not be modelled in the 2020/21 footprint owing to a lack of data on the number of students coming to Bath for study, when they travelled, and the number of times they travelled between home & Bath. This portion of the Scope 3 footprint will reflect a “normal” year.
- Our Scope 3 emissions are someone else’s Scope 1 and 2 all the way down the supply chain, so addressing these emissions requires wider engagement with the University community and our suppliers.

University Scope 3 CO₂ emissions by category (2019/20)



- The two key areas of focus for scope 3 in 2022 are to develop an initial reduction plan for achieving our 2030 reduction target, and to continue to improve the accuracy of the footprint calculation. We will also work with our Procurement team to begin to develop and implement a strategy for moving away from the low-quality expenditure-based calculation for our procurement emissions.
- Analysis will take place to understand better what the University actually purchases within each of the categories in the footprint.

Case Study: Scope 3: Embodied Carbon of our purchases



The ultimate aim of our carbon footprint is for it to consist of high quality and accurate data. Some areas have already achieved this, but our purchasing footprint still uses low quality data – it is based upon an expenditure methodology. To improve our purchasing footprint, we will need all our suppliers to declare the embodied carbon of the products and services that they sell to us. Embodied carbon is defined as the carbon “emissions associated with the energy consumption and chemical processes during the extraction, manufacture, transportation & assembly....” of a product or service.

2 Suppliers provided embodied carbon data

4000 Number of unique suppliers to the University

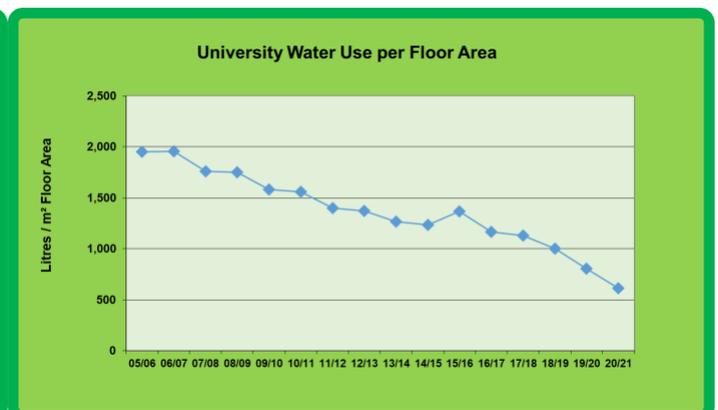
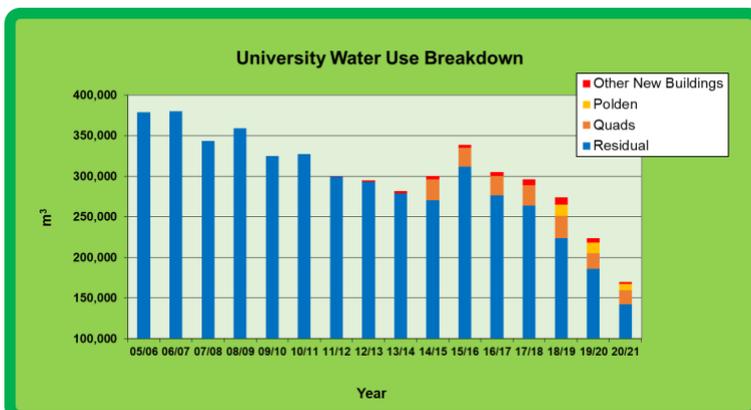
2020-21 saw a landmark as our first two suppliers started providing embodied carbon data on the goods that they supply us. These are two of our IT hardware suppliers – Hewlett Packard (desktop computers & equipment) and Lenovo (laptops & equipment). Both suppliers already produce PCFs (Product Carbon Footprints) for a selection of their products and they are now providing a report to the University outlining the total carbon footprint of our purchases. The accurate carbon calculations are as follows:

	No. of products supplied	Carbon footprint (tCO ₂ e)
Hewlett Packard	1,463	481
Lenovo	1,845	801

These figures have been benchmarked against the old expenditure-based methodology of calculating carbon emissions against the expenditure of the purchases, which show that the Lenovo value would have been 15% and the HP one 30% higher. This demonstrates that improving the calculation methodology could significantly impact the University’s scope 3 carbon footprint, potentially by tens of thousands of tonnes of CO₂.

The next steps are to include the embodied carbon figures of these products at the point of purchase to influence purchasers toward lower carbon products, and to expand the number of suppliers providing this information.

7.5. Emissions from Water Usage

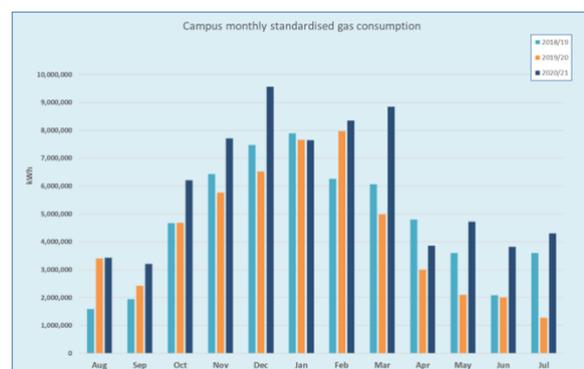
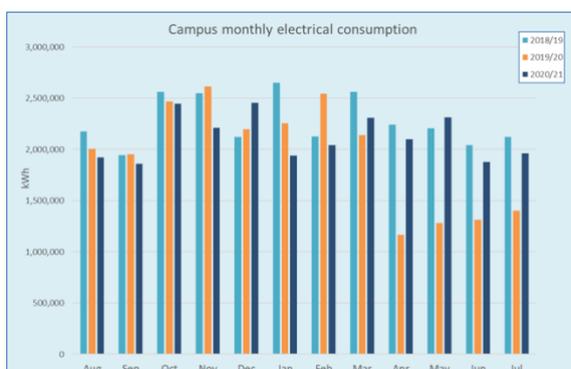


KPI	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21
Total water use (m ³)	338,886	305,090	296,320	274,017	223,610	169,777
Water use per area (m ³ /m ²)	1367	1165	1131	1001	805	611

- Carbon emissions from water usage⁵ in 2020/21 were 67 tCO₂, which is a 70% reduction from last year's 220 tCO₂. The majority of this reduction comes as a result of a 55% reduction in the emissions factor, which was recalibrated in 2021, from the 2012 valuation.
- Water use in 20/21 fell due to Covid-19 and is also an estimated figure as the main campus supply is still being upgraded, so there is a high degree of uncertainty in the figures from the last two years.
- Through efficiency work our consumption continues to fall – actual consumption has fallen over the last 15 years despite the University growing significantly (floor area up by 40%), and the normalised figure has been halved over this period, even before this atypical year.

7.6. Impact of the Covid-19 Pandemic on our Energy Consumption & Carbon Emissions

- Rapid societal shift in response to the Covid-19 pandemic, coupled with changing rules during the various lockdowns, has had a marked impact on both gas and electricity emissions during the last two years.
- During the first national lockdown in March 2020, consumption in both utilities fell when compared to the previous year, as the campus largely closed down. Once the first lockdown finished, both utilities returned toward their normal (2018/19) levels in August/September 2020. From this date though, gas and electricity consumption have followed very different trajectories.
- Electricity consumption in 2020/21 has been slightly lower than pre-Covid 2018/19 figures, primarily owing to the lower number of people on campus. However, keeping almost empty buildings active through long periods of the year has increased total consumption above what it could have been.
- Gas consumption in 2020/21 has leapt by 38% over the previous year and is also 27% higher than pre-Covid 2018/19. The primary reason underlying this massive increase is that as the total lockdown rules eased, campus buildings were allowed to open but had to meet strict rules on ventilation and air circulation, leading to buildings being heated at full capacity all the time and for a longer heating season. Additionally, whilst many teaching, research and office spaces were unoccupied, it was not possible to 'mothball' buildings in their entirety.
- For both utilities, initial figures from 2021/22 indicate that consumption is at or below pre-Covid levels.



- The impact of Covid-19 on our indirect emissions (Scope 3) from the goods and services we procure has been mixed. Business travel emissions declined by more than 95% in 2020/21, while IT hardware CO₂ emissions have remained static, despite a 50% increase in expenditure (to facilitate homeworking). This is owing to an equivalent reduction in the IT hardware emissions factor, which has offset the expenditure rise. It is difficult to quantify the impact of these changes on the remainder of our Scope 3 carbon footprint, as the detailed assessment of these emissions is still under development (see section 7.4).

⁵ Emissions generated from the use of water on campus, accounting for both the supply and treatment of wastewater. Based on analysis carried out with our water supplier, we assume 90% of our water supply is returned to the sewer.

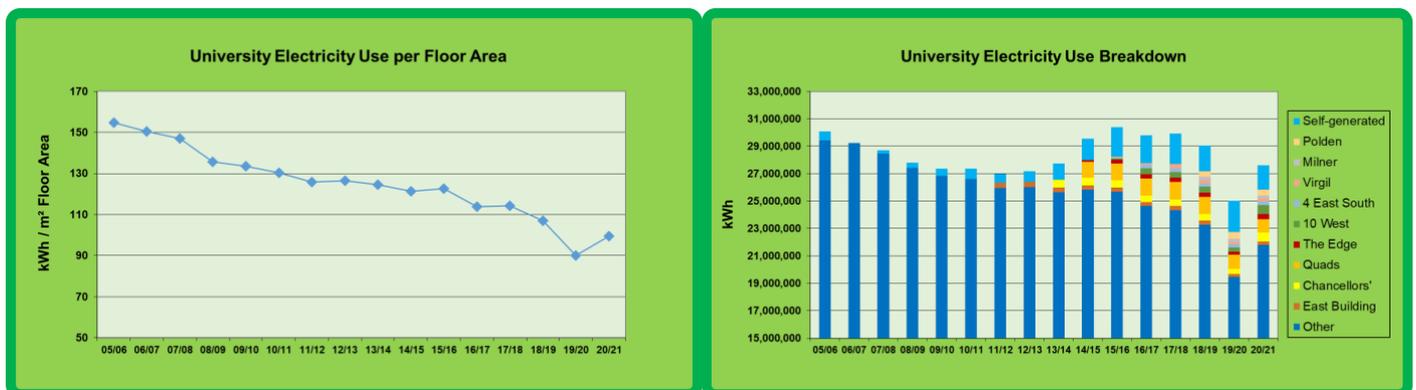
- Building climate conscious decisions into the response to Covid-19 and the post-Covid recovery is not straightforward. Many decisions to provide a Covid-secure campus unavoidably lead to higher carbon emissions, and we recognise that careful consideration will be required in unwinding these positions.

7.7. Gas Usage



- Gas usage is heavily dependent on weather. Using statistical temperature records, 'Normalised' gas usage, with the exception of the Covid-19 increase of 2020/21, shows the long-term trend is almost level, even with a significant expansion in the Estate.
- 2020/21 saw an absolute increase in gas use of 38%, The significant increase in 2020/21 is mainly attributable to the impact of the Covid-19 pandemic (see section 7.6).
- It should be noted that gas use increases as our electricity self-generation increases through gas-fired CHP. However, this rise is more than offset by the financial and carbon savings.

7.8. Electricity Usage



- 2020/21 saw an absolute increase in electricity use of 14% over the previous year, but this is set against a Covid-affected significant fall in consumption in 2019/20 during the first lockdown (see section 7.6). It is still 5% lower than in 2018-19, which would have been 7% if not for IAAPS coming online in the middle of the year.
- Electricity usage per floor area increased last year, returning close to its pre-Covid pandemic trend. Owing to the significant decreases in consumption at the end of 2019/20, its low value should be viewed as an outlier value in any analysis.
- Total electricity 'consumed' (i.e. imported/bought in plus self-generated) has stayed roughly constant in recent years with new buildings and growth in student numbers being partially offset by increases in self-generation and energy efficiency savings.

7.9. Energy provision on Campus

7.9.1. Grid Electricity

- Electricity is bought on a 'green' renewables tariff; this applies to 100% of the campus electricity supply and all our off campus supplies too. This means that for each unit of electricity used, our

supplier purchases a unit of renewable energy on the University's behalf ("Renewable Energy Guarantee of Origin").

- However, as the electricity that we import from the grid is still general electricity, we use the standard UK grid electricity emissions factor to calculate our Scope 2 footprint.

7.9.2. Self-Generation

7.9.3. Solar Photovoltaic

- Our solar photovoltaic (PV) network generated 147,288 kWh of electricity in 2020/21.
- There is some scope for further roof-mounted PV systems and plans are being developed to maximise these, which could potentially triple our current capacity. This will require investment, but the maximum will generate only 1-2% of our current annual demand. The priority should always be for demand reduction which has a much better return on investment and effort (the 'greenest' energy is that which is not used in the first place).

7.9.4. Solar Thermal

- Four blocks of the Westwood residences, Woodland Court and 4 West have all benefitted from solar thermal systems. Used to generate hot water they typically produce around 22,000kWh of heat each year. Due to the age of these systems and reliability issues some of these have been recently decommissioned, with plans to replace them with solar PV where possible.

7.9.5. Combined Heat & Power (CHP)

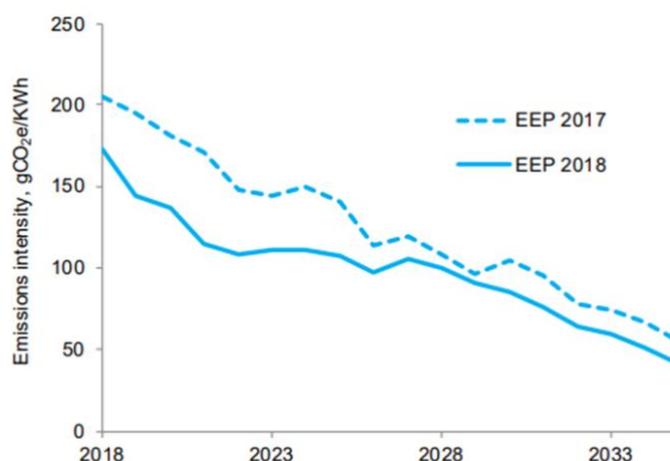
- Gas-powered CHP is a particularly efficient form of generating electricity as it allows the waste heat to be 'recycled' locally on site.
- There are now 4 CHP engines on campus.
- These systems generated 1.6 million kWh of electricity in 2020/21,
- They also generated heat that was captured and used on campus; this heat would have otherwise been wasted through conventional generation at a power station.

7.10. Funds for Investment in Efficiency Projects

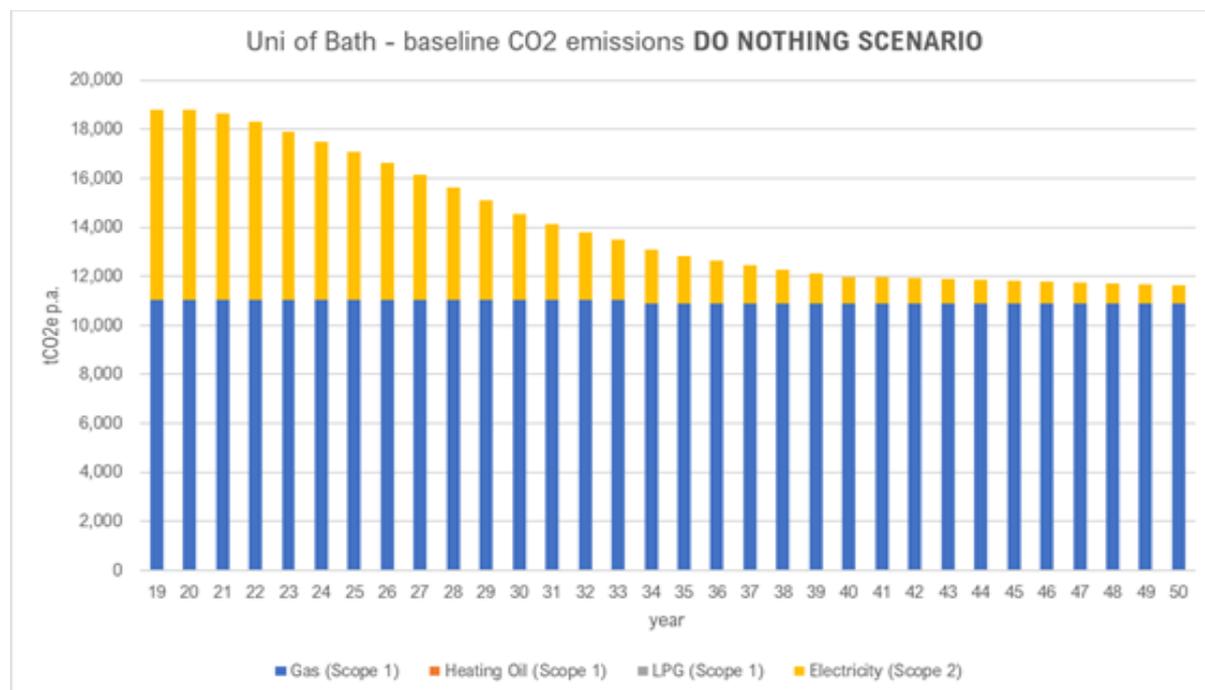
- In 2015 the University successfully bid for £600k from a HEFCE/SALIX Revolving Green Fund for investment in efficiency projects adding to an existing £250k fund.
- These are both 'revolving' funds whereby energy savings are fed back into the fund for future use and hence are self-replenishing.
- Both funds continue to be re-invested in energy saving projects, but these funds have strict criteria.
- The original revolving fund has now been spent three times over.

7.11. Decarbonisation of the UK Electricity Grid

- As well as the weather, a major influence on carbon emissions outside the university's control is the grid conversion rate from a unit of electricity to CO₂. These are set each year by the government (DEFRA) and are calculated according to the changing UK electricity generation mix.
- The grid conversion rate has been falling over recent years and this is expected to continue as increased low carbon generation is used:



- Even if we took no further action to reduce emissions, decarbonisation of UK grid electricity supply would therefore still deliver a considerable carbon emissions reduction.



- An equivalent decarbonisation of the gas supply network (Scope 1) remains unlikely in the medium term.
- Decarbonisation of the UK electricity supply is positive news but leads to a fundamental change in priorities for reducing carbon in Scope 1 and 2.
- The priority for carbon saving for the UK and the University must now shift to reducing gas usage; continued electricity efficiency work will save money but a rapidly diminishing amount of carbon. Switching from gas use to electricity for heating will also be needed. However, this brings additional complexity:
 - Electricity is currently more expensive than gas
 - Electrification of heating through the use of heat pumps is technically complex, especially in existing buildings, requiring investment in the heating systems, but also often the fabric of the building and insulating properties to enable the change of heating source.
 - Reducing Scope 1 carbon emissions related to gas usage will increase Scope 2 emissions and costs will inherently increase where the alternative technologies are powered by electricity.
 - Although electricity is decarbonising, the University still needs to reduce consumption, in line with the carbon reduction hierarchy⁶, and this is where the greatest financial gains are.
 - Renewable energy is likely to be part of the solution, but opportunities here will be limited by various factors (for example tripling the current number of solar panels would still only generate 1-2% of University electricity use).

7.12. What do we mean by Net Zero Carbon and how do we develop a reduction pathway:
 In adopting the CAF Principles, we have committed to becoming net zero carbon in Scope 1, 2, and 3 emissions by 2040. This means that we will work to reduce our carbon emissions to as close to zero as possible as our priority but recognise that any residual emissions which cannot be mitigated will be balanced with an equal amount of carbon avoided through carbon offsetting projects. This is not the

⁶ The carbon reduction hierarchy lays out a priority order of implementation for emissions reduction: 'avoid, educe, replace and offset'.

same as a 'zero carbon' or 'absolute zero' target which refers to transitioning to a situation where no carbon emissions are produced from **any** aspect of our activity.

The process of defining our reduction pathway trajectory is complex, requiring us to:

- Develop a depth of understanding of all our own emissions – from heating and electricity use on campus, through to the carbon embodied in travel and procurement.
- Explore the advantages and disadvantages of different options for reduction across all scopes,
- make underlying assumptions about future technologies, decarbonisation in the grid and the speed of decarbonisation in other sectors,
- and understand what level of residuals would be consistent with the level of decarbonisation required by science to limit warming to less than 1.5°C / 2°C compared to preindustrial temperatures.

We are at the beginning of this journey, and have started to make good progress across these areas, including:

- extending and refining the calculation and reporting of our emissions in line with the GHG protocols, this includes detailed analysis to understand our scope 3 emissions, which we are including in this report for the first time.
- commissioned a campus-wide heat decarbonisation study, with funding from the SALIX Low Carbon Skills Fund Phase 2.
- establishing a procurement scope 3 working group and asking our university community about their views on the approach we take to different issues and the speed with which we progress.

There is increasing consensus that emission decarbonisation pathways, and residuals, should be defined in line with the science and the Paris agreement goals. The methodology defined by the Science Based Targets Initiative⁷ is increasingly recognised as a robust and credible way to approach defining your emissions pathway, as it is based on IPCC and IEA pathways.

There is currently no SBTI Framework Guidance that relates specifically to universities and colleges, but the EAUC is supporting the development of a verified sectoral approach for the University and College sector. This will bring a number of benefits, economies of scale, consistent application of data collection and reporting standards, consistent approaches to the publication externally of progress in delivering progress as a sector.

We will therefore be working through the EAUC-led sector initiative to understand what level of residuals would be consistent with the level of decarbonisation required by science to limit warming to less than 1.5°C / 2°C compared to preindustrial temperatures.

7.13. Decarbonising our existing campus operations.

Meeting our carbon targets requires major reductions in the energy demands of our campus and buildings, supported by the provision or purchase of energy from renewable sources. To understand how this can be achieved, we have commissioned a detailed heat decarbonisation study of our campus, funded through a £144,000 grant from the Salix Public Sector Decarbonisation Fund.

Our footprint and falling grid factors necessitate that the focus of this study is on reducing our gas usage, but options for Scope 2 electricity reduction are also being considered, so that the final output will be a full Scope 1 & 2 decarbonisation plan in line with our targets for net zero by 2030.

Alongside this analysis, various improvements continue to be made to address our energy-related carbon emissions as part of ongoing work. Clearly this has been against the backdrop of the challenges around Covid-19 and so has been particularly challenging, but some highlights include:

- Significant improvements in the energy metering systems and software to improve reliability and accessibility to data,

⁷ The Science-Based Targets initiative (SBTi) is a joint initiative by Carbon Disclosure Project (CDP), the UN Global Compact (UNGC), the World Resources Institute (WRI) and WWF, intended to increase corporate ambition on climate action by mobilising companies to set greenhouse gas emission reduction targets consistent with the level of decarbonisation required by science to limit warming to less than 1.5°C / 2°C compared to preindustrial temperatures.

- Further upgrades to campus lighting with the latest high efficiency fittings and automated controls,
- New Apprentice Energy Manager and BMS Control Manager posts recruited,
- A major project to upgrade the ventilation system for the main University 50m pool was also carried out. This £400k project was carried out in a challenging timescale to make use of the short window created by the presence of our elite swimmers at the Tokyo Olympics, and is already showing significant improvements, with expected savings of approximately £50,000 and 325 tCO₂ each year.

7.14. Minimising operational and embodied emissions from new building or refurbishment

Continuing to develop our estate is important for the delivery of world-class research and teaching. We are therefore considering options to develop a Sustainable Building Standard to guide future campus building and refurbishment work, and ensure that it does not increase operational emissions, (future scope 1 and 2 emissions) alongside minimising embodied emissions in construction or refurbishment (current scope 3 emissions).

7.15. Carbon Offsetting

- Carbon offset schemes allow companies to invest in projects which remove carbon emissions from the atmosphere or prevent emissions from being released, in order to compensate for their own residual emissions, and support their transition to a zero-carbon organisation. Carbon offsetting is considered as the position of last resort on the carbon reduction hierarchy of 'avoid, reduce, replace and offset' and there is debate around its validity as an approach. Whilst we are committed to systematically working to reduce our carbon emissions, it may be necessary to offset *residual* emissions to achieve carbon neutrality in Scope 1 and 2 in 2030, and Scope 3 in 2040.
- When considering offsetting and emission reduction approaches, it is important that choices made do not simply export carbon emissions (e.g., to the Global South), instead of reducing them.
- Sector-wide responses to offsetting are beginning to emerge and we will continue to engage with these – for example through the [EAUC Science-Based Target Guidance and Verification Framework for Universities and Colleges Delivery Group](#).
- In 2021 we introduced a [policy on travel offsetting](#) for projects funded through the Wellcome Trust, in response to their change in grant conditions⁸ which asks the people they “fund to look for every opportunity to do things differently, so that travel only happens when it’s essential and it has a carbon neutral impact.”

Case Study: Launch of our first carbon offset scheme



We have taken a sector leading position with our first offsetting scheme.

The scheme covers all research travel as part of Wellcome Trust funded research, and ensures offsets are authentic, accredited and will sequester carbon in a meaningful way whilst supporting growth of new forest in the UK.

Leading academics from the Universities of Oxford and Cambridge have developed the Oxford Principles for offsetting and EAUC Carbon Coalition scheme for universities. To meet the minimum standards that avoid risk to reputation and ensure authentic carbon sequestration in line with the Oxford Principles, the University of Bath has created an offset mechanism through the EAUC Carbon Coalition scheme using the highest quality offsets recommended within the Oxford Principles.

⁸ <https://wellcome.org/grant-funding/carbon-offset-policy-travel>

The offsets involve a mix of 93% UK Woodland Carbon Code accredited offsets based on UK afforestation and 7% of Climework's accredited offsets based on direct air carbon capture and storage (DACCS).

We have also mandated the use of a higher quality carbon calculator than the Wellcome Trust requests ensuring the full climate change impacts of flying are captured, including the radiative forcing caused by condensation trails.

7.16. Launch of the Net Zero Carbon Campus Fund

Recognising that solutions to our carbon reduction challenges will come from many different areas of the University, we launched a [Net Zero Carbon Campus Fund](#) (NZCC Fund) to provide small grants which support students and/or staff to take action and reduce carbon emissions in their own departments or across the campus.

- Up to £5,000 will be awarded this academic year thanks to a donation from our Alumni Fund
- All types of projects will be considered, including equipment, research, influencing behaviour, communications campaigns and delivering infrastructure; as long as the project contributes to reducing the carbon emissions of the University.
- We know that reductions from these projects might be small, and so the Fund is also looking at how projects will help to engage our community on the climate agenda.



8. Partnerships

As an anchor institution in our community the University has an opportunity to develop meaningful collaborative partnerships which help to address the Climate Emergency. We work with institutions across the HE Sector, nationally and internationally but also form more local place-based relationships with WECA and BANES.

Moving forward the Climate Action project will continue to facilitate discussion on the common challenges to transitioning to the net zero carbon economy and looking for opportunities where we can bring our expertise, research, and experience as an organisation to support our partners and region in this journey.



8.1. COP 26

2021 saw the UK host the 26th UN Climate Change Conference of the Parties (COP26) in Glasgow. This Summit brought together parties to accelerate action towards the goals of the Paris Agreement and the UN Framework Convention on Climate Change. Across the University, [our experts engaged](#) with this global climate conference, providing expert input, commentary and joining the debate to encourage the negotiators to deliver an ambitious agreement that was commensurate with the climate crisis.

Colleagues from the University of Bath Institute for Policy Research (IPR) were part of the leadership team for Climate Exp0 - the first virtual conference from the COP26 Universities Network and the Italian University Network for Sustainable Development (RUS). Held in the run up to COP26, ClimateExp0 was an open online event, bringing together global policymakers, academics, practitioners, students and members of the public to collaborate, share and debate climate change policy. The programme featured the latest thinking and most relevant international climate change and policy research across five themes including Green Recovery; Nature-based Solutions; Mitigation Solutions; Adaptation and Resilience; and Finance and Regulation. Addressing one theme each day, it showcased an impressive range of over 200 international speakers and contributors, featuring over 10 from the University's student and academic community, including the Departments of Psychology; Architecture and Civil Engineering; Mechanical Engineering; and Physics.

Case Study: ActNow Film shown at COP26



The [ActNow Film](#) was produced by student volunteers, the University of Bath Institute for Policy Research (IPR) and Cambridge Zero, in partnership with GAUC. It showcased the views of 16-30 year olds, and is drawn from films submitted by over 140 young people from 32 countries.

140

Young people submitted films for inclusion in the ActNow film

In the film young people from across the world share their lived experiences of climate change; their hopes and ambitions for the future; and their 'asks' of the climate change negotiators, as well as their own climate pledges. They share, in their own words, why stopping climate change is important to them - the future generation.

32

Young people from 32 countries were involved in this project

Following successful trailer premieres at Climate Week NYC and the UN Biodiversity Convention COP15 in Kunming, ActNowFilm was showcased in the Green Zone at COP26 and featured at the GAUC Climate x Summit.

On the film's successful entry to COP26, Head of Policy Programmes and Communications at the IPR, Amy Thompson, adds:

"This youth voices project has been such an incredible film to work on. By listening to and watching the fears and experiences of these young people, and the actions they are taking and pledges that they are making to address climate change, you hear and feel the collective power and determination of young people from around the world."

"Young people want a safer and more sustainable world – they are clear on that. It is our hope that the negotiators and leaders at the COP26 summit listen to these voices and take action to enable this future."

8.2. Civic University Agreement

In 2019, the UPP Foundation, through their Civic University Commission (a major inquiry into the role of universities in their localities) launched their Truly Civic report (pdf). The primary recommendation from the inquiry was a call to action for higher education institutions across the UK to create civic agreements in collaboration with their local communities, businesses and other institutions and organisations. These agreements are statements of intent, based on local needs, as to how universities would operate in their region. A civic university agreement outlines how a university will contribute to the environmental, social, cultural, and economic wellbeing of its place, in collaboration with our local communities, businesses and other institutions and organisations

This year we have begun drafting our Civic University Agreement along with our partners, working together to articulate our agreement and what each partner will contribute to the process. The Civic University Agreement belongs not to the University of Bath, but to the whole partnership and the local area, so ensuring all partners play an equal role in its development and drafting is essential. In parallel, the Civic University Network, of which Bath is a part, has been exploring a collaborative climate declaration and how this can be included within the civic agreement process.

8.3. National and international engagement

In July 2020 we signed up to the UN 'Race to Zero', a global campaign in the run up to COP26⁹ a global campaign for transition to zero carbon society and sustainable growth. During implementation, other international campaigns will provide opportunities for engagement. Supporting sustainable international activities, in particular around our research strengths, will help address the global climate emergency challenge.

We are also a member of EAUC (<https://www.eauc.org.uk>), an alliance for sustainability leadership in education. Central to EAUC is a belief that post-16 education should be a global leader in sustainability, whilst having a responsibility to agents of change.

9. Accommodation and Hospitality Service (ahs)

ahs manages the hospitality outlets, shops, conferences, events, security and University accommodation for students and visitors. They run several initiatives which reduce the environmental impact of these services:

9.1. Retail

ahs opened new zero waste 'refillery' stations within the Retail outlets on campus (Fresh and The Market) in a bid to reduce plastic packaging and encourage customers to purchase only the quantities of food required. Various dry goods such as rice, pasta, nuts, and couscous can now be purchased with no plastic packaging.

Other schemes in Retail outlets this year included:

- Introducing compostable carriers and removing plastic bags, including bag for life,
- Adding loose fruit and vegetables in the Market,
- Introducing sandwich suppliers with compostable packaging,
- Removal of cups for hot drinks in the Market
- Eco-friendly chemicals and environmentally sound products made available to students

9.2. Climate Champions

ahs and the Climate Action Team jointly employed casual student Climate Champions to promote and raise awareness of environmental issues on campus and in the city. These Climate Champions have encouraged students to take part in sustainability quizzes, recycle and save energy in student accommodation.

9.3. The Exchange Cup Scheme

The Exchange Cup scheme was launched in 2018 in one takeaway outlet only. The scheme has been well received at the University and in 2021, it has expanded, operating in all ahs outlets. This scheme allows you to buy a reusable coffee cup for £2 or swap it for a token if you don't want to carry it around. This can then be used instead of a disposable cup, to help reduce the amount of waste we send to landfill. Using an Exchange cup or your own reusable cup gives you a 20p discount on your hot drink.

9.4. Pack For Good

The end of term 'Pack For Good' campaign is run in conjunction with ahs, Estates, the Students' Union, the Student Community Partnership, the local council and Bath Spa University. This campaign collects unwanted items from students as they move out of accommodation and donates it to charity. In 2021, there were 1,279 bags of charity donations given to the British Heart Foundation which has raised £17,906 for the charity, and diverted an estimated 10 tonnes from landfill, equivalent to 104,131 kg carbon emissions. A total of £656,656 has been raised in Bath since the campaign began in 2012, diverting an estimated 375 tonnes from landfill, equivalent to 3,818,736 kg carbon emissions¹⁰.

9.5. The Sustainable Food Commitment (SFC)

Accommodation and Hospitality Services (ahs) have been working to reduce the environmental impact of campus food provision for over a decade. In line with many environmental initiatives these efforts to date have been primarily focused on issues of waste, single use plastic and fair trade. The Climate

⁹ COP26 is the next UN Climate Conference, now scheduled to take place in Glasgow in November 2021.

¹⁰ Figures and equivalent emission reductions provided by British Heart Foundation campaign.

Action Team have worked with ahs to support them in moving to their next phase of environmental impact reduction, broadening the focus from primarily waste and fair trade to a whole-system approach primarily focused on climate change. Whilst our initial focus is on climate change, we recognise the significant co-benefits to biodiversity, soil, water and air quality as well as human health and well-being, and will aim to broaden the Sustainable Food Commitment to reflect sustainability issues more broadly as we achieve our goals.

Drawing together expert advice from University of Bath academics, and in dialogue with students and the Climate Action Team, ahs is in the process of developing a Sustainable Food Commitment.

Case Study: Student Switch Off



The award-winning student residences energy-saving competition '[Student Switch Off](#)' continues to deliver savings and raise awareness with new students. Each year typically 1500-2000 first year students sign up and pledge to behave in an energy efficient way.

Students are provided with top tips on various social media, plus competitions, quizzes, training, and regular updates including how much electricity they have been using. A 'Beer & Curry' prize is awarded to the winning hall, and there are a number of other prizes given away during the competition.

This campaign runs at over 40 universities in the UK; Bath continues to be a leader amongst these in implementation. Thanks to a combined effort between Estates, AHS staff, the SU, and student volunteers, higher levels of engagement are achieved than most other institutes.

The University have been running the campaign for the last 12 years and over this time have saved 1,123,499kWh, equivalent to 260 tonnes CO₂.



- 1744

students engaged in the campaign (48% of 3,600 residents)
- 1414

entries in our climate crisis quizzes
- 316

students participated in online competitions, activities and webinars
- 14

students trained as campaign ambassadors
- 88

Estimated tCO₂ saved

10. Students' Union

In May 2020, the Students' Union (SU) declared a Climate Emergency, at the same time as the University. The urgency and importance of this issue has been consistently reflected in the inclusion of environmental campaigns as one of its Top 10 priority campaigns over the past four years, calling on the University to:

- “commit to radical action in its strategy to combat the climate crisis” in the 2019/20 Top Ten,
- “commit to sustainable investment practices and divest from all companies with links to the fossil fuel industry” in the 2020/21 Top Ten,
- “create a transparent sustainable practice policy and plan; including demonstrating positive steps to divest from companies with poor sustainability practices” in the 2021/22 Top Ten.

The SU has embedded the NUS training on Education for Sustainable Development into its training programme for academic reps. This equips students with an understanding of how they can champion environmental, social, and economic sustainability through their role, and be confident in doing this. Over 30 students took part in the training in 2021, and this will be offered again in 2022.

In academic year 2021/22, the SU held a Citizens' Assembly on the theme of sustainability, inviting students to consider sustainability issues across the University and propose solutions. Work is ongoing to develop campaigns and opportunities to put these solutions into practice.

The SU Officers are working in partnership with the Climate Action team on the SOS-UK Responsible Futures programme, a whole-institution supported change programme and accreditation mark to embed sustainability across all aspects of student learning.

The SU recognises that its own enterprise has a carbon impact and is committed to looking at its own practices.

- In 2019 it signed up to the NUS Green Impact Accreditation to provide a framework to reach considerably improved standards in terms of sustainability and was awarded a "Good" rating in July 2020. Due to the impact of Covid-19, the SU was unable to enter Green Impact in academic year 2020/21 but has been using the supportive process to improve the sustainability of the SU's activities and will be submitting for accreditation again in academic year 2021/22.
- Working with More Trees BANES (not-for-profit community group) to run a '[Plant Your Votes](#)' scheme which plants 1 tree for every 10 individual votes placed in the SU Officer Elections. Following the 2021 Officer Elections, 541 trees were planted. This scheme will be running again for the 2022 Officer Elections.
- Embedding sustainability in the SU bars by increasing vegan and vegetarian options on the menu, working to reduce single-use plastics, and selecting new merchandise suppliers who offer more sustainable options.

It is also supporting students to make individual sustainable and low carbon choices, this includes:

- a successful ballgown swap shop timed to coincide with the Winter Balls, organised with People & Planet, and the Sustainable Fashion Society and using the free clothes swapping app [Dopple](#), founded by one of our own Bath students. Plans are for future swap shops to focus on sports kit.
- A Sustainability themed day during Fresher's Week 2021 during which a Pack 4 Good event was held selling second-hand kitchen equipment to students, avoiding the purchase of newer equipment, saving students money, and raising £1,365 for RAG.
- hosting a successful Share and Repair Café on campus, in partnership with the Bath charity Share and Repair. This enables students to extend the life of clothing, electricals or furniture with free repairs conducted by skilled volunteers.