Climate Action

Annual Report 2023

UNIVERSITY OF BATH

Message from our Vice Chancellor

"We recognise our responsibility as a University to address the grand challenges of sustainability and climate change, and our whole institution approach allows us to empower our students, deliver research with impact alongside reducing our own emissions.

This year the University of Bath was honoured to be named the University of the Year by The Times and The Sunday Times Good University Guide 2023 in recognition of our strong focus on both excellent learning and student experience. Embedding sustainability into the curriculum means our students will have the knowledge, skills and capabilities to become the innovators and leaders who tackle the challenges of climate change in the future.

Our research has already developed solutions which are delivering real emission reductions now, whilst current work will be part of the solutions of the future – not only in transitioning to the low carbon economy but also in building adaptive capacity and resilience for a changed climate.

Within our University Strategy we have a clear commitment to environmental best practice, and we are demonstrating this in our commitment to our challenging net zero targets in 2030 and 2040. We have initial pathways to achieving this but it is only through the support and action of our whole community that we will be successful.

To further our institutional objectives in this arena, the University will seek to appoint a Director of University Sustainability during the coming year."

Professor Ian White,
Vice-Chancellor and President

"This year I would like acknowledge the hard work and dedication of the Climate Action Team, who once again have made significant efforts to support and advance the University's transition to a Net Zero carbon future. Particular highlights this year include: Climate Literacy training offered to all incoming students, further roll out of the LEAF programme for our research labs, all-staff and all-student Climate Action Survey, work supporting organisational change and partnerships, sustainable food commitment, and leadership of the GW4 Climate Alliance Living Labs project."

Professor Pete Walker, Climate Action Framework Lead

"Our students recognise that climate action is needed now to safeguard their future.

The Climate Action Team's work is vital, both to transform the University's carbon impact but also to publicly demonstrate that our commitments to the climate are backed by action.

Both the SU and the University have declared climate emergencies and now must respond with scale and urgency in order to meet our targets by 2030, and also to achieve the necessary transformation across our whole organisation, including making sure our current and future students are educated and equipped to deal with the greatest challenge of our present and future."

Alex Robinson, SU President

Internal Audit

The University of Bath's Internal Audit Department undertook an independent assessment of the carbon data presented within the Climate Action Annual Report. The opinion of the Internal Audit was as follows:

"In our opinion, we consider that Reasonable Assurance can be given with respect to the adequacy and effectiveness of the University's arrangements for managing the risks relating to the accuracy and reliability of the information and data collected relating to the University's Carbon footprint.

Based on the procedures we have performed nothing has come to our attention that causes us to believe that the carbon emissions reported within the Climate Action Annual Report 2022-23 for the year ended 31 July 2022*, has not been prepared, in all material respects, in accordance with the adopted University methodology that also materially complies with the Alliance for Sustainability Leadership in Education – Standardised Carbon Emissions Reporting for Further and Higher Education."

The full report of the findings of the Internal Audit, together with any identified areas of improvement to the collection processes, methodologies, and documentation, will be presented to the Audit and Risk Assurance Committee.

*This is based upon the guidance of the internationally recognised Greenhouse Gas (GHG) Protocol

Contents

Introduction

Welcome to our Annual Climate Action Report 2022-23

When the University declared a climate emergency in May 2020, it set out a vision to deliver a joined-up, whole institution response as represented through our 11 CAF (Climate Action Framework) Principles.

This vision covers four thematic work areas as covered in this report:

- **Education** – empowering students as change makers for climate change.
- **Research** – delivering solutions to tackle the climate emergency.
- **Footprint** – reducing our footprint to net zero carbon emissions by 2040 .
- **Partnerships** – working to bring wider societal transformation in response to the climate crisis.

The Principles and our approach were created through consultation with our whole community and approved by our leadership and governing body. Our staff and students continue to believe in this whole-University vision and support strong action across all aspects of university life.

98% of people support climate education at Bath[1]

40% of students and 39% of staff support rewarding research that tackles the climate crisis

99% of people support changing how we produce goods and services

59% of people support the development of policies to guide who the University partners with[2]

Whilst this vision focuses explicitly on our response to the climate emergency, we recognise that climate action is positioned within the broader sustainability challenges, including the interlinked biodiversity crisis.

Climate change and biodiversity loss can be seen as the biggest sustainability challenges of our generation, and as such are inherently interconnected to all the environmental, social and economic concerns as articulated by the 17 UN's Sustainable Development Goals (SDGs).

Highlights

Education

- Climate Literacy offered to all incoming students as part induction
- Participating in collaborative education project funded by QAA
- MSc Net Zero Futures course to launch for 2024
- Student impact through LabCycle spin-out project

Research

- Sustainability continues to be key strategic research theme for University
- Launch of Institute for Sustainability
- 50 labs joined our LEAF pilot
- Lorraine Whitmarsh awarded MBE, contributed to House of Lords report and to Greta Thunberg's Climate book

Footprint

- Scope 1 and 2 emissions down 20% on last year, and down by 47% since 2005
- Scope 3 measurement and supply chain engagement work continue to be at vanguard of sector – GW4 pilot project lead by Bath
- Launched our Sustainable Food Commitment
- Business travel to UK destinations by train instead of flying
- Piloting low carbon consideration in tenders

Partnerships

- Working with suppliers on their low carbon progress
- ActNowFilm2 produced in partnership with Cambridge Zero, ForAfrika, Global Alliance of Universities on Climate (GAUC) and Plant-for-the-Planet
- Collaborative project with B&NES council on sustainable construction

Organisational Change

- Ongoing support for whole institutional approach across all areas of community
- Climate Advocates Pilot launched in five departments
- Piloting a Climate Impact Assessment tool for use on business cases, and papers to committee

Key Performance Indicators

In 2021, the University launched its 5-year University Strategy around the four pillars – supporting our community, excellence in education, high-impact research, and strategic partnerships.

Our climate commitments can be seen as a green thread which runs through this strategy, visible in our core value of "Supporting a sustainable community and adopting best environmental practice", and Sustainability as one of our three primary institutional research themes.

With the 2021-2026 Strategy, the University Key Operating Performance Indicators (KOPIs) were updated to align with the four pillars.

The previous KOPIs, total carbon emissions (total impact), and carbon emissions per m2 floor area (efficiency measure) are no longer included in the University KOPIs but reported annually in our Climate Action report.

Climate Action Framework Principles

- **We understand the challenges**
- **We understand and acknowledge the challenges, and initial progress has been made**
- **Plans are well underway, and we're making progress**
- **Change is embedded and ongoing**

Progress against our CAF Climate Principles

Principle	Progress
Carbon emissions reduction 	**Scope 1 & 2:** ✓ Emerging analysis of plans for campus decarbonisation. ✓ Next Steps include embedding in new Estates Strategy, and detailed and funded (in principle) campus decarbonisation plan. **Scope 3** ✓ Piloting actions in key areas (e.g. procurement tenders). ✓ Carbon reduction plan in development.
Research and innovation 	✓ Sustainability is one of the 3 core pillars of University Research strategy. ✓ Institute of Sustainability launched. ✓ 3 out of 5 Bath Beacons are climate focused. ✓ Inclusion of climate change in the new research ethics digital platform. ✓ Ongoing research/operational collaborations (using the University as a research tool).
Learning and teaching 	✓ Climate Literacy for incoming students. ✓ Optional Climate Action courses available in staff development but not mandatory. ✓ Embedding of climate in all courses through curriculum transformation, but no systematic assessment of progress yet. ✓ Pilots of pedagogically-innovative climate-related initiatives (outside formal curriculum) available to students in some disciplines.

bath.ac.uk/corporate-information/university-of-bath-climate-action-framework-principles

Progress against our CAF Climate Principles

Principle	Progress
University strategy	✓ Whole institution approach to Climate Action. ✓ Climate impact considered (to some extent) in all decision-making. ✓ Climate is mentioned in University strategy, as a value not a core strategic pillar.
University governance	✓ All UEB, and Council papers include an assessment of Climate Action impact. ✓ Annual publication of emissions, including scope 3. ✓ Governance structure established through Steering Group and reporting to Council.
University campus emissions reduction and climate change adaptation	✓ Low carbon design considered on a case-by-case basis on individual projects. ✓ Consultancy study by ARUP has identified potential pathways to Net Zero – ongoing refinement and exploration of alternative funding/delivery models. ✓ Workshops to be held on adaptive needs of campus/supply chains. ✓ Residual emissions working group to be established.
Internationalisation strategy	✓ Carbon impact of internationalisation recognised internally. ✓ Initial discussions to explore and reconcile tension between climate commitments and internationalisation.

bath.ac.uk/corporate-information/university-of-bath-climate-action-framework-principles

Progress against our CAF Climate Principles

Principle	Progress
Carbon management: (improving data quality)	✓ Measuring and reporting scope 1, 2 and 3 data, supported by analysis of data quality. ✓ Independent internal audit and verification of data.
University finances	✓ Initial contextual information on carbon considered in funding decisions but systematic strategic approach not yet developed. ✓ Carbon intensity of investment portfolio measured and reported, with intention to reduce intensity but plan not yet developed.
University community awareness and action	✓ Ongoing annual engagement programme across student and staff community, targeted based on behaviour change research. ✓ Majority of University community aware of climate commitments.
University of Bath: local leader and partner	✓ Participate in sector climate initiatives. ✓ Involved in local forums. ✓ Local projects developed to support the local area/region to transition to net zero. ✓ Applications for joint funding to progress local/regional climate projects.

bath.ac.uk/corporate-information/university-of-bath-climate-action-framework-principles

Education

Through the Climate Action Project, we are helping build a world-class reputation for high quality education across a range of disciplines to fully address climate change. To achieve this, we are seeking to:

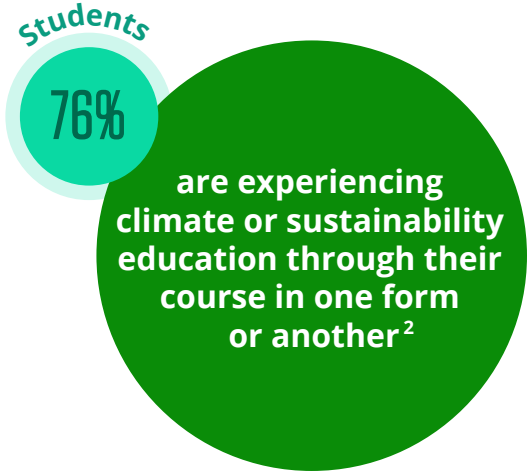
- Provide impactful learning opportunities for every student to study and work on climate related issues.
- Equip students with sustainability skills and knowledge to empower them to be future leaders, innovators and changemakers.
- Embedding sustainability in all course experiences.
- Exploring pedagogically-innovative teaching practices to reduce carbon emissions.

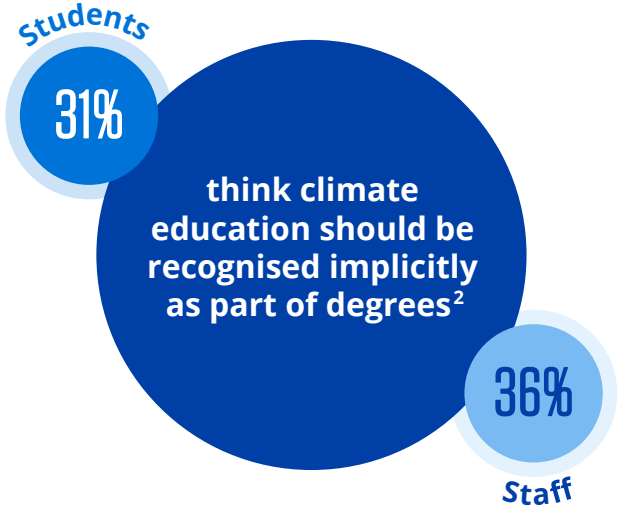
Embedding climate change in education

We are on a journey to embed climate change across our education framework, and climate action is now integrated into education strategy and development, through:

- The Education Strategic Implementation Plan (ESIP), approved by Senate in 2022, and which sets out four priorities with one entitled "Sustainability and Green recovery – to set ambitious targets for integration into education at Bath in response to student and staff feedback"
- The Education, Quality and Standards Committee (EQSC) now requires all papers to explicitly include climate action.
- The Teaching Development Fund (TDF) criteria explicitly includes Climate Action Principles.

Additionally, we are working towards Responsible Futures accreditation, a nationally-recognised scheme in which we work with students on institutional level strategic action, and have been co-creating our action plan with the Students' Union.





Education

Developing the curriculum

As part of the University's aim to equip all Bath graduates with the knowledge, confidence, and skills to conserve and protect our planet, we have been addressing learning in the formal curriculum (both through embedding in current courses and by developing new ones).
Key achievements include:

- The curriculum transformation project has a theme of 'Citizenship and Sustainability', through which climate change learning, skills and knowledge are being embedded. To support this, in collaboration with CLT, we have:
  - Updated and delivered the Citizenship and Sustainability session to include a section on Climate Literacy.
  - Delivered a collaborative pilot workshop for unit conveners as part of the MA Education programme curriculum transformation process to embed sustainability knowledge and skills. This has led to content, assessment and learning outcomes of 10 units being aligned to sustainability and climate change.
  - Taken learnings from this pilot workshop to continue developing workshops that aim to provide a structured and accessible way for academic staff to embed sustainability competencies into their teaching to provide students with the knowledge and skills they need to tackle current challenges.
- A new MSc Zero Carbon Futures course was approved by Senate and is expected to begin in academic year 2024-25.
- Ongoing pilot initiatives embedding climate action in the formal curriculum include climate focused student-led projects in which the Climate Action Team are a potential client. A recent Master's consultancy project developed recommendations for overcoming the conflict between achieving net zero and pursuing internationalisation as a strategically important part of the University's approach.
- Climate Fresk (an interactive climate change workshop) facilitator training was undertaken with staff and was then delivered at the Education Research and Culture Day, and for MSc Global Health and BSc Health and Sport. With positive feedback from staff and students, this will now be fully embedded into those programmes.

Case Study

Collaborating for quality sustainability learning

In 2022, University of Bath joined with 10 other universities, led by De Montfort University, to deliver a Collaborative Enhancement Project focused on Education for Sustainable Development (ESD) and academic quality, funded by QAA. The aims of this project are to:

1. Develop and trial an audit process to help track and identify quality ESD provision, identifying gaps, best practice and opportunities for progression.
2. Help students identify how their course links to sustainable development and climate change.
3. Co-develop a resource that will make the alignment of ESD to staff and student academic quality processes more straightforward to adopt, by providing adaptable templates and a range of institution-specific approaches which will help to inform future practices.

The project, which runs until summer 2023, has been undertaken with MA Education and BSc Architecture and Civil Engineering. Plans are underway to roll out learnings and resources in the next academic year.

"Participating in this project has been invaluable in unlocking deeper conversations about quality assurance, how we evaluate sustainability in the curriculum and the importance of student voice in the process."

Nicki Schantz, Climate Action Education Programme Officer

Education

Enhancing learning experiences

To complement and enhance students' curriculum learning related to climate action, optional informal learning experiences are offered.

- In 2022-23, we reprised our Climate Literacy induction, offering it to all incoming students with over 1000 attending our interactive workshop and around 100 expected to achieve accredited Carbon Literacy certification. Wider sector learning from this is being encouraged, with an initial presentation of the work at a meeting of the UK Consortium on Sustainability Research.
- A new cohort of student Climate Leaders was recruited to work with the Climate Action Team on strategically significant projects. Projects this year include internationalisation, student recognition, promoting climate positive careers, and embedding climate action into skills training.
- Since 2019/20 the University has run several Vertically Integrated Projects (VIPs); 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. This year, some of these VIPS have had a specific climate focus, including
  - Creating carbon neutral communities (Farrington Gurney).
  - Decarbonising Heat.
  - Students for Sustainable Food.
- Taking Action at Bath was held once again in October 2022, offering students an opportunity to explore how to get involved in extra-curricular activities and contribute to positive climate and social change while studying at Bath.
- The annual One Young World Bath event was held in March 2023, this year focusing on Sustainable cities and communities, Quality Education, and Good Health and Wellbeing, with inspirational speakers, interactive workshops, and networking.

Case Study

Students for Sustainable Food

The 'Student for Sustainable Food' Vertically Integrated Project (VIP) is a student-led research-focused project that aims to promote sustainable food practices and encourage behaviour change. In 2021-22, they helped shape the Sustainable Food Commitment (SFC) and this year the group have:

- Carried out a one-week experiment in 4W café to trial removing the additional charge for plant-based milks.
- The GW4 Climate Alliance living labs project supported this work, financing the non-dairy milk subsidy for the pilot and survey work.
- The aim was to understand if removing financial barriers would sufficiently incentivise behaviour change.
- Partly based on popularity during the week, and partly based on existing plans within the SFC, the University has now permanently scrapped additional charges for plant-based milks.

"Our campaign provided compelling evidence for the University to permanently drop the 40p charge for oat milk and it has shown that sustainable habits do not only come down to individuals but also the wider context they are in. We tackled this by informing individuals about the environmental benefits of plant-based milk and by removing structural cost barriers."

Nina Tapie, Psychology student

Case Study

LabCycle – tackling lab plastic waste (5.5 million tonnes each year!)

Jinghui Liang joined University of Bath as a Marie Curie FIRE Fellow in the Centre for Sustainable and Circular Technologies (now Institute for Sustainability), completing a PhD and post-doctoral project, both of which demonstrated the promising future of biotechnology in helping fight climate change.

During these studies, Jinghui developed an idea for reducing plastic consumable waste from labs and with this she created LabCycle with her co-founders whom she met at a SETsquared training workshop.

The process has been trialled at Bath and facilities are under construction to roll this process out across the University.

"I was devastated to see the sheer amount of plastic consumables being used to ensure research quality, and health and safety. Even worse, they can't be recycled due to a lack of know-how and scalable technologies. Determined to provide the infrastructure to make research and healthcare more sustainable, I co-founded LabCycle, a start-up aiming to create the first circular economy for laboratory plastic consumables."

Jinghui Liang, Research Visitor

Education

Subliminal curriculum

The subliminal or 'hidden' curriculum refers to a University's local practices, its campuses and residences, or more broadly: the environment in which students learn. Behavioural change campaigns and local good practices (e.g. Keep Cups, Sustainable Food Commitment, end of term waste initiatives, switch off campaigns) are recognised as being part of a student's learning experience, as well as having pure operational benefits, and are hence an essential part of the curriculum – accreditation schemes like Responsible Futures explicitly recognise this. In the Footprint section we explain more about our wider campus initiatives.

In support of informal learning opportunities linked to climate change, we have:

- Recruited eight students as Climate Champions to work with Campus Services and CAF to deliver peer-to-peer advice that supports student behaviour change for sustainability.
- Provided guidance during the induction process to encourage the inclusion of sustainability principles within student-created shared living agreements.

Research

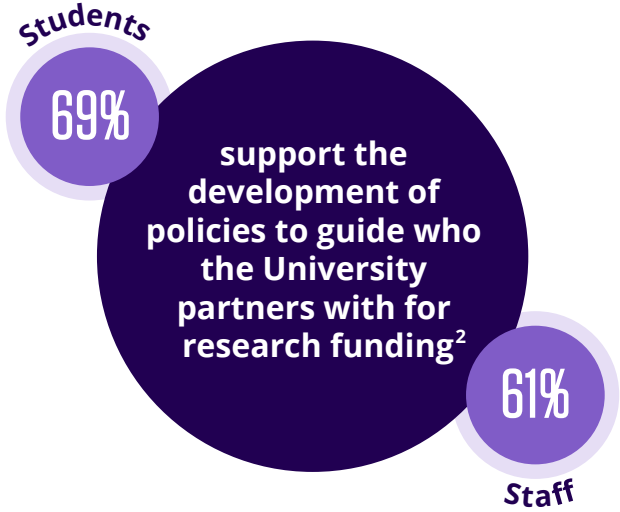
Research impact

Sustainability is one of the University's three key research themes and ground-breaking work is taking place across the spectrum of disciplines covered by our research. In the context of tackling climate change, this includes work that aims to deliver immediate and potentially shorter-term carbon emissions savings up to work where the impacts will be realised over a longer timescale.

Across the University we have experts researching solutions to the climate crisis from multiple angles:

- Changing behaviours - focusing on perceptions and behaviour in relation to climate change, energy, transport. and waste management.
- Developing low carbon alternatives and solutions – future low carbon vehicle propulsion, creating the next generation of energy-positive buildings, lab-grown meat, innovative construction materials, measuring and reducing the environmental footprint of products and organisations.
- Future energy supply and storage - energy materials and solar cells, green nanomaterials in energy storage, marine renewable energy, sustainable chemistry, solar energy, industrial decarbonisation using hydrogen and life cycle impacts for renewable energy production, energy and power networks, including Smart grids
- Adapting sustainable business practice – corporate finance, infrastructure transformation and regulation of utilities, circular economy business models, reducing material usage in manufacturing.
- The politics and economics of climate change - global political economy of climate change, decarbonisation and climate justice, impact of climate change on geopolitics, green growth and just transition, monetary valuations of nature and eco-systems.
- The health and societal impacts of climate change - psychology of climate change and eco-anxiety, consumer acceptance of cultured meat and plant-based alternatives, impacts of the environment on health, and understanding uncertainty in forecasts from a mathematical perspective.
- The wider environmental effects of climate change - mathematics of climate change and weather modelling, solar-driven water harvesting and wider water resource issues, machine learning for environment protection and conservation.

We have taken a creative approach to communicating the impact of this wide range of work through our Research with Impact series.



Research

Research Institutes and Centres

The University has several world-leading research institutes and centres addressing climate change and sustainability challenges. These include:

- Centre for Climate Change and Social Transformation (CAST).
- Institute for Advanced Automotive Propulsion Systems (IAAPS).
- Institute for Policy Research (IPR).
- Institute for Mathematical Innovation
- Innovation Centre for Applied Sustainable Technologies (iCAST).
- Industrial Decarbonisation Research and Innovation Centre (IDRIC).
- Institute for Sustainability.
- Faculty of Engineering 'Centre for Climate Adaptation and Environment research.

SPOTLIGHT

Professor Lorraine Whitmarsh MBE

Professor Whitmarsh is a leading environmental psychologist and Director of the Centre for Climate Change and Social Transformations (CAST). Her research focuses on public perceptions and behaviour in relation to climate change, energy, and transport.

She regularly advises governmental and other organisations on low-carbon behaviour change and climate change communication as:

- a member of the Climate Crisis Advisory Group (the independent body of experts advising policymakers on the climate crisis and net zero transition).
- an expert lead for Climate Assembly UK (the nationally organised citizens' assembly on climate change and net zero).
- a lead author for the IPCC's Working Group II Sixth Assessment Report

In recognition of the work she has led on behaviour change and public engagement towards more sustainable futures, she was awarded an MBE in the Queen's New Year's Honours List 2022.

Last year, she also co-authored a chapter in Greta Thunberg's 'The Climate Book' with her CAST colleague, Dr Stuart Capstick. This explored the associations between individual environmental actions (such as driving or flying less, or saving energy) and wider social and system transformations (such as changes to buildings and cities, and new laws).

With her colleagues in psychology, Professor Whitmarsh and the Climate Action team work collaboratively to use the University as a research experiment (Living Lab) for climate related behaviour change projects, including our annual Climate Action survey.

"Climate change is the biggest threat to humans and the environment, and universities need to lead the way on cutting emissions by demonstrating innovative solutions. We have been working with the CAF team to design behaviour change interventions to promote plant-based diets and sustainable travel, and to measure progress towards carbon neutrality."

Professor Lorraine Whitmarsh

Case Study

New UK Hub for Hydrogen Research at Bath

- When consumed – whether via combustion (burning) or through electrochemical processes in a fuel cell – hydrogen's only material co-product is water. It's also incredibly energy-dense, delivering three times the amount of energy per kilogram compared to other fuels such as petrol, and has a broad spectrum of applications, from heating through to powering vehicles.
- However, challenges remain to make, store and use low carbon hydrogen efficiently and affordably.
- Professor Tim Mays, Department of Chemical Engineering, has won a £579,000 EPSRC grant to set up a national research programme, UK-HyRES, that will establish Bath as a UK Hub for Hydrogen Research to address these challenges.
- With a planned start in May 2023, the Hub will cover all aspects of the hydrogen value chain including energy and industrial decarbonisation.
- One of the areas UK-HyRES will focus on is expanding hydrogen's use as a 'buffer' to store energy when supply from renewable sources outstrips demand.
- Many industrial partners, including GKN Aerospace, Siemens Energy and Wales and West Utilities are involved in developing the Hub to ensure that the research will make a real-world impact with potential commercialisation.

"Green hydrogen from renewables such as solar and wind is an essential ingredient in the urgent transition away from fossil fuels and feedstocks that is required to meet the UK's Net Zero and Energy Security commitments."

Professor Tim Mays

Case Study

Digital Net Zero Energy System Lab

The Faculty of Engineering and Design launched a new digital facility to demonstrate how energy system digitalisation can enable a whole-system approach to enable faster and deeper decarbonisation.

Responding to the challenge that low-carbon technologies are typically installed at the lowest levels of the electrical distribution network, far from new offshore renewable capacity, this lab is exploring a whole-system approach to optimise and coordinate the operation of kilowatt-scale EV and HP energy demand in line with growing clean energy in the gigawatt scale.

Aiming to accelerate an equitable and sustainable transition to net zero while improving network resilience, research will focus on energy systems modelling, energy customer and demand management modelling, energy market modelling, carbon intensity analysis, and whole-system interaction between energy system and energy customers for improving energy security and reducing energy prices and energy security.

"Building energy flexibility is a vital component of our whole systems approach to energy decarbonisation. With increased use of digital technology, including smart metering and grid-interactive controls, energy demand flexibility can be exploited and will empower consumers to make best economic use of time-of-use energy tariffs. The support of the Faculty of Engineering and Design to establish our Digital Net Zero Energy Systems Lab will accelerate our cross-disciplinary efforts to deliver increased energy security, increased renewable energy utilisation, and to achieve net zero at the lowest cost to the UK consumer."

Dr Andy Shea, Senior Lecturer, Department of Architecture and Civil Engineering

Furong Li, Professor, Department of Electronic and Electrical Engineering

Research

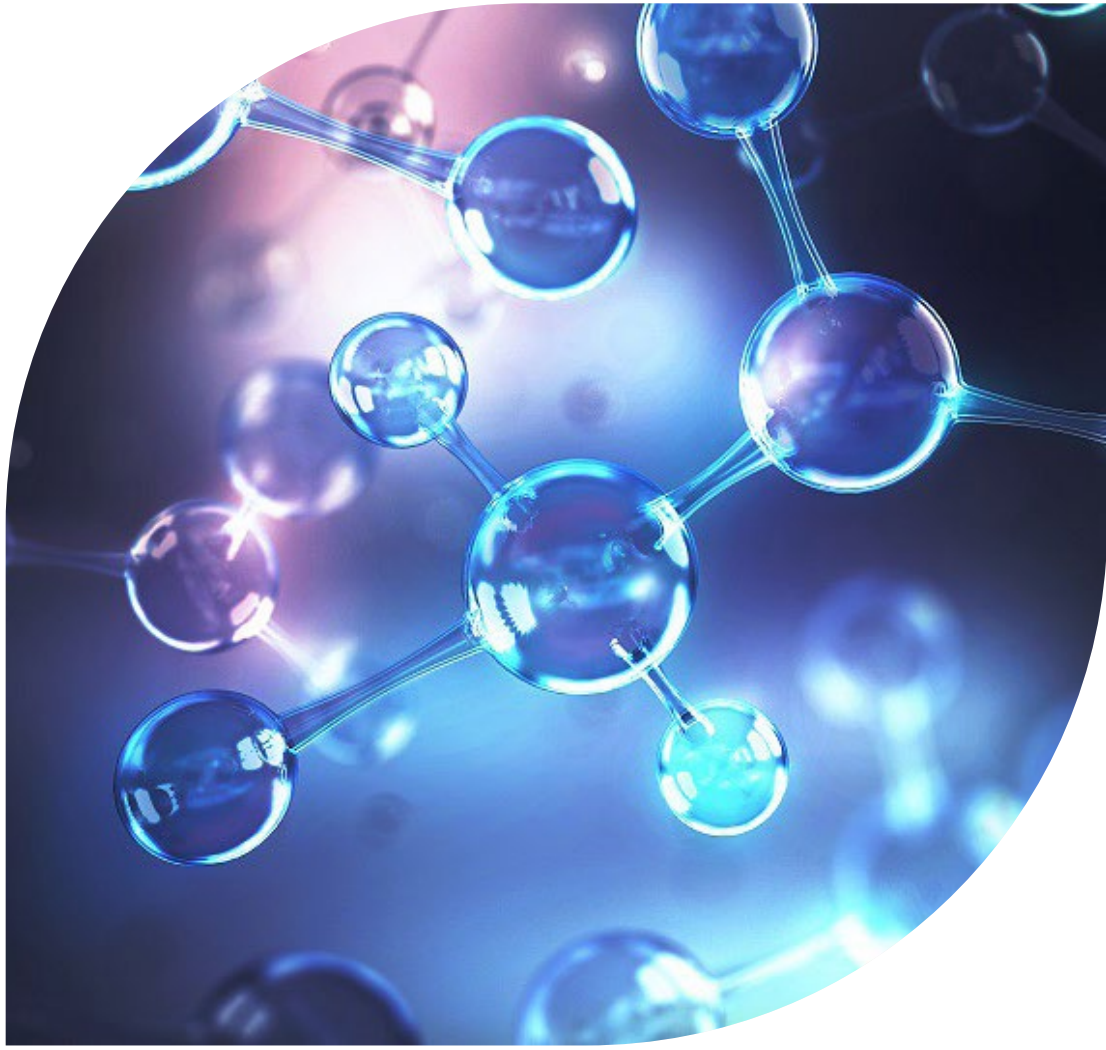
Collaborating for impact

Bath Beacons:
This multidisciplinary initiative empowers our research community to tackle major global challenges by building consortia for large-scale funding. A number of Beacons tackle climate change, including 'Sustainable and automated transport research', 'Living well now and by 2050', and 'Future fuels'.

Earth System Governance Project:
the University entered into a new partnership in September 2022 with this global, interdisciplinary research network to establish the Research Centre Bath as part of a Global Alliance, which will increase our international standing and reputation in the field of climate change and sustainability.

Ellen MacArthur Circular Economy Scheme:
in June 2022, University of Bath were recognised by the Ellen MacArthur Foundation for its work on promoting a circular economy through learning and teaching, applied sustainability research and our Climate Action Framework.

GW4 Climate Alliance
This alliance brings together four research-intensive universities - Bath, Bristol, Cardiff and Exeter - connecting researchers with policymakers, industry and the public to influence change through long-term partnerships. Through the climate alliance, GW4 is seeking to lead the regional response to the climate emergency recognising that whilst the challenge of climate change is global, solutions need to work at the local and regional level.

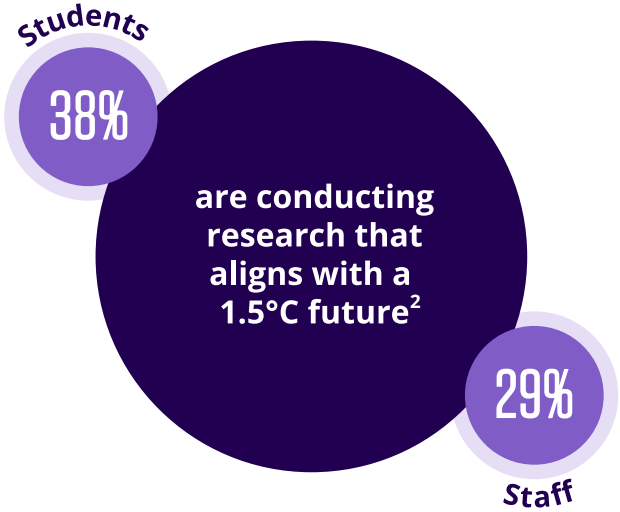


Research

Research conduct

Alongside the content and impact of our research, we are also considering the carbon impact of the way we conduct our research:

- As signatories to the Concordat to Support Research Integrity, the University have launched a new dedicated digital platform, to support our approach to research ethics governance. This recognises and incorporates a consideration of the ethical implications of the impact of our research on climate change, and how we reduce carbon emissions from our research.
- Anneke Lubben has been appointed to the newly created role of Director of Research Infrastructure and Facilities, reporting directly to the Pro Vice-Chancellor (Research). This role provides strategic leadership focused on developing world class and sustainable research infrastructure and specialist research facilities across the University. Embedded in this approach is a consideration of our carbon emissions, helping to reducing scope 3 emissions through securing an evolving and appropriate equipment base, with a core principle of minimising unnecessary duplication and sharing equipment where appropriate.
- Work through the Laboratory Efficiency Assessment Framework (LEAF) has continued with ongoing efforts to recruit and certify labs:
  - 50 labs across the Faculties of Engineering and Design, Humanities and Social Sciences, and Science are signed up to LEAF.
  - 19 of those have achieved Bronze accreditation with some now working towards Silver.
  - Material and Chemical Characterisation (MC2) department are first to have achieved 100% Bronze ratings.
  - The Faculty of Engineering and Design have set staged targets to sign up all labs this year and achieve 100% Bronze certification in the next academic year.



Case Study

-70 is the new -80

Ultra-low temperature freezers (ULTs) are used extensively for storing biological samples for research, but are highly energy intensive, each using around the same energy as a single household annually. Several measures can be taken to improve efficiency, the most effective being only cooling samples as much as needed. ULTs used to be set at -65°C or -70°C, until the 1980s-1990s when manufacturers started to advertise temperatures around 10°C colder. This seemingly small difference requires 25-30% more energy with little evidence that lower temperatures improve sample stability or recovery.

- 24 labs at Bath have warmed up their freezers this year: 8 in the Department of Health and 16 in the Department of Life Sciences.
- These measures save energy costs, reduce our carbon footprint and extend the life of equipment.

"Turning the ultra-low temperature freezers up is a great example of a very quick win in terms of energy usage and sustainability. Surprisingly, this modest change in temperature has a big effect on energy usage, and significantly reduces strain on the freezer themselves, prolonging their life span. Importantly, there are no significant problems regarding the viability of important samples by making this change, and the speed with which the freezers warm to an unacceptably high temperature in the event of a power outage is only marginally shorter. In sum, this is a great example of an incredibly simple change that all labs could make immediately, with significant energy savings with no appreciable downside."

Professor Ed Feil, Department of Life Sciences

Case Study

First Green Hydrogen production facility in the UK's southwest

- In Spring 2023, a new Green Hydrogen production and storage facility will become operational at our **Institute for Advanced Automotive Propulsion Systems (IAAPS)** research facility at the Bristol and Bath Science Park.
- This facility, made possible due to a £2.5M grant from the UK Research Partnership Innovation Fund (RPIF), will allow IAAPS to sustainably produce hydrogen for its research and testing work in a low carbon way, powered by solar energy.
- The new manufacturing capability will not only decarbonise the energy used on the IAAPS site, but also support research into sustainable propulsion technologies and the use of hydrogen as an alternative green energy to achieve net zero targets.
- Acting as a regional and national demonstrator for local green energy generation and use, this facility will form the basis of a regional H2 and Sustainable Transport Acceleration Hub, working with over 30 cross-sector partners to stimulate green growth in the region.

"In working with a diverse range of organisations, including industry leaders, innovators, academics, legislators and SMEs, we are setting the pace in the adoption of net zero technology by a much broader range of stakeholders."

Professor Chris Brace, Academic Director, IAAPS

Footprint

What is the cause of the carbon emissions we produce at the University?

Universities have a unique role to play in addressing the climate emergency, through our education and research but we also have a responsibility to reduce our own emissions.

- Our research plays a critical role in understanding and fighting climate change challenges, but it also generates carbon emissions and environmental impacts through the way in which it is carried out.
- Our teaching empowers students to become future leaders and innovators in our response to the climate crisis, but it also results in carbon emissions in its delivery and the movement of large volumes of students to and from Bath at the start and end of each semester.
- The University campus is like a small town, and in common with the rest of society, produces emissions from the way our community travel, what we eat, our choices as consumers and the generation of energy to heat and power our buildings and equipment.

These carbon emissions make up our carbon footprint.

How do we understand and classify our carbon emissions?

To better understand the source of these emissions, and so take action to minimise them, they are broken down in to three categories for reporting*:

- **Scope 1** covers direct greenhouse gas emissions from sources owned or controlled by the University. This is mainly the gas used to power boilers and fuel used in university owned vehicles, but also includes fugitive emissions (leaks and other irregular releases of gases or vapours from pressurized containment).
- **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.

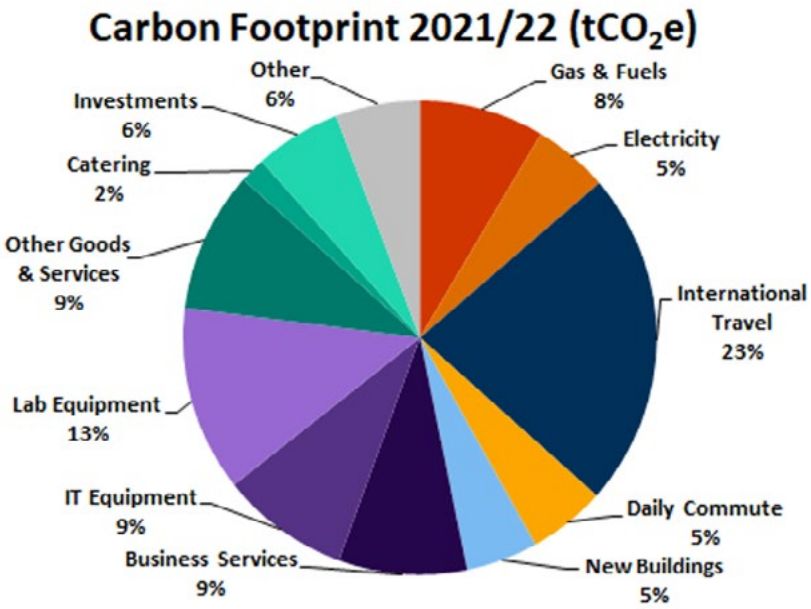
We report on all emissions within our footprint boundary:

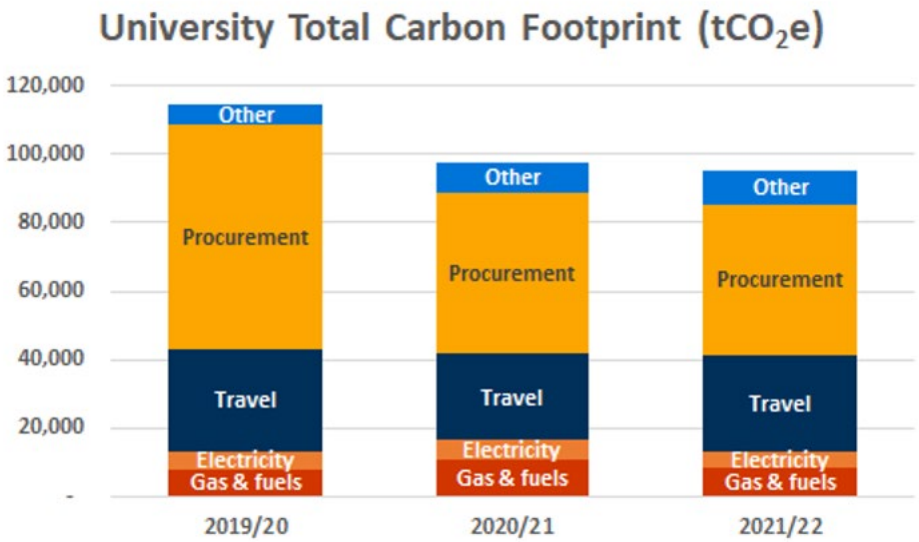
- **Scope 1 and 2:** this covers the buildings on our main Claverton Campus and a number of our off-campus sites and student accommodation blocks, as well as vehicle fuel use and fugitive emissions. Please see Appendix 2 for a complete list.
- **Scope 3:** we report all emissions, subject to data availability, associated with travel (both staff and students), expenditure, investments, waste, deliveries, and fuel and energy related activities.

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

Footprint

The carbon emissions covered in this report are from the academic year 2021/22.





- In comparison to last year, scope 1 and 2 emissions combined have fallen by 20% but scope 3 emissions have risen by 1%.
- Our total emissions are down 1% compared to last year.

In Spring 2023, EAUC (Environmental Association for Universities and Colleges) introduced the Standardised Carbon Emissions Reporting for Further and Higher Education, setting the guidelines for Universities in reporting their carbon emissions across all scopes, with the aim of improving transparency and comparability across the sector. The University of Bath took part in the consultation process, and our reporting approach is already in line with these guidelines, with the exception of upstream transport emissions, where we have taken the precautionary approach of double counting these emissions in order to ensure that they are not under-estimated. The net effect of this approach is not material.

Footprint

Improving our understanding of our carbon footprint

A key focus of our carbon accounting work is to improve the underlying data quality, enabling us to prioritise our work accordingly.

Across our footprint there are differing levels of confidence in the underlying data, influenced by three main factors:

1. **Completeness** relates to whether all the data within a footprint category is available. For example, if a few of the University's off campus buildings are not included in the footprint.
2. **Accuracy** relates to how the data is recorded. For example, if the University's gas footprint was based upon estimated bills rather than actual meter readings.
3. **Methodology used** to calculate the emissions. For example, we currently calculate our procurement emissions based upon expenditure data, as more accurate data is not yet widely available here. This 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 appear to be 50% greater, despite the equipment being the same. This method, however, follows best practice given the lack of supplier data.

See Appendix 1 for a subjective assessment of the confidence in the data in each category.

In reporting our carbon footprint for the academic year 2021/22, we have made the following improvements to our data quality:

Scope	Area	How?
Scope 1	Included Fugitive Emissions	Campus infrastructure started the ongoing audit process for refrigerant and cooling gases across campus. Not yet extended to research labs.
Scope 1 & 2	Metering	Early adopter of good metering means we had one of the best metered campuses in the sector 10/15 years ago. A focus on improving metering hardware and software to create an open real-time system for sharing data has improved both data collection and building controls.
Scope 3	Waste	Significant improvement with values obtained for several additional waste streams (see case study under scope on page 35).
	Improved data for emissions from Investments	Commissioned Mercer to report on the carbon footprint and carbon intensity of our long-term investments on a 3 yearly basis.

Footprint

Scope 1 and 2 Emissions

The University's 2011 Carbon Management Plan set out the target "to reduce direct Scope 1 and 2 CO^2 emissions by 43% by 2020 from a 2005 baseline."

At the end of this period we achieved a 44% reduction. We achieved this absolute target we set ourselves in 2005 against a backdrop of significant University expansion – over that period we increased in size by 41% (by building floor area) which is the equivalent of 8.6 Chancellors' Buildings. Our carbon emissions per square metre floor area, or per student, or per £ turnover all fell by around 60%, and the University benefited from a saving of the order of £1.5m every year due to this extensive work.

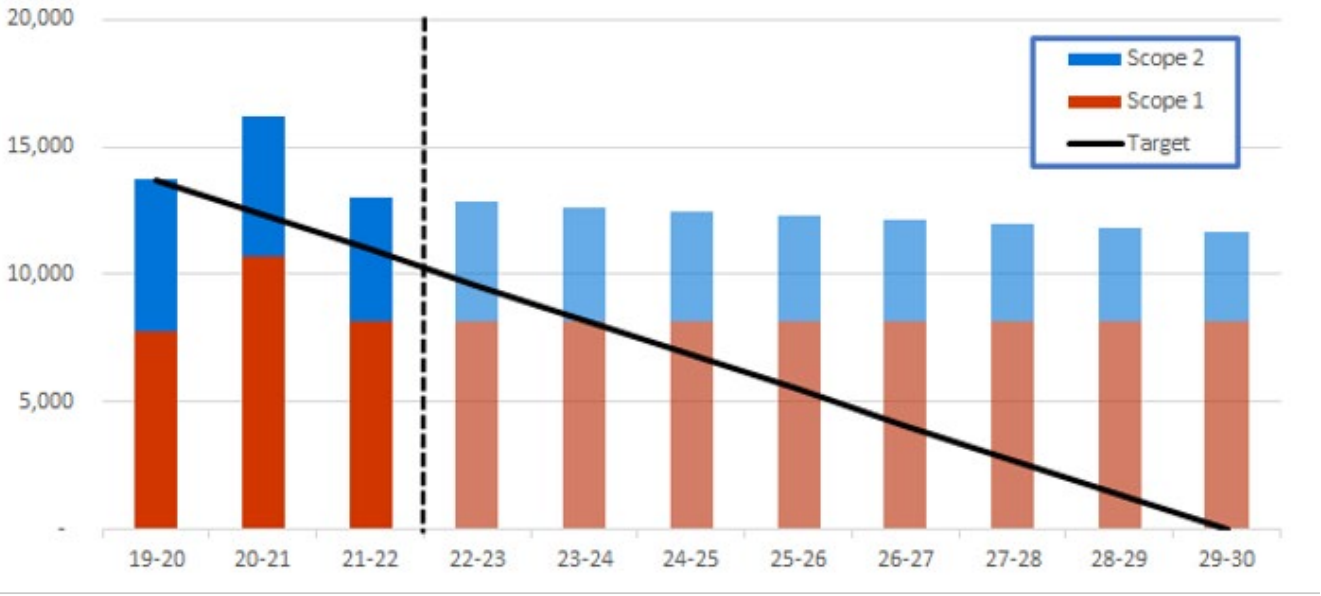
This work as 'early adopters' (the University was the very first in the UK to set carbon targets in 2003), makes achieving new carbon targets an increasing challenge, although clearly a necessary one in response to the climate emergency. It also illustrates that many of the easier quick wins have already been achieved. Many of the remaining challenges are those with longer paybacks, more complex technical issues and greater policy challenges.

Our 2021/22 scope 1 and 2 emissions were 20% lower than last year, but still remain above our 2019/20 emissions, which reflected a sharp decrease in scope 1 and 2 emissions, resulting from lockdowns in response to the Covid pandemic. Covid precautions (increased mechanical ventilation, open windows with the heating on, etc) in 2020/21 and 2021/22 also resulted in increased energy use and this situation has not yet fully gone back to a pre-Covid state. Like many organisations our Covid response has clearly had a negative impact on energy carbon emissions.

On a theoretical straight-line basis to meet our 2030 net zero target we would need to be nearer a 20% reduction from our baseline year, as illustrated by comparison to a 'do nothing' or business as usual scenario.

Footprint

Scope 1 and 2 Emissions



This graph:

- Includes future scope 2 reductions based upon the predicted decarbonisation of the UK's electricity grid.
- Excludes the impact of any potential new buildings that are constructed on campus.
- Excludes the impact of planned decarbonisation interventions, as our campus decarbonisation plan is not yet developed and agreed.

We are working on developing our campus decarbonisation plan to address this.

We recognise that we need to consider not only how we achieve this target in 2030 but also the speed of our implementation i.e. our total emissions over this period. Our focus is therefore not just the endpoint we reach in 2030, but how we address the carbon we continue to produce over the next seven years.

Please see Appendix 3 for a breakdown of our emissions and carbon emissions per square metre since 2005/06.

Case Study

Decarbonising the campus

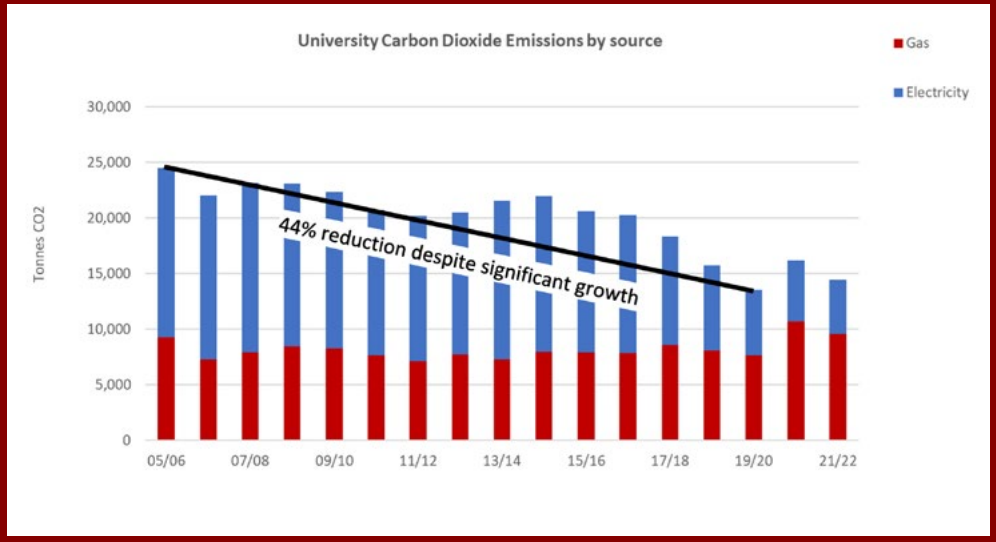
We commissioned ARUP to help us understand how we can achieve the major reductions in the energy demands of our campus and buildings required to achieve net zero.

This study grouped buildings of similar type on campus, and then assessed the interventions that would be required to an indicative building of each type (e.g. fabric upgrades, heat pump installation, heating system upgrades, lighting upgrades, new PV). It modelled several possible pathways, optimised for carbon, cost and level of disruption, and showed a potential pathway to net zero.

The conclusions from this study are starting to be incorporated into the University's long term maintenance programme, so that, where there is capacity and it is financially feasible, planned long term maintenance activities can be enhanced to deliver carbon reductions, and avoid solutions which are not supportive of our decarbonisation approach.

We are now looking at how we develop this study into a feasible campus decarbonisation plan. In common with other organisations the key challenges in doing this remain:

- Resource and time needed to develop this programme of work which includes analysis of the technical challenges.
- Capacity of our campus and community to absorb disruption.
- Funding the capital costs involved, especially as:
  - payback periods for the required improvements to the fabric of our buildings are long and we have already completed those interventions with a shorter payback.
  - the focus in heat decarbonisation is electrification of heating sources (as the production of electricity in the UK is now significantly lower carbon than burning gas) – unfortunately this is more expensive than gas, although this can be balanced in combination with the reduced demand from fabric improvements and improved building management systems.
  - we have already achieved the 'quick wins' (e.g. LED lighting upgrades to around half of the estate – see historic annual reports) through a 15 year programme of work prior to the pandemic, which reduced our carbon emissions by 44% by 2020 against a 2005 baseline:



Case Study

Decarbonising the campus: Next steps

- Following the appointment of a new Director of Campus Infrastructure in 2022, with responsibility for scope 1 and 2 emissions clearly set out in the priorities for the department, the University is currently developing a new Estates Strategy, and carbon reduction will be a key priority of this.
- We have commissioned a study on one of our campus buildings, 10W, to understand in detail how we could implement the recommendations of the ARUP Report, to deliver the technical upgrades required to transition this building to use heat pumps as the energy source.
- We have commissioned a technical study to explore a phased approach to transitioning our district heating network, which feeds the main Parade buildings, from gas to electricity. This requires multi-year planning of complex technical choices to enable the transition.
- Sustainable Building Standard – the University has chosen not to adopt an overarching sustainable building standard and is instead trialling this approach in the project to develop a new student accommodation block on campus.
- Decarbonising our campus does not just require a technical approach, there are also policy and process issues around space usage, and a significant contribution to be made from behavioural change (see page 24 for information on our lab environmental programme, LEAF) – this is ongoing work.

Footprint

Scope 3 Emissions

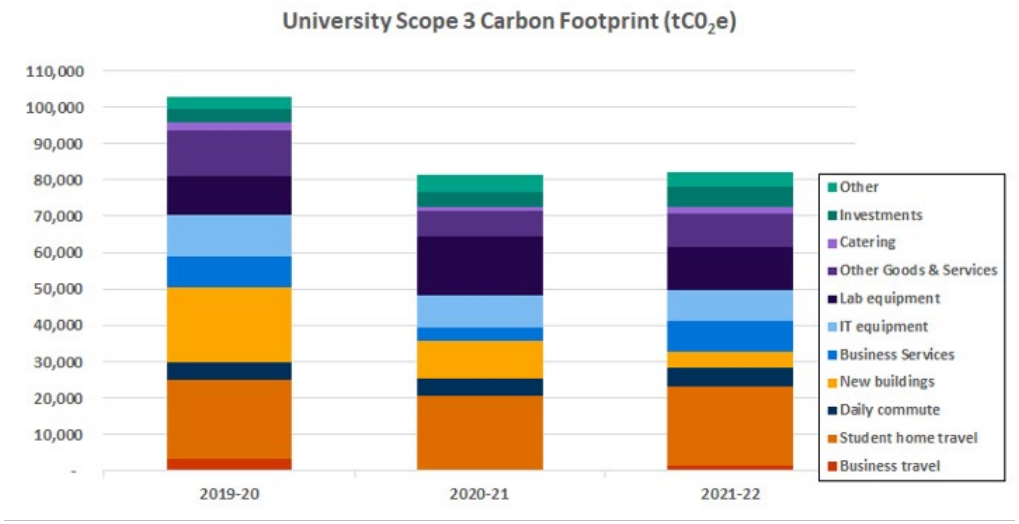
Our scope 3 emissions have increased 1% from the previous year – in some areas this is due to improvement in the underlying data (e.g. investments), but progress in individual areas was mixed:

- New Buildings emissions decreased by 5,600 tCO^2e: With IAAPs and the major building work on the School of Management now being completed, our emissions from construction reduced by 54%.
- Business travel has increased by 1,400 tCO2e: post-pandemic business travel bounced back during academic year 2021/22. Emissions associated to business travel therefore increased by a factor of 16 but are still less than half of the 2019/20 figure.
- We introduced a new business travel policy which restricted the use of flights in the UK, and introduced an expectation that the least carbon emitting method of travel should be used subject to the principle of economy and reasonableness, even where costs may be higher.
- Our International Relations Office introduced a travel planning dashboard, which will allow the University to better analyse and plan international travel.

The major components of our Scope 3 emissions are travel (business travel, student travel and commuting – 34% of Scope 3), and the procurement of goods and services (48% of Scope 3, 54% including new building construction)*. The challenge here is to understand how we can reduce the quantity of our purchases without impacting the quality of our teaching and research – how do we "buy less and buy better"?. Central University procurement is trialling embedding carbon considerations in tenders and signalling to our suppliers that this will become an increasing area of focus (see case studies).

Our ability to measure and reduce our supply chain emissions depends very much on the ability of the supply chain to do the same. Significant work is needed at sector and national level with common suppliers to make the necessary improvements. We are playing a key role in a number of such initiatives via the purchasing consortia and EAUC. The University also led a GW4 Living Labs project looking specifically at this area culminating in a large workshop across the four Universities, industry, and other regional bodies.

We are developing our scope 3 emission reduction plan but approaching this in a measured and meaningful way rather than simply applying a uniform percentage reduction.



*See Appendix 3 for actual Scope 3 figures

Case Study

Improving our understanding of our waste

Waste reporting has been intermittent over the last few years, with low levels of confidence in the completeness of the data used for the University footprint. This improved significantly last year, with values obtained for several additional waste streams, leading to the University's reported waste footprint more than tripling to 30 tCO^2e.

The change has been made possible by:

- Assigning responsibility to a single person for collating all the waste data on campus.
- Communicating effectively with our waste contractors, ensuring that the information they provide is accurate and timely.
- Improving the quality of the data collected by collecting data in tonnages rather than volumes. This has been enabled with the on-campus compactor installed in October 2020.

"We have worked hard over the last couple of years to improve the recording and reporting of all waste across campus, which provides us with a significantly better idea of our waste and waste streams."

Liz Russell, Waste, Recycling and Environment Manager, Campus Services

Case Study

Embedding carbon requirements in our tender process

As part of our actions to reduce our supply chain carbon footprint, we are beginning to engage with our suppliers to involve them in the carbon reduction process – our scope 3 emissions are our suppliers' scope 1 and 2 emissions (all the way down the supply chain). This was achieved for the first time in the tender documentation for the final stage of the School of Management building project - fitting out of Level 5 of the building. This went to tender at the end of 2022 and included a scored question on how the supplier could assist the University toward meeting our carbon reduction targets. The process achieved a number of objectives. It:

- Focused the question on the sustainable performance of the bidders, rather than standard request for evidence of standards achieved or documentation written.
- Covered carbon emitted during the contract period, but also introduced the importance of the future operation of Level 5 of the School of Management.
- Directly indicated to the bidders the importance of the climate emergency to the University.
- It encouraged suppliers to question the carbon impact of their own operations.

"Suppliers tend to perceive the University as just another organisation purchasing their goods and/or services. We need to change that perception and demonstrate to them that the climate emergency is central to the University's operations, and that our suppliers recognise that they are an integral part of the process."

Mark Whiteley, Climate Action Scope 3 Data Officer

Case Study

Reducing emissions by understanding our travel plans

International travel by staff is largely uncoordinated. Consequently, staff members occasionally travel to perform a task, when a colleague may already be in-country who could do it instead (e.g. attending a student recruitment fair). A solution to this issue is being implemented in conjunction with our travel company Clarity, where it will be possible to see planned trips across the world, using the new Travel Planning Dashboard. This will allow users to see:

- Which countries are being visited, and when.
- The reason for travel of those who are travelling.
- Who is travelling.

"As part of the University's objective to reduce its travel footprint, key initiatives like the Travel Planning Dashboard will help to avoid unnecessary travel across the world, and we look forward to monitoring the impact of the dashboard over the next academic year."

Emma Milk, International Projects Officer, International Relations Office

Note that access to the dashboard is restricted to key travel planning personnel across the University, to protect the privacy and security of individual travellers.

Case Study

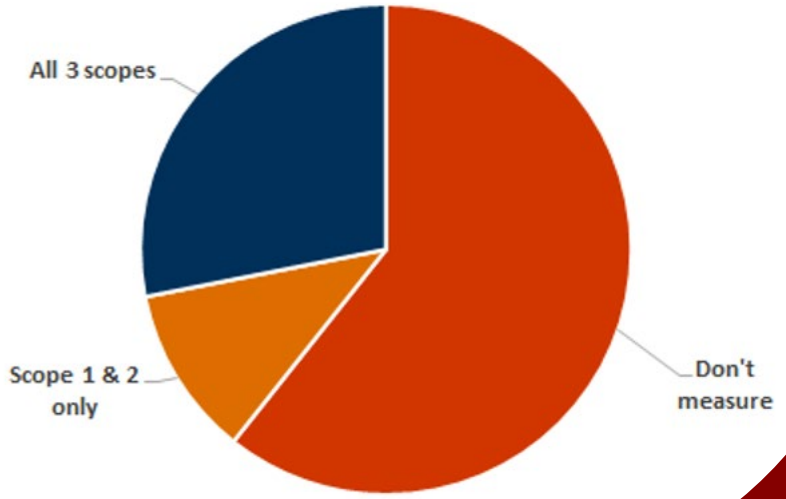
Understanding where our suppliers are on their own decarbonisation journeys

Our supply chain forms the largest single part of our carbon footprint (45%), and 98% of this footprint is based upon a low-quality expenditure-based calculation. Improving the quality of our supply chain footprint is a massive task that will require effective communication and collaboration with our suppliers. To start this process, the Climate Action and Procurement teams produced a survey to determine where our suppliers are in their carbon reporting journeys.

Sent to almost 500 of our suppliers last year, the key messages from this process are:

- 88 suppliers completed the survey – a 19% response rate. This is a high response rate, other Universities that have performed similar surveys, typically achieved a 5% response rate.
- The majority of respondents (60%) cover three sectors (Information Technology; Estates and buildings; Professional services and consultancy). These are typically more mature sectors regarding scope 3 emissions reporting.
- Only 38% of these suppliers calculate any of their carbon emissions, indicating the scale of the journey for the UK sector as a whole.
- Almost 40% would be happy to actively collaborate with the University to improve their and our carbon reporting.
- The next stage is to produce a bespoke plan for working with our suppliers to assist them on their carbon reporting journeys, which we will report upon next year.

Which carbon emissions do you measure?



"In order to reduce our supply chain Scope 3 footprint, having good relationships with our suppliers is an essential part of the process. The conclusions from the survey are helping us prepare our action plan for collaborative working with them."

Tony Brett, Head of Procurement

Case Study

Introducing our Sustainable Food Commitment (SFC)

Following an evidence-based approach, our new **Sustainable Food Commitment** refocuses our efforts based on those activities with the largest climate impacts. The five areas of focus are:

1. Using more seasonal food, and locally-produced food when it has a lower climate impact.
2. Sourcing sustainable fish.
3. Reducing food waste.
4. Minimising packaging.
5. Reducing meat and in particular ruminant meat consumption.

There is a detailed action plan to deliver in all these areas with considerable **progress already having been made**; procuring all dairy milk from a South-West supplier, **removing disposable cups from all our catering outlets** on campus through our reusable exchange cup scheme, permanently reduced beef and meat consumption in our Hospitality units by over 95%, and dropping the 40p **supplement for oat and soy milk in hot drinks**.

More than half of staff and two thirds of students are aware of the SFC since it was introduced in September 2022, and some are reporting that it is impacting their behaviours.

"We are now excited about working on the next stage of this journey, and through our work on the SFC we want to make it easy for our community to choose climate-friendly meals on campus, whilst still offering a range of tasty choices of course."

Jane Loveys, Director of Campus Services

Partnerships

We develop meaningful collaborative partnerships to help address the climate emergency across the Higher Education Sector, nationally and internationally but also form more local place-based relationships with the West of England Combined Authority (WECA) and Bath and North East Somerset Council (BANES).

- Signed up to the UN 'Race to Zero', a global campaign for transition to a zero-carbon society and sustainable growth.
- Active member of EAUC, an alliance for sustainability leadership in education. The University is looking forward to hosting the EAUC's Annual Conference in June 2023, with the theme "Conversations on Climate Solutions".
- Member of the Universities Policy Engagement Network (UPEN) comprised of 80 UK universities working together to increase public policy impact from their research. This offers a dedicated contact point for policymakers, and a collective response to requests for evidence.

Case Study

Partnering on ambitious sustainable construction policies

- In early 2023, Bath and North East Somerset Council launched new policies to address building emissions – the first council in the UK to set net zero operational energy requirements for new housing, whilst also imposing net zero operational carbon standards for new non-residential buildings and capped embodied carbon emissions for both development types.
- Building carbon experts from the University are working with the Council's planning team to make sure the new approach achieves real emission reductions, by evaluating developer engagement, advising on carbon assessment methodologies and identifying real impacts on design proposals.
- This project will provide a unique research study into carbon legislation and will hopefully be a precursor to a longer-term partnership through which the policy will be developed and its effects measured, providing a case study of international significance.

"This is a great example of the benefits of our whole-institution approach to climate change – what began as a conversation with the Council's planning team about ensuring our buildings standards aligned with future net zero policy, evolved into a wider and more impactful partnership."

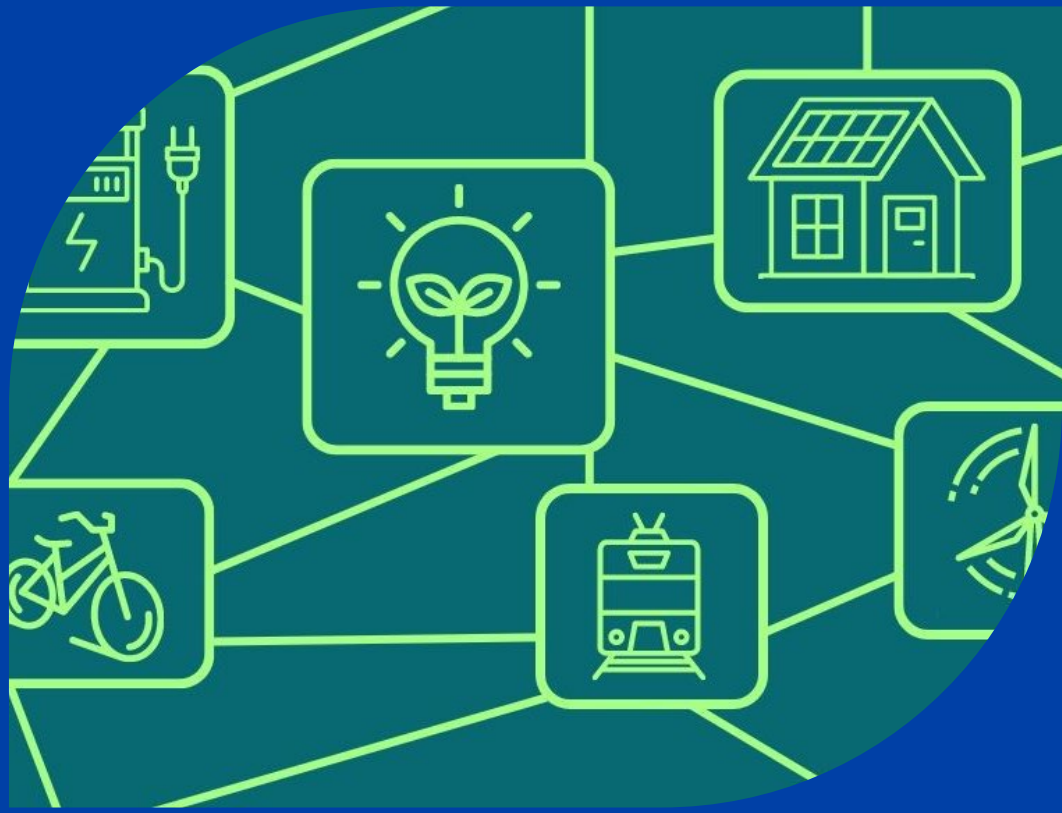
Peter Phelps, Climate Action Project Lead

Case Study

IPR's Policy Fellowship Programme enables evidence informed policy design to deliver net zero

- The Institute for Policy Research (IPR) has a new Policy Fellowship Programme, designed specifically for senior policymakers and decision-makers from government and the third sector who want to develop their professional knowledge on enabling net zero for transport, buildings and infrastructure.
- Structured around tailored one-to-one or group cohort meetings, this programme enables policy makers to meet with world-class academics from across the University, to explore the policy questions, or challenges, they are addressing in their work.
- The programme is free-of-charge and delivered in a hybrid format, allowing fellows to participate in-person or online.

This new Policy Fellowship Programme has successfully engaged and supported colleagues from the Department for Transport, The Office for Zero Emissions Vehicles, The Department for Levelling Up and Local Communities, former department of BEIS and now with the Department for Energy Security and Net Zero. Via this programme we aim to enable evidence informed policy design that can support the UK government's transition to net zero.



Case Study

ActNowFilm project amplifies young people's voices in the climate debate

- The ActNowFilm project is a film series which aims to amplify youth voices in the urgent climate debates. It is produced by the University of Bath Institute for Policy Research (IPR) and Cambridge Zero, and supported by the UK Universities Climate Network (UUCN).
- The project has already resulted in two widely screened films, ActNowFilm and ActNowFilm: intergenerational conversations on climate change, which were showcased to participants and negotiators at the most recent global climate change conferences, COP26 (Glasgow, Scotland) and COP27 (Sharm el-Sheikh, Egypt), respectively.
- This year, the ActNowFilm project team is producing a new film – ActNowFilm: young people in conversation with climate experts – which they hope to present to delegates at COP28.
- The film will feature exchanges between young people and internationally acclaimed climate experts, including leaders from indigenous communities and representatives from business, policy, the third sector and academia. It is intended to act as a clarion call for the inclusion of young people in the urgent climate debates and to expedite further action to protect humanity from the effects of the climate crisis.

"As we transition towards net zero and a sustainable future we face a nexus of challenges and it is young people, those under 30, that will be the future stewards and leaders of these imperative changes. We believe their voices and experiences should be a part of the climate conversations to enable the just transition we must deliver. We hope that the ActNowFilm screening at COP28 will highlight the value, place and importance of youth voices in the urgent climate debates."

Amy Thompson, one of the film's producers, and Head of Policy Programmes and Communications at the IPR

Case Study

SetSquared's Sustainability Workshops help local business unlock their low carbon potential

- SETsquared is a unique enterprise partnership and a dynamic collaboration between the six leading research-led UK universities of Bath, Bristol, Cardiff, Exeter, Southampton and Surrey. Ranked as the Global No. 1 Business Incubator, it provides a wide range of highly acclaimed support programmes to help turn ideas into thriving businesses.
- SETSquared offers tailored **support** (funded by the European Regional Development Fund) for small and medium sized organisations which are looking to shift their business and services to low-carbon or become more sustainable, through a choice of in-depth Sustainability Workouts or shorter Masterclasses.
- The Sustainability Workout is a 2-3 day interactive course delivered by sustainability, start-up, and innovation specialists. Built around practical exercises, it helps participants scrutinise their existing business model and develop strategies to include sustainability at its core.

Recent participants have:

- Built educational robotic 'smart toys' – animals that evolve as children learn about them, working with animal charities, educating about conservation and climate change, and are mission-driven to be tackling environmental issues from the outset.
- Dedicated their consultancy to supporting organisations on their journey to Net Zero carbon emissions, helping them to understand and reduce their carbon footprints through advice, funding and projects.

"The Sustainability Workout provided us with useful headspace to think more strategically about how we move forward with embedding circular and regenerative approaches further into our business model. This is a fast-moving area, so checking that we are keeping track of wider developments, as well as hearing about other delegates' journeys, has been time well spent."

Linda Farrow, Director, Agile Property and Homes Limited

Case Study

Living Well Beacon – Stakeholder Workshops

- In May 2022, two stakeholder workshops took place to map out the priorities of the Bath community when it comes to 'living well now and in 2050' financed by the University Public Engagement Grant.
- Participants included St John's Foundation, Bath and West Community Energy, Transition Bath, Bath Spa University, the Good Economy, Bath and North East Somerset Council (B&NES), First Steps Bath, and Relational Wellbeing Collaborative who all positively contributed to a common vision.
- The **Doughnut economics model** was used as a tool to identify the priorities for living well, to explore what is unique to Bath and identify what types of action-led projects could be implemented locally.
- The workshops identified many issues as 'emergency challenges' such as affordability, inequality, retrofitting, sustainable transportation, nurturing key workers, etc and highlighted how difficult it is to disentangle the social and environmental lenses of the Doughnut, especially when addressing the needs of every living being is placed at the centre of our priorities.
- This engagement led to a collaboration with B&NES to develop a Voluntary Local Review of the UN Sustainable Development Goals.

"In the words of Donella Meadows, systems can't be controlled, but they can be designed and redesigned. Listening to what the system tells us will certainly feed into the University's motto generatim discite cultus – understanding the nature of an organism to make sure it thrives."

Aurelie Charles, Senior Lecturer, Department of Social and Policy Sciences

Organisational Change

We are on a journey to transform into a university that aligns with a 1.5°C world, and this requires fully embracing the concept of a whole institution approach. The scale of changes required are far-reaching and challenging in scope, yet our University community is ready to respond to the climate crisis with both scale and urgency.

Embedding climate action into University decisions

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:

- All papers to Council and University Executive Board now require a consideration of how the proposed change impacts the CAF Principles. To support individuals in unpicking often nuanced impacts we are piloting the use of a Climate Action Impact Assessment Tool. This takes staff through a guided assessment of potential impact areas, across the whole institution response and represents the output as a visual diagram to support easy understanding of where these impacts occur, both positive and negative.
- The Climate Action project approaches complex issues in a collaborative way, involving staff, from all Faculties and at different levels of their careers, Unions and students in working groups to develop proposals.

Engaging our community

To increase awareness of the work being undertaken through CAF, various communications and engagement work has been carried out in the past year. This serves multiple purposes: to increase knowledge and understanding across our community; to promote active participation within this work; and to influence personal behaviour changes. In the past year, it has included:

- In collaboration with the Psychology Department, we conducted our second annual Climate Action Survey, achieving an impressive 4764 responses – representing a 42% response rate from staff and 14% from students.
- An active travel communications campaign was carried out in spring to encourage behaviour change around commuting habits for both staff and students and was accompanied by a range of engagement events.
- Through the Climate Action blog, a series of thought pieces have been shared to staff and students. This year, several pieces have been given to students as professional experience commissions and which will provide peer-to-peer insights and practical advice.

Organisational Change

Embedding transformational change processes

To deliver the scale and extent of change required to fulfil the University's ambition of a whole-institution response to the climate emergency requires the entire University community to participate.

- A pilot scheme to recruit departmental 'Climate Advocates', staff with specific terms of reference and workload allowance, has been approved in the Faculty of Engineering and Design and the Department of Life Sciences.
- New **Climate Action badges** (with no plastic content) have been introduced to recognise and reward the significant contributions individuals across the University are making towards tackling climate change. Badges will be awarded as part of a celebration event in summer 2023.
- Pilot Climate Literacy training for staff has been delivered to professional services staff in the Faculty of Humanities and Social Sciences and the Faculty of Engineering and Design.

Students' Union

Student voice for climate change

The Students' Union declared a climate emergency in 2020, alongside the University, and since then have consistently sought significant and impactful transformation from the University to back this up. This is reflected in their Top 10 priority campaigns, calling on the University to:

- "commit to **radical action in its strategy** to combat the climate crisis" (2019/20 Top Ten).
- "commit to **sustainable investment** practices and divest from all companies with links to the fossil fuel industry" (2020/21 Top Ten).
- "create a transparent **sustainable practice policy** and plan; including demonstrating positive steps to divest from companies with poor sustainability practices" (2021/22 Top Ten).
- "demonstrably **respond with scale and urgency** to the climate emergency, and to increase the use of transparent and credible sustainability impact statements in decision-making." (2022/23 Top Ten).

THE SU UNIVERSITY OF BATH

Supporting student action

The SU continue to support students to make sustainable and low carbon changes, as well as encouraging them to carry out wider projects to effect change within and beyond the University community. This includes:

- In July 2022, the Sustainable Fashion Society received a 'Highly Commended' Green Impact Award for their collaborative events, clothing sales, screen printing and embroidery workshops.
- V Team, the University's largest student volunteer group, carried out a number of projects:
  - V Clean undertook regular litter picks, joining forces with local residents to help clean the city and its surroundings.
  - V-Hedgehogs launched and is working towards the Hedgehog Friendly Campus award. 420 tree saplings have been donated by Students For Trees which will be planted to improve wildlife habitat on campus.
  - V-Trees has run regular tree planting and tree guarding sessions in collaboration with More Trees BANES.
- Green Week was celebrated in March to actively engage with students on sustainability topics, with a variety of events including debates and guest speaker talks.
- During Freshers Week 2022, a Sustainability Day was held to introduce incoming students to the many opportunities to get involved with climate action and sustainability during their time at Bath. It also included a sale of 2000 second-hand kitchen items, diverting them from landfill and raising £1300 for RAG.
- To encourage active travel behaviour change, the SU installed a Grease Monkeys Bike Repair Station, made possible through funding from the University provided in 2020.

Students' Union

SU carbon footprint

In parallel with the University, the SU is taking action to reduce their environmental impact. As part of this, they are signed up to NUS Green Impact Accreditation which provides a framework to continually improve sustainability standards. In July 2022 they were awarded an 'Excellent' rating with work continuing this year to be submitted for re-accreditation in July 2023.

Key achievements to reduce the SU's footprint this year include:

- All t-shirts sold by the SU during Freshers Week 2022 (around 4000/year), are now ethically-sourced and certified organic cotton.
- SU sports have entered a new agreement to provide sports kits for all University performance teams with Surridge, who work exclusively with Fairtrade suppliers.
- As part of ongoing work, the SU support the University's Sustainable Food Commitment, with notable changes this year including:
  - The Plug and Tub bar have adopted the Exchange Cup Scheme to remove single-use cups from campus and have removed beef burgers from their menu.
  - Growing on last year's reusable cup scheme at the Summer Ball, this year students will purchase a £1 cup to exchange at the bar when purchasing drinks.

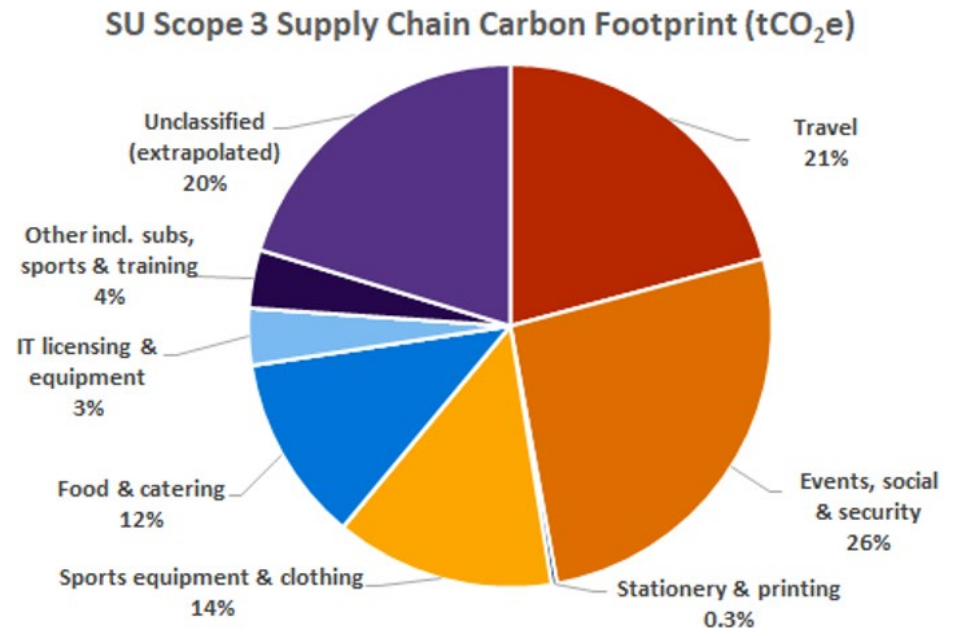
Students' Union

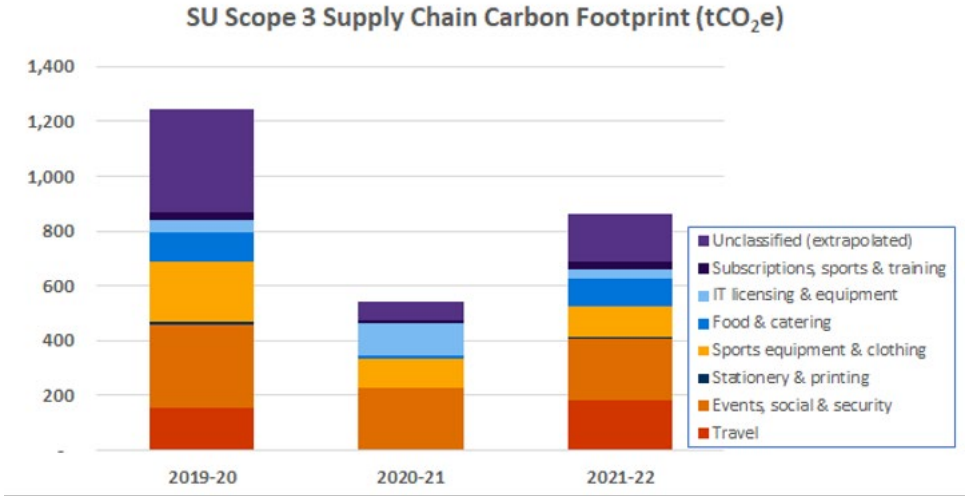
SU Carbon Footprint

There have been significant changes in the SU supply chain carbon footprint over the last three years. As this period has been completely affected by the Covid pandemic, it is very hard to establish any trends in the data that cannot be explained by the pandemic.

As the first full back-to-normal year for the SU, the 2022/23 footprint will be the best indicator of progress over the next few years.

For each reporting year, the objective is to reduce the size of the "Unclassified" proportion of the footprint. As the calculation is directly linked to the list of SU suppliers, additional suppliers are included in the calculation each year, with the number increasing from 50 to 88 suppliers over the last two years. In 2021/22, these 88 suppliers (8% of all suppliers) covered 78% of SU expenditure.





Horizon Scanning

The University's approach to climate action is interconnected with that of the whole higher education and research sectors, our own community, and the political and social context in which we live, study and work. The transformational shift to address our own climate impact must therefore be understood within this broader perspective.

Across our themes we see increasing signs of change. Individually, they might not seem significant but collectively they signal the beginnings of a systemic shift in how climate action is viewed and change is happening.

We have highlighted some of the signals on the following pages.

Students

The 'Greta generation' of students take action on climate change and expect to see their Universities do the same.

2019 onwards

Students locally and nationally demand Universities take action - SOS-UK is founded in response to the climate emergency.

Oct 2021

EAUC Student Climate Commissioners Publish COY16 Student Statement with 9 core demands

Nov 2022

University of Barcelona students demand compulsory climate module and fossil fuel divestment in 7 day 'End Fossil' occupation

Jan 2023

Students accuse University of Winchester of 'greenwashing' them in protest over its £24,000 life-size Greta Thunberg sculpture

Jan 2023

Elite teenage athlete says no to competing for GB in Australia over climate concerns

Education

Accelerating mainstreaming of climate knowledge and sustainability competencies across University curriculums.

July 2021

UK Professional Bodies commit to action on climate change

Oct 2021

UK Universities Climate Network call for mainstreaming of climate change education across the curriculum

Nov 2021

Climate Action Survey finds 72% of Bath students and 66% of staff believe climate education should be embedded in the main curriculum

March 2022

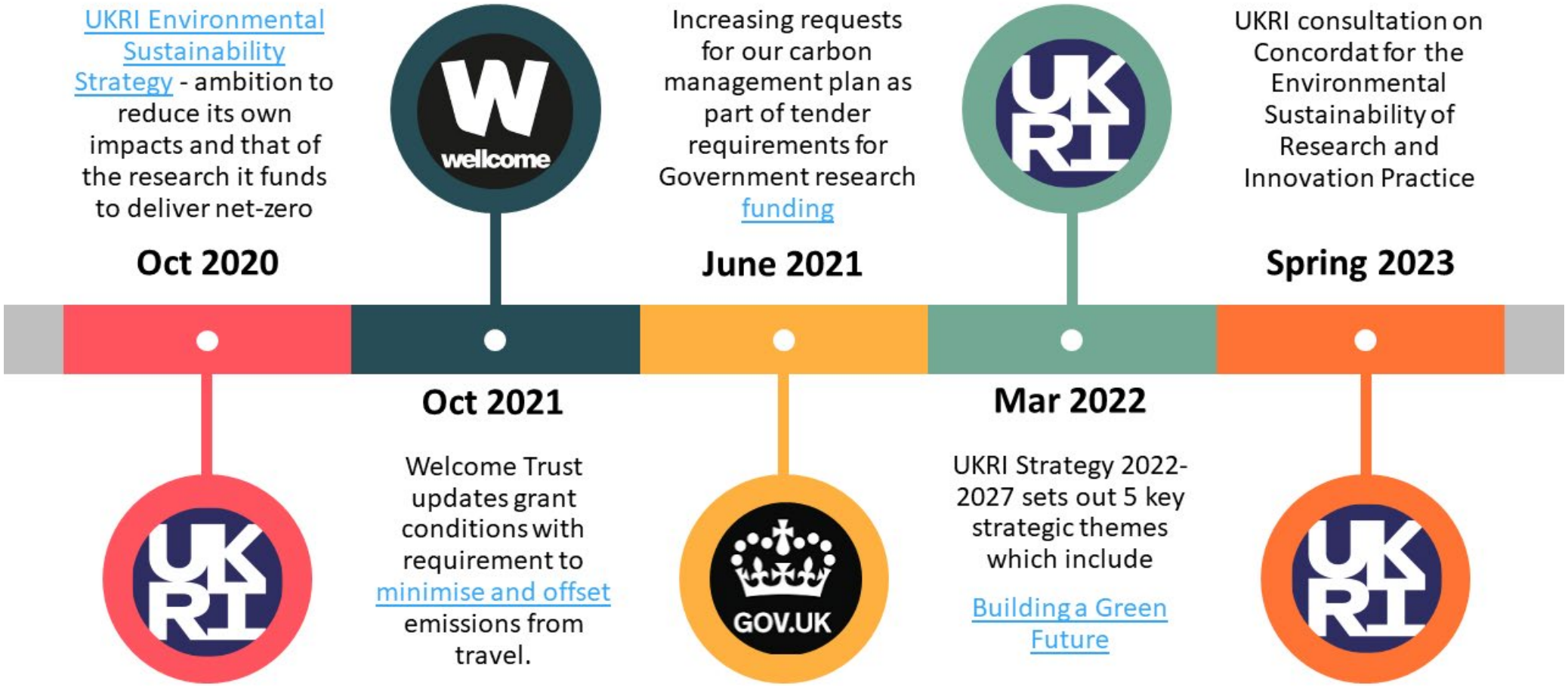
2021/22 Subject Benchmarking review cycle incorporates consideration of how practice within disciplines addresses wider social goals

April 2022

DfE Sustainability and Climate Change Strategy commits to education for sustainable development, green skills and careers

Research

Major research funders signal intent to require sustainability practice in Universities they fund, both across the estate and in research conduct.



Footprint

Higher education sector converges on taking full responsibility for climate action and sustainability, with progress to deliver this accelerating.

July 2020

EAUC launches Roadmap to Net Zero for the FE Sector

built on a whole institution response.

Nov 2022

QS launches a new International Sustainability Ranking

Jan 2023

Royal Anniversary Trust publishes Accelerating the UK Tertiary Education Sector towards Net Zero

Feb 2023

EAUC launches a Standardised Carbon Emissions Framework for the higher education sector

June 2023

QS World University Ranking 2024 methodology updated to include a 5% contribution from the Sustainability Rankings.

An External View of our Progress

Whilst external rankings and league tables focus only on specific areas of a University's contribution, and are often contentious, they provide a snapshot of progress at a point in time and highlight areas which external stakeholders identify as key.

QS World Sustainability Rankings

In the inaugural 2023 QS World Sustainability Rankings, Bath was ranked 321-340 out of 700 worldwide. This ranking combines a social impact and environmental impact rank.

Social Impact Rank, 172

Bath scored highly recognising our commitment to equality, our strong reputation for employability, and research in education and relating to quality of life. There is room to improve in knowledge exchange relationships with institutions in countries in receipt of overseas development aid.

Environmental Impact Rank

501+: Bath's lower score here was impacted by the fact that marine science is not a core research theme for the University, and whilst we have launched specific sustainability courses and Institutes this came after the review period. Sustainable research was our strongest dimension in this ranking, reflecting Bath's considerable strengths across the areas of research related to the SDGs. Our lower scores reflect the potential to improve the speed with which we are visibly being ambitious in our approach to sustainable investments and procurement.

People and Planet University League Table

The 2022 People and Planet University League Table ranked the University of Bath at 107 out of 153. This league table assess universities on their whole institution approach to sustainability, and whilst recognising that climate change is inextricably linked to the broader sustainability agenda, at the University of Bath we have been focussing our sustainability efforts through the narrower (but high priority) lens of climate action.

Whilst we scored highly in the areas of Education, Workers Rights and Energy Sources, scores elsewhere were lower due to:

- Overall emissions reduction was impacted in 2020/21 by the energy intensive demands of re-opening the campus with increased ventilation in response to the Covid pandemic.
- Not having yet developed our campus decarbonisation approach to the point of having a costed and funded plan.
- Absence of a formal environmental management system (EMS) or public reporting on environmental auditing.
- Speed of progress on waste, recycling, and water consumption.
- Progress to be made on ethical investments.

Other League Tables

SOS-UK (formerly part of the NUS) compile a league table for carbon targets. Bath scores reasonably highly as our targets are in line with good practice in the sector and the league table has focussed on encouraging those without targets. In future, however, the focus will shift to delivery.

The 1.5 Degrees International University Rankings Based on Sustainability assesses the 20 top universities worldwide, reflecting how they are preparing future leaders for a 1.5 degree world through their teaching. This highlights the increasing interest across the sector in understanding where real progress is being made.

Find out more

www.bath.ac.uk/topics/climate-change-and-the-university-of-bath

blogs.bath.ac.uk/climate-action

Get in touch: **climateaction@bath.ac.uk**

Sources

1 **www.bath.ac.uk/publications/climate-action-survey-results-2021-22**

2 **www.bath.ac.uk/publications/climate-action-survey-results-2022-23**

Appendix 1: Data Confidence

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:

- GHG Protocol Category: The scope 1, 2 and 3 data categories as specified within the Greenhouse Gas Protocol.
- Impact on Footprint: 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.
- Data Status: An overview of the data's status, covering both the range of coverage of the category and quality of that data. The traffic light shading system has also been applied to demonstrate whether the data has improved or not in the last year (only using green and red).

	GHG Protocol Category	Impact on footprint	Data Status
Scope 1	Natural gas	9%	- 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%	- Added in 2021/22; Data incomplete
Scope 2	Electricity	5%	- Same as for Natural gas above
Scope 3	1. Purchased goods and services	42%	- Good data coverage (Agresso and Students' Union). - Poor quality data for calculation (based on £ expenditure)
	2. Capital goods	5%	- Good data coverage (Agresso) - Poor quality data for calculation (based on £ expenditure)
	3. Fuel and energy related activities	3%	- Same as for Natural gas and Fuels above
	4. Upstream transportation and distribution	1%	- No data on CO2 from suppliers. - Estimate made based upon deliveries to the University.
	5. Waste generated in operations	<0.1%	- Good quality data; significant improvement in coverage.
	6. Business travel	2%	- Good quality data from travel company Clarity (flights; hotels) - Personal expenses and credit card data (car use, taxis, buses, flights, etc), but estimates required. - No data for visiting academics.
	7. Employee commuting (staff)	3%	- Poor out of date data - Weak analysis.
	8. Upstream leased assets	0%	- No data
	9. Downstream transportation & distribution (students	25%	- Daily commute: Poor out of date data; weak analysis. - Home commute: Robust estimate for overseas students; Estimate for UK students; No data for students on placements.
	15. Investments	6%	- New methodology. Covers majority of portfolio.

Appendix 2: Footprint Boundary

The following off-campus sites are included in carbon footprint calculation (scopes 1 and 2, plus energy category of scope 3):

- Cleveland's Building
- John Wood Building
- Carpenter House
- SULIS Sports Club
- Pulteney Court
- Canal Wharf
- John Wood Court
- Thornbank Gardens
- Virgil Building

The following sites are not included in our footprint calculation this year:

- IAAPS included in 2020/21, but there is no available natural gas metering data for 2021/22.
- Collaboration sites with other Research partners (e.g. ICAST, Swindon).
- Overseas offices

Overall, the footprint boundary is the same as reported for academic year 2020/21, with the exception being IAAPS.

Appendix 3: Scope 1, 2 and 3 Emissions since 2005/06

	05/06	06/07	07/08	08/09	09/10	10/11	11/12	12/13	13/14	14/15	15/16	16/17	17/18	18/19	19/20	20/21	21/22
Scope 1																	
Natural Gas	9,251	7,324	7,917	8,504	8,289	7,707	7,130	7,741	7,276	7,959	7,920	7,882	8,579	8,079	7,759	10,688	8,063
Fuels	-	-	-	-	-	-	-	-	-	-	-	-	-	-	33	42	37
Fugitive Emissions	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	80	39
Scope 2																	
Electricity	15,262	14,723	15,216	14,615	14,082	13,067	13,079	12,771	14,274	14,014	12,699	12,408	9,741	7,707	5,831	5,487	4,891
Total Scope 1 & 2	24,513	22,047	23,134	23,119	22,371	20,775	20,209	20,512	21,551	21,973	20,619	20,290	18,320	15,786	13,623	16,297	13,030
Reduction from 2005 baseline	0	10%	6%	6%	9%	15%	18%	16%	12%	10%	16%	17%	25%	36%	44%	34%	47%
kg CO^2/m	126.1	113.4	118.5	112.7	109.1	99.0	94.2	95.4	96.8	90.3	83.2	77.5	70.0	57.7	49.1	58.7	44.7
Totals																	
Scope 3*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	101,595	81,402	82,278
Scope 1, 2 & 3*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	115,218	97,699	95,308

*It should be noted that the Scope 3 footprint numbers for the baseline year and subsequent years are 'working' values, as the calculation data available is frequently changing, in terms of both availability and quality.

Climate Action

UNIVERSITY OF BATH

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