



University of Cambridge

Environmental Sustainability Report 2017



The University of Cambridge leads the world in many fields of academic endeavour, including making essential contributions to the global journey toward a more sustainable future. In the course of carrying out our research, we should not lose sight of the fact that how we carry out our research, and all of the work that supports it, also has an environmental impact.

Through our 2015 vision, policy and strategy, we made a commitment to achieve outstanding environmental performance and we are seeing the positive impact of our efforts in some areas; however, we also recognise that we must do more to achieve our aspirations on a range of fronts.

As the Earth provides evermore compelling feedback of the ways in which human activity is changing the environment, we must now, more than ever, demonstrate our leadership by aiming higher and pushing harder to reduce our impact on the natural world.

This report provides an honest account of our progress to date and highlights key priorities for the coming year – I invite all members of the University to participate in taking these forward.

Vice-Chancellor Professor Stephen Toope

Environmental Sustainability Report 2017



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Introduction

In this, the second of our annual reports, we set out a review of the work we've done over the course of the 2016 – 2017 academic year, as well as our plans for the future in each of our nine key impact areas.

The University has made a public commitment to sustainability and, in particular, its relationship with the environment through its mission statement. Our Environmental Sustainability Vision, Policy and Strategy 2015 – 2020 (our Policy) aligns with this mission, and one of its core values. The extensive consultation held in developing our Policy allowed us to identify material issues, both in terms of our environmental impact and importance to our key stakeholders; these form the focus of our Policy and our ongoing reporting.

Our Policy is divided into nine sections, each covering a different priority area of environmental sustainability with an overarching aim. This report follows the same format so that referencing between the two documents is straightforward.

The work to achieve these aims is led by the Environment and Energy section (E&E) within the Estate Management Division and focuses on the operational activities of the University; as such, our scope of work doesn't include the 31 independent Colleges, although we do liaise with them on a number of issues and they are represented on the Environmental Sustainability Strategy Committee, the group that directs and guides our work.

In terms of our core mission, Cambridge is undoubtedly successful; an almost endless list of ground breaking, and often game-changing, work has led to our being a global leader in the higher education sector. As a result of our success, and in order to maintain our position, we have continued to grow; leading to more students, researchers and staff and an increased number of ever more advanced facilities to house them. It's this continued growth which presents the most significant challenge to E&E's work to reduce our environmental impact and which sets the context for the work of the team.



The Cambridge Green Challenge

Virtually every aspect of activity across the University has some environmental sustainability impact. As this agenda is so broad, every individual working or studying at the University has a role to play in taking action to reduce their environmental impact during their time at Cambridge; that's the Cambridge Green Challenge.

The Cambridge Green Challenge is the banner under which all our activities sit, it's the call to action that runs through all of our communications, and is a direct recognition that we must mobilise as many individuals as possible in the delivery of our environmental sustainability goals.



THE CAMBRIDGE *green*
CHALLENGE

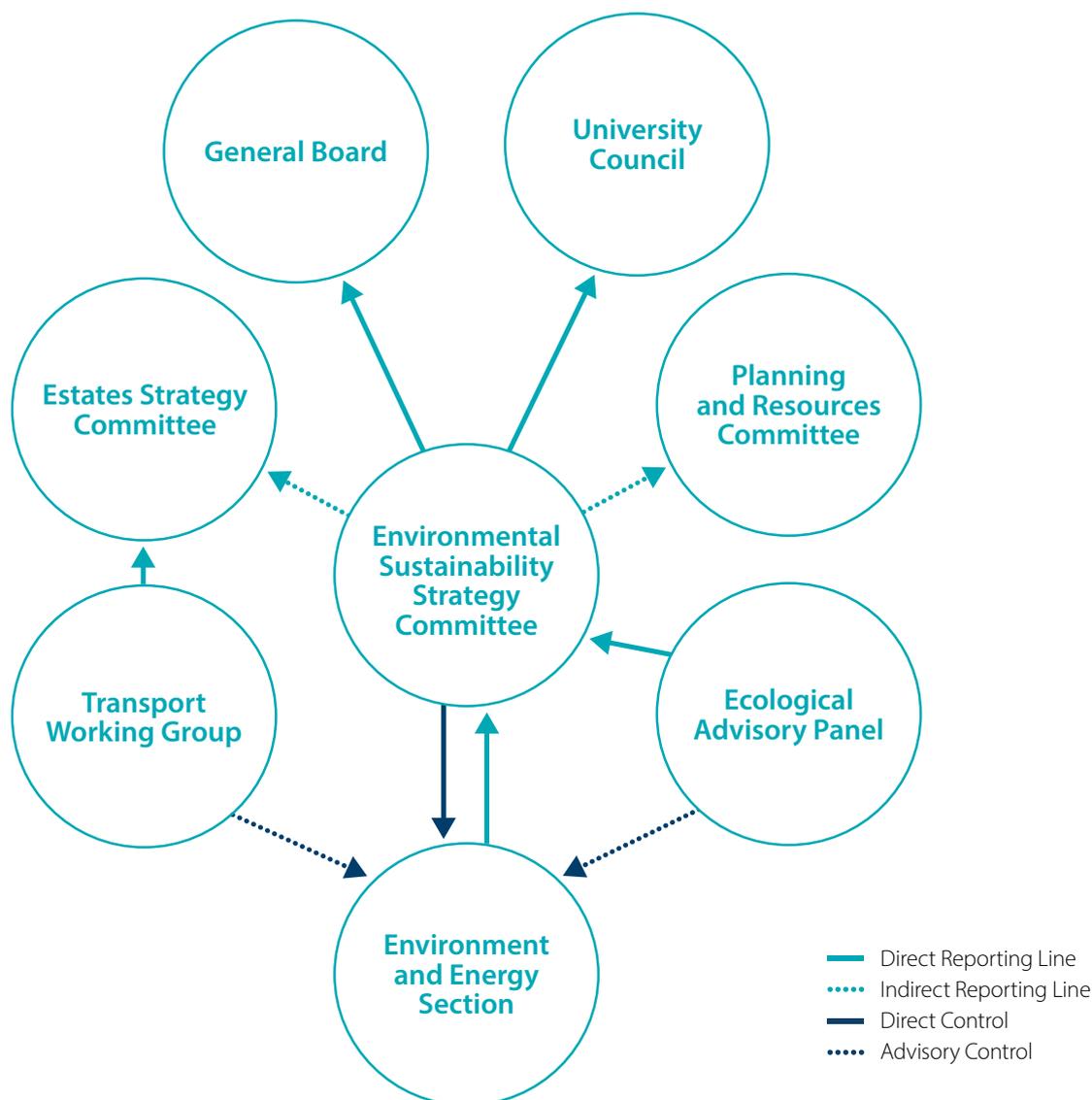
Governance

Strategic oversight of the delivery of our goals is provided by the Environmental Sustainability Strategy Committee (ESSC) and the importance of this agenda is demonstrated through the structure of the Committee: it's chaired by the Senior Adviser to the Vice-Chancellor with special responsibility for Environmental Sustainability, and reports directly to the University Council and General Board. ESSC also has indirect reporting lines to the Estates Strategy Committee (ESC) and the Planning and Resources Committee (PRC) for issues relevant to them.

In 2017, we also established the Ecological Advisory Panel (EAP) to allow us to draw on the expertise within the University as well as collaborate with external organisations in informing our broader decisions on the development and management of the estate and its interaction with the local natural environment.

In recognition of the particular challenges associated with moving toward more sustainable travel in and around Cambridge, we're currently in the process of establishing a Transport Working Group which will report to the ESSC. This new working group will have strong links with both the ESSC and the EAP to ensure that action is coordinated and takes advantage of the considerable academic expertise available to us.

F1 Environmental sustainability governance structure

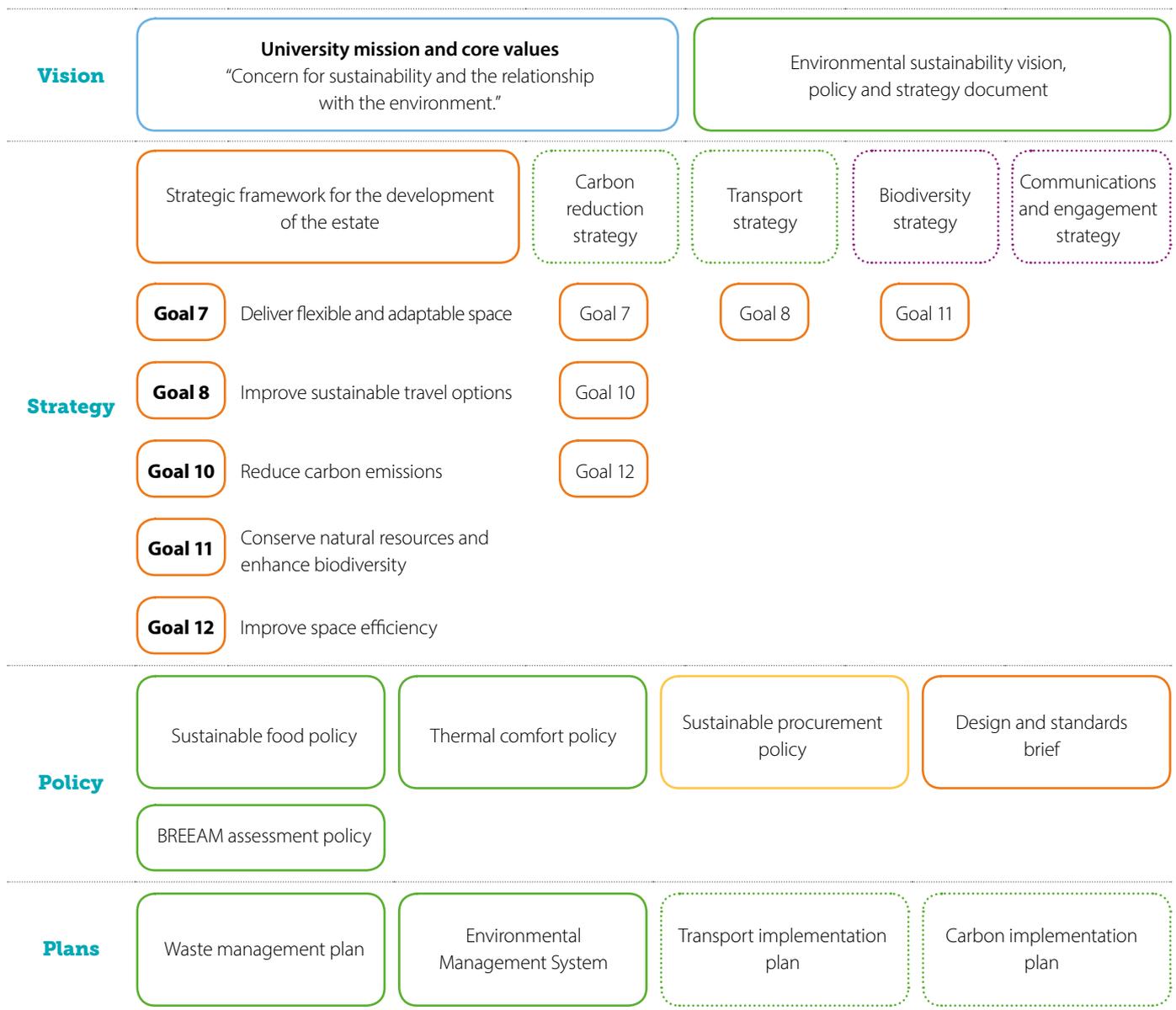


Environmental sustainability strategies and policies

To support our work in environmental sustainability, we have a number of strategies and policies that have been adopted by the University, are being taken through our committee structure, or are currently being developed. These important documents sit within a wider context; our environmental sustainability policy directly relates to the University Mission and one of its

core values. Additionally, the University's Strategic Framework for the Development of the Estate commits to developing the estate sustainably as one of four key performance areas, and includes a range of specific goals which either directly, or indirectly, relate to environmental sustainability.

F2 Environmental sustainability strategy and policy structure



Owner

- University
- Estate management
- Environment and Energy section
- Procurement Section

Adopted policy

- At Committee
- In development

Progress against our targets

Over the course of 2016-17, we've made significant progress in a range of areas; laying down the foundations for new and revised strategies, implementing more energy efficiency projects than ever before, increasing access to sustainable transport alternatives, and inputting to the development of a new Design and Standards Brief for capital projects. We've also tackled a number of new areas in 2016/17, including working to understand the University's biodiversity baseline, developing an approach to support more sustainable food choices and considering how procurement guidelines can be updated to support better choices. However, there's still room for improvement and there are a number of areas where progress has been slow. Specifically, we've not made the

progress we would have wanted in supporting sustainable procurement or reducing water consumption, but we are optimistic for the coming year in these areas with the University appointing a new Head of Procurement and plans for our new Sustainable Labs Coordinator to look at water use in labs.

It's also worth noting that we're reporting here against our existing targets but the work we've done on both the transport and carbon reduction strategies has suggested revised targets which, once finalised, are likely to change our position.

T1 Performance against targets

Impact area	Target	Current progress	Position
Energy and Carbon management	To reduce Scope 1 and 2 carbon emissions from building-related energy use by 34% by 2020/21 against a 2005/06 baseline	Our energy-related carbon emissions have increased by 3% since our baseline year. However, in recent years, we have seen our annual emissions reduce, by 13% since 2013/14.	
Water management	To reduce water consumption by 20% by 2020/21 against a 2005/06 baseline	Water consumption is 10.8% higher than in our baseline year. Our current downward trajectory indicates that we will be 0.3% above baseline in the target year.	
Biodiversity and ecosystems	In the expert opinion of the Ecological Advisory Panel, that no construction, refurbishment or maintenance work on the estate has a net negative impact on biodiversity and that, where possible, the impact is net positive	The Ecological Advisory Panel has now been established and is meeting regularly with a focus on establishing our biodiversity baseline.	
Waste management	To send zero non-hazardous waste to landfill by 2020/21	Our operational waste to landfill reduced from 2,009 tonnes last year to just 67 tonnes this year, thanks to a re-tender of our main waste contract. However, due to a large construction waste output this year, overall waste to landfill did not decrease significantly from last year.	
	To achieve continuous year-on-year reductions in waste arising per FTE staff and students	Our total operational waste output dropped 16% year-on-year. However, when construction waste is included, the waste arising per FTE increased significantly, from 0.28 tonnes to 0.68 tonnes.	
	To recycle at least 95% of total waste produced at the University by 2016/17	Our recycling rate increased from 70% to 83%. Excluding construction waste, it increased from 39% to 50%. While we have missed our challenging 95% target, significant improvements have been made.	



We can do better



We are making good progress



We have achieved our target

Impact area	Target	Current progress	Position
Sustainable procurement	That central University procurement frameworks are more attractive financially, more environmentally friendly and faster than other routes, and therefore, more institutions use them	Sustainability criteria are included in the tenders for central procurement frameworks as and when they come up for renewal. Further work needs to be undertaken to encourage institutions to use the frameworks.	
	To achieve at least level 4 'Enhance' across all themes of the Sustainable Procurement Flexible Framework by December 2015	Level 4 achieved in December 2015	
	For institutions to consider sustainability criteria within their procurement activity	We have seen an increase in the number of institutions including sustainability criteria within their tender assessment and selection processes	
Sustainable construction and refurbishment	To establish and implement a standard for sustainable construction at the University of Cambridge that is context specific and is considered a leading approach in comparison with our peers	A final draft of a new Design & Standards Brief was issued for stakeholder consultation in June 2017. This included a range of measures focused on enhancing the environmental sustainability of our new buildings and refurbishments. This new Design & Standards Brief is being implemented during 2018.	
	By 2020/21, for 95% of annually certified buildings (by floor area) to have a minimum Display Energy Certificate rating of 'D'	259,821m ² of our estate has a current Display Energy Certificate. 54% of this floor area has a rating of 'D' or better.	
Travel	At least 75% of staff to be regularly commuting to work by sustainable modes of travel by 2016/17	In 2016/17, levels of sustainable travel have reduced to 74% (from 75%), just below the target.	
	To reduce per capita carbon emissions from business flights by 25% by 2020/21	We have seen a reversal of the previous trend against this target in 2016/17 – per capita emissions have increased, by around 30% since the target base year (2014/15).	

Energy and Carbon

Our carbon emissions, in particular those related to our building energy use and business flights, represent one of our most significant environmental impacts. We've got targets for emissions reduction and a range of activities and measures focused on their delivery.

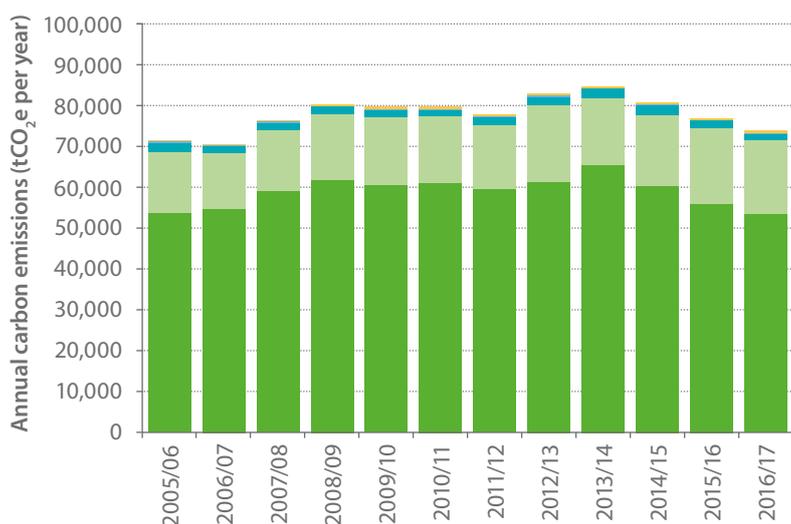


Overarching aim

To reduce scope 1, 2 and 3 carbon emissions while supporting the University's plans for growth in research activity and staff and student numbers.

F3

Total annual Scope 1 and 2 carbon emissions



Progress against our carbon reduction targets

In 2016/17, energy consumption in our buildings was 262 million kWh; although this represents around a 5% increase since 2015/16, our Scope 1 and 2 carbon emissions reduced in 2016/17 for the third consecutive year, primarily due to ongoing decarbonisation of the UK electricity grid.

- Electricity emissions
- Gas emissions
- Oil emissions
- Biomass emissions
- Heat and steam emissions
- Vehicle related emissions

F4

Breakdown of our 2016/17 carbon emissions by scope¹

Although Scope 1 and 2 energy use represents the biggest source of carbon emissions, accounting in 2016/17 for approximately 72% of our total, our indirect (or Scope 3) emissions, for example from staff business travel, are also significant; and they're on an upward trend, increasing by 37% in 2016/17 compared to the previous year.

- Scope 1
- Scope 2
- Scope 3



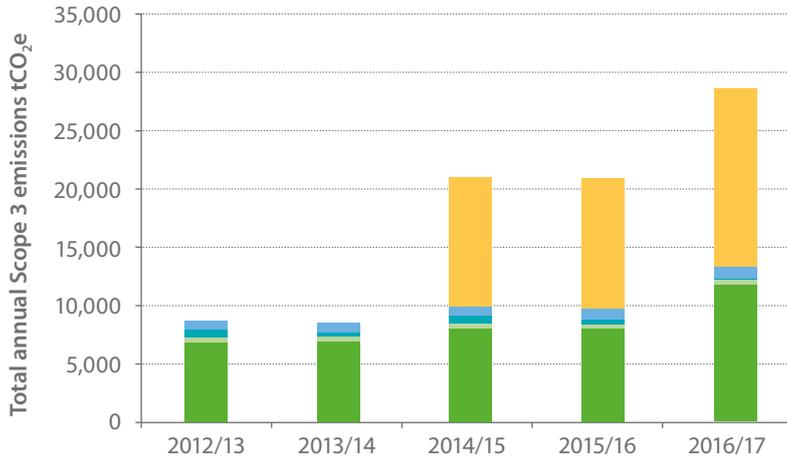
Corrections to emissions reporting

In this years' figures, we've corrected errors in the reporting of biomass and oil emissions for 2015/16 – this was due to the incorrect type of report being generated from our energy management system which meant the figures were overstated by 46% and 10% respectively. We've also corrected an error in last years' report which significantly overstated PV generation by 55%.

¹A full breakdown of our reported emissions data can be found here: <https://www.environment.admin.cam.ac.uk/energy-and-carbon>

F5

Total Scope 3 emissions²



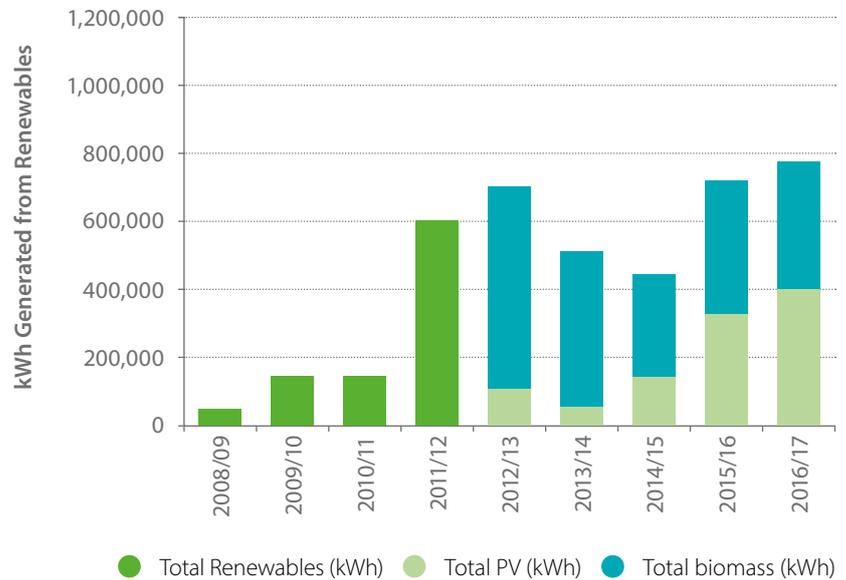
As shown in Figure 5, our analysis indicates that this increase in Scope 3 emissions results from more business travel by air, and increased commuting distances reported in the annual staff travel survey, both by bus and by car. On a more positive note, our carbon emissions from waste were greatly reduced in 2016/17 as a result of the implementation of our 'zero waste to landfill' approach to waste management (described on page 20 of our 2016 report).

- Staff commuting
- Water
- Waste
- Travel for work by other modes
- Travel for work by air

Renewable energy generation

F6

When considering this data, we need to acknowledge that both the quality and completeness of our Scope 3 data is poor, meaning the figures presented here don't tell the whole story. For example, we don't currently report emissions from our supply chain as there's no accurate way of doing this; and we know that the data we hold on business travel represents only a portion of the journeys taken for business. More positive news is that the amount of energy we're generating ourselves from photovoltaic installations increased again this year (up by 22% on 2015/16). We also continue to use biomass fuel in two buildings, reducing the carbon intensity of the heating for those locations; see Figure 6 for details.



Following the 2016 review of our Carbon Management Plan 2010-20, we've begun to develop a revised approach to carbon reduction, which has four key strands:

Technological improvements

Enhancing the energy performance of our existing estate, delivering low carbon new developments and investing in more on-site renewable energy supplies.

Culture change

Fostering a low carbon culture across the University, under which carbon is considered by everyone as part of their day job, is a material consideration in decision making, and where decision making is joined up in pursuit of carbon reduction as a common goal.

Maximising linkages with our teaching and research

Increasing opportunities for our students to access formal and informal learning on environmental sustainability, and for our academic research and expertise to inform our approach to carbon reduction – refer to the Environmental sustainability in teaching and research section for more on this.

Better information to support better decisions

Developing a better understanding of our carbon impact, in particular our Scope 3 emissions, so that we can be more effective in reducing emissions, and making data more accessible to staff and students so that they can better understand how their behaviours and choices affect our carbon emissions.

²We do not have comparable data on emissions from travel for work (business travel) prior to 2014/15.

What we've done

ECRP achieves more than ever before

At £2.9 million, spending on energy and carbon reduction in 2016/17 was the highest we've ever achieved, representing a very successful year for the Energy and Carbon Reduction Project (ECRP) and continuing the trend of identifying and delivering more savings year on year. The projects funded through the ECRP in 2016/17 (some examples given below) are estimated to deliver energy savings in the region of 7,000MWh, avoided energy costs of around £550,000 and carbon savings of around 2,300 tCO₂e per year.

We deliver one of the UKs first wind responsive fume exhaust systems

In 2017 we completed one of the first wind responsive fume exhaust projects in the UK, at our Chemistry Department. Fans extracting air from fume cupboards respond to local wind conditions to reduce energy consumption while maintaining strict safety criteria – a complex balancing act, but one which is set to save 920,000kWh of energy per year.

Our successful Equipment Replacement Programme expands its coverage

We've expanded our Equipment Replacement Programme (which went live in 2016) to include drying cabinets, as well as ultra-low temperature freezers. In its first year, the programme has incentivised 20 departments to replace 60 freezers and four drying cabinets, helping us to reduce our emissions by over 100 tCO₂e per year. The programme has also acted as a catalyst for change amongst members of the University that had previously taken little or no action to reduce their energy use.

More and more people are getting involved

Through further development of our Green Labs programme and the launch of a Building Managers Network across our estate in 2017, we've increased opportunities for staff to become involved in the design and delivery of energy and carbon reduction projects. We also launched the first ever Cambridge Carbon Challenge in 2017 as a means of engaging staff and students in carbon reduction which resulted in two winning project proposals now being funded for implementation through the ECRP.



In progress/future plans

To put our revised approach to carbon reduction into practice, we'll be taking forward several work streams this year; here are some examples:

Passing control of electricity costs to users

We're developing a scheme under which University departments will become responsible for managing their own electricity budgets. The scheme will have a phased implementation across departments from 2019/20. Supported by an extensive project to enhance metering, a pilot will be undertaken in 2017/18 in one of our buildings, with outcomes used to finalise details of how the new scheme will work and allow for a 'ghost' year to test systems in 2018/19.

Exploring alternatives to flying

We're running the Cambridge Carbon Challenge for a second year, this time with a focus on innovative ideas for reducing air miles and incentivising alternatives to flying.

Moving to whole life costing

The new Design and Standards Brief introduces a requirement for the key elements of our new buildings to be selected on the basis of their whole life costs, including their energy costs.

Striving to do more

We're exploring options to increase funding for energy and carbon reduction projects so that we can implement energy efficiency improvements and renewable energy projects at a larger scale.

Water

Over the course of 2016/17, we've been working hard on a range of other environmental issues, meaning that we've made less progress on reducing water consumption than we would have liked; however, our water use, both in absolute terms and in terms of intensity of use, have fallen this year.

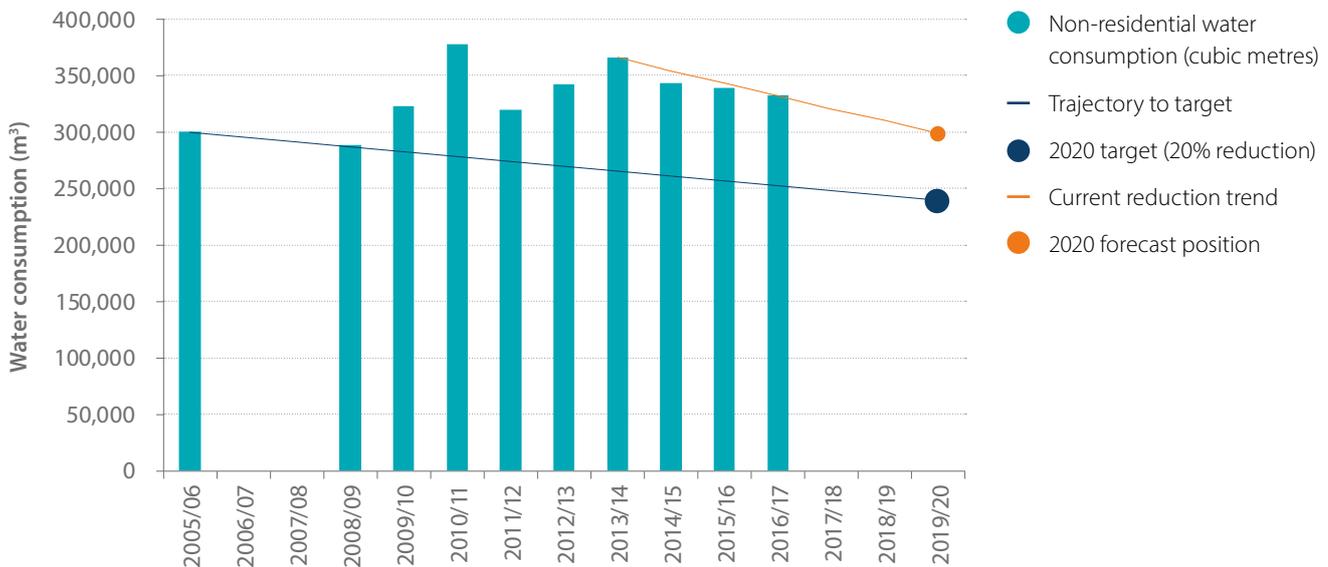


Overarching aim

To conserve water through efficient use and management.

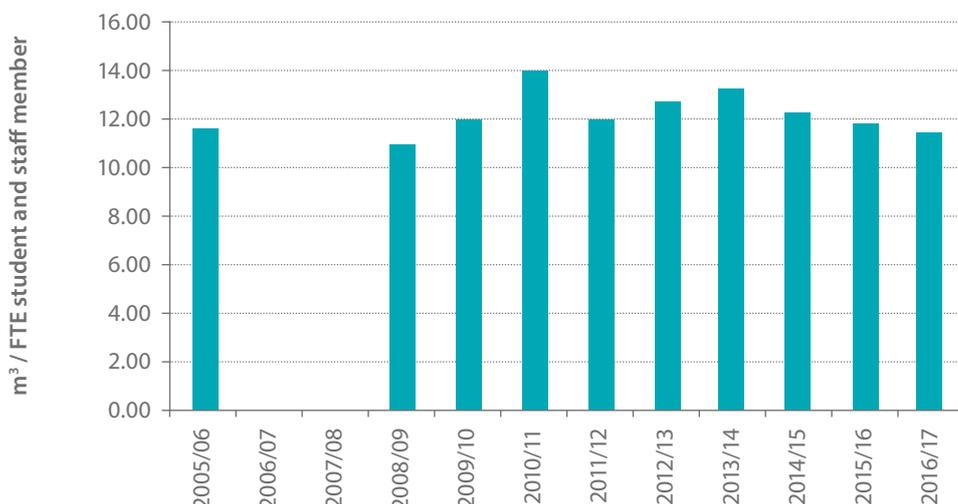
F7

Annual water consumption since our 2005/06 baseline



F8

Water consumption per FTE student and staff member



What we've done

Water consumption falls for the third year running

Overall water consumption is 10.8% higher than in 2005/06, but consumption started to fall in 2014/15 and has continued to do so – consumption's decreased by 1.8% compared to 2015/16, and 3.2% since 2014/15. If we continue our reduction at the same rate, we'll be approximately back to our baseline consumption in 2020/21 – some way off our 20% reduction target. To achieve the 20% target, we need a reduction of almost 31,000m³ per year.

New buildings driving water efficiency

All of our new building and major refurbishment projects target a BREEAM Excellent rating, or equivalent, and part of that process involves considering water use resulting in significant reductions in consumption where new buildings replace old. In practice, this means new buildings are fitted with efficient taps and showers, typically limiting flow rates to 5 l/min and 9 l/min respectively and installed WCs are typically 6 and 4 litre dual-flush to further aid water efficiency. Since our last report, we've completed four new buildings which have contributed to the continuing reduction in consumption. Not only has our overall water consumption continued to fall, the consumption per Full Time Equivalent staff and student member has now reduced below that in our baseline year of 2005/06.

In progress/future plans

We've identified that we need better data to support our water reduction efforts as well as driving value from the data we collect. We also need to focus on high intensity water use to ensure our work is targeted. Here's what we'll be doing next year.

More data please

We plan to analyse and target buildings based on actual consumption data from newly installed Automatic Meter Reading connected devices as well as to identify where metering needs to be enhanced as a future phase of our broader metering project.

Focus on labs

Notwithstanding the need for better data, we don't want to stand still; our Sustainable Labs Coordinator will be working with users to trial water saving products in high consuming laboratories. If successful, we'll look to include them within future new build and refurbishment projects.

Using better data to flag issues early

With our new AMR meters, we'll be able to set up automatic warnings when consumption spikes, alerting us to leaks more quickly and enabling unnecessary consumption to be tackled as soon as possible.



Biodiversity and ecosystems

A key focus of our work around biodiversity and ecosystems is the establishment of an Ecological Advisory Panel (EAP) to provide guidance to our development work. Having established the EAP, we're now getting more expert advice on how to move forward with a focus on both new development as well as the existing estate.



Overarching aim

To be a leading organisation within the sector in limiting negative and, where possible, having positive direct and indirect impacts on biodiversity and natural ecosystems so that the University's practical performance in this area matches its aspirations to be a global leader in conservation and food security research.



What we've done

Harvesting our internal expertise

An Ecological Advisory Panel has been established, meeting for the first time in May 2017. It is made up of academics from the Departments of Zoology, Plant Sciences and Land Economy plus representatives from the Wildlife Trust and RSPB who are partners from the Cambridge Conservation Initiative. The Panel is responsible for overseeing the development of a biodiversity baseline assessment and action plan on our estate.

Understanding where we are now to figure out where to go next

To support the EAP, we've produced an initial baseline assessment of biodiversity, drawing together information from various sources, including; biodiversity monitoring plans, ecological surveys, national record resources, and internal documents providing information on biodiversity. We're using the output of this exercise to inform an initial implementation plan.

Managing our 'wild' places

A Woodland Management Plan for the University has been finalised covering 15% of the University's rural estate. The remainder is covered by environmental stewardship agreements at either Entry, or Higher, levels.

In progress/future plans



Formalising our thinking and actions on biodiversity

Over the next year, we'll aim to develop a strategy focused on improving the way we monitor and manage our existing estate as well as ensuring our developments consider and integrate biodiversity into the design and delivery of new buildings and landscapes.



Building on solid foundations

We'll continue work to complete our baseline assessment of biodiversity across the estate, including mapping to inform prioritisation of future actions.



Supporting those tasked with looking after our estate

We'll be working with the University's Grounds Maintenance team to review activities and determine where they can be more closely aligned with biodiversity objectives.

We'll also be implementing a range of biodiversity recommendations made by ecologists for the West Cambridge site.



Many hands make light work!

There are many enthusiastic nature lovers across the University, and we want them to be involved. To give them the opportunity, we'll be considering how best to increase engagement with staff and students on biodiversity.

Waste management

Over the last year we've put significant effort into improving our recording of waste data. This lets us better manage and control our waste outputs, and look at better targeting of our waste management and recycling efforts. In addition, changes made last year to the way we dispose of our waste has led to significant and positive changes in our recycling rate and waste to landfill.



Overarching aim

To minimise and actively manage waste through elimination, education, reuse and recycling.

Since the introduction of a new waste contract in 2016, significant improvements have been made to the handling of our operational (non-construction) waste, as shown in Figure 9. As a result, our operational waste to landfill this year fell to just 67 tonnes from 2,009 tonnes last year, and our operational recycling rate increased from 39% to 50%.

Despite this improvement our overall waste output increased significantly, leading to a large increase in waste per FTE from 0.28 tonnes to 0.68 tonnes; this was primarily due to a number of large construction projects during 2016/17. In spite of this, our overall (operational and construction) recycling rate increased from 70% to 83% (see figure 10); a record high.

F9

Changes in the way we dispose of our operational waste



- Recycled
- Composted
- Anaerobic digestion
- Energy from waste
- Incinerated
- Landfill
- Other

F10

Recycling rates



- Construction recycling rate
- Operational recycling rate
- Total recycling rate

What we've done

Just because it's waste, doesn't mean it's worthless

In the Summer of 2016, a new contractor took on the collection of our non-hazardous waste leading to significant improvements in how the waste we produce is dealt with. Any non-recyclable waste is no longer sent to landfill, instead it is used as a 'refuse-derived fuel', meaning it is turned from waste into energy.

Food waste collections have also been expanded, with this waste being anaerobically digested to generate biogas.

Efforts have also been made to encourage better recycling practices among staff and students through a number of events and awareness raising activities, including a waste and recycling guidance document, and a 'Spotlight On Waste' month.

Weighing up the problem

A big focus throughout 2016-17 has been on greater data and information on our waste disposal. Our waste contractor is now weighing each bin they collect from our sites, so that we can more accurately understand the composition of our waste and provide departments with regular feedback on the amount they recycle.

Students help us learn

A 'bin busting' audit of the University's bins was initiated by the Living Laboratory for Sustainability to determine problem waste streams, and gleaned useful information such as that 26% of waste is put in the wrong bin by staff and students! In addition, Cambridge Hub provided a cohort of students through the 'Social Innovation Programme' to research waste management at the University, including carrying out a survey of staff and students on barriers to recycling. This provided us with useful information which will feed into a new set of targeted initiatives and plans for improving performance in 2017-18 and beyond.

In progress/future plans

Revising our waste management plan

We're currently using an Interim Waste Management Plan to allow us time to put in place arrangements for better waste data. We've now started to gather that data, meaning that in 2017/18 we can focus on developing and implementing a new Waste Management Strategy.



Sustainable procurement

There have been a number of initiatives focused on sustainable procurement this year, including plenty of engagement with suppliers, enhancing our systems and looking at resource efficient furniture.



Overarching aim

To positively influence the sustainability performance of suppliers and the sustainability credentials of the goods and services that we purchase.



What we've done

Constructionline – Gold standard!

Estate Management is working to implement a requirement for suppliers to be verified to Constructionline Gold standard. This work will vet over 450 suppliers to ensure they meet a range of criteria, including having an environmental policy in place.

More equipment, less energy

Our Equipment Replacement Programme has helped to raise awareness of the energy intensity of certain types of plug-in equipment and we're using our procurement system to promote more energy efficient models.

Sustainable furniture procurement for the Judge

For the Judge Business School furniture tender awarded in January 2017, suppliers were required to be certified under the Forest Stewardship Council and Furniture Industry Sustainability Programme. In addition, the suppliers were required to demonstrate how furniture could be disassembled with standard tools, encouraging the reuse, refurbishment, repair, and recycling of components and reducing resource consumption.

Cleaning up cleaning!

The recent Cambridge Institute for Medical Research (CIMR) cleaning contract award eliminated the use of chemicals, to support the department in improving its environmental credentials. The "LotusPRO" water based natural cleaning solution runs on tap water and eliminates the need to buy, store and mix chemicals.

In progress/future plans



Focus on sustainable procurement

The theme for our Procurement section's annual exhibition this year will once again be focussed on sustainable procurement. There will be three seminars during the day, covering our use of plastics in University cafés, our zero waste to landfill initiative; and one on modern slavery. E&E intend to have a presence at the event and will be available to answer questions at the various seminars.



New Head of Procurement

The Environment and Energy section will work closely with the newly appointed Head of Procurement, to positively influence and drive sustainable procurement initiatives.



Enhancing guidance provided to departments

We'll also be working to develop guidance on best practice to influence department's procurement decisions with an initial likely focus on purchasing energy efficient plug-in equipment.



Our Marketplace procurement system is evolving

The University will be rolling out the pilot Marketplace initiative where the online system suggests an equivalent, more environmentally sustainable, stationery item to encourage users to make informed choices to reduce impact.



Train not plane!

Our travel management company will be running sustainable initiatives to encourage staff to use rail travel, where possible, instead of flights for trips within the UK.



New consortia contract for resource efficiency

North Eastern Universities Purchasing Consortium (NEUPS) have launched a Furniture Reuse and Recycling Framework to provide a collection and recycling service with full end to end provision for furniture storage, reuse and recycling.

Sustainable construction and refurbishment

The University estate continues to develop rapidly so we've stepped up our efforts to address the potential environmental impact of this work. With more projects in the development pipeline expected to match a rating of Excellent under the rigorous 'BREEAM' sustainability assessment and the appointment of a Sustainable Buildings Advisor, we're determined to have a positive impact.



Overarching aim

To reduce the environmental sustainability impacts of our construction and refurbishment projects.

T2

Post completion sustainability assessments were finalised for four projects during 2016/17

Building	BREEAM Certification
Maxwell Centre	Excellent
Electrical Engineering Department Building Annexe	Very Good
Cambridge Centre for Clinical Research	Very Good
David Attenborough Building ¹	Compliance with New Museums Site Sustainability Framework ²

¹The David Attenborough Building has won the 2017 Architects' Journal Retrofit Awards and has been shortlisted for the 2018 CIBSE Building Performance Awards

²Buildings forming part of the New Museums Site Masterplan are being assessed using a bespoke Sustainability Framework, compliance with which is deemed to be equivalent to a BREEAM rating of Excellent.



What we've done

Strengthening our team to support engagement

In May 2017, we appointed our Sustainable Buildings Advisor to support the University's Projects team with environmentally sustainable design and to monitor compliance with environmental standards.

Every project is unique and, as such, has the opportunity to teach us something, meaning another important part of the role is to ensure that Post Occupancy Evaluations (POE) are carried out so that we can learn the lessons each project has to offer.

New design brief allows us to reach every project

The appointment of our Sustainable Buildings Advisor has significantly increased our bandwidth to engage effectively with projects but, with so much development happening across the estate, it's still possible that some might slip through the net.

To make sure every project meets a minimum level of performance, we've developed a rigorous new set of environmental standards for construction and refurbishment to form part of a significant new Design & Standards Brief document.

A new building is for life, not just for construction

This year lifecycle costing exercises have informed decisions to utilise ground source heat pumps to heat and cool three major projects at West Cambridge; minimising future reliance on natural gas.

The late Professor Sir David MacKay remains as impactful as ever

The Energy Cost Metric (an idea originally mooted by MacKay, and featured in last year's report) informed the detailed design of the new Civil Engineering Building for the Department of Engineering.

In progress/future plans

Design and Standards Brief is coming!

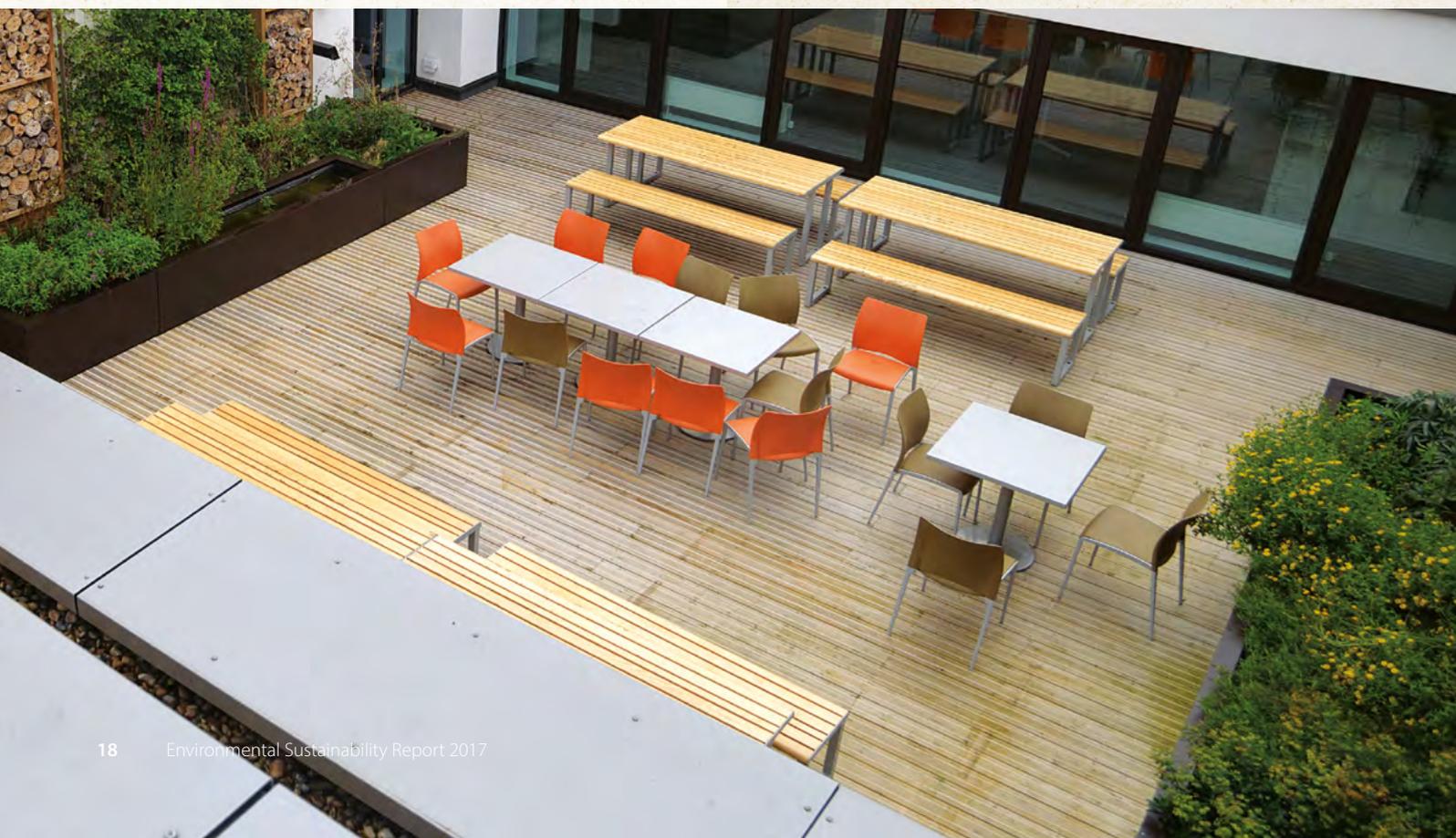
The new Design & Standards Brief will be implemented during 2018. This will require project teams to meet challenging new environmental targets; in particular far more attention must be given to the impact of 'un-regulated' energy demand from plugged in equipment and scientific processes. The new Design & Standards Brief also includes a checklist of issues to be reviewed at key stages during the project to reduce risk of environmental targets being missed.

Post Occupancy Evaluation will help us learn our way to better buildings

In the coming year, there will also be a renewed focus on post occupancy evaluation of completed projects. For example; occupants of the David Attenborough Building will be surveyed in early 2018 to see whether the aspirations for a healthier and more comfortable environment have been met in reality. We'll also make greater use of the more detailed metering data that is becoming available with new projects.

Capital Plan Prioritisation tool

A new Capital Plan Prioritisation Tool will be developed over the next 12 months. The tool includes a number of environmental sustainability related metrics to allow us to monitor how projects are addressing key issues during the design process.



Travel and Transport

We're a major employer in Cambridge, and as such, we recognise the impact our staff and students have in travelling to, and at, work. That's why we put a significant amount of effort into developing, implementing and supporting a range of sustainable travel and transport initiatives across our estate and beyond.



Overarching aim

To provide viable and accessible sustainable travel options for staff and students for travel to work, travel at work and travel for work which results in a reduction of carbon emissions.

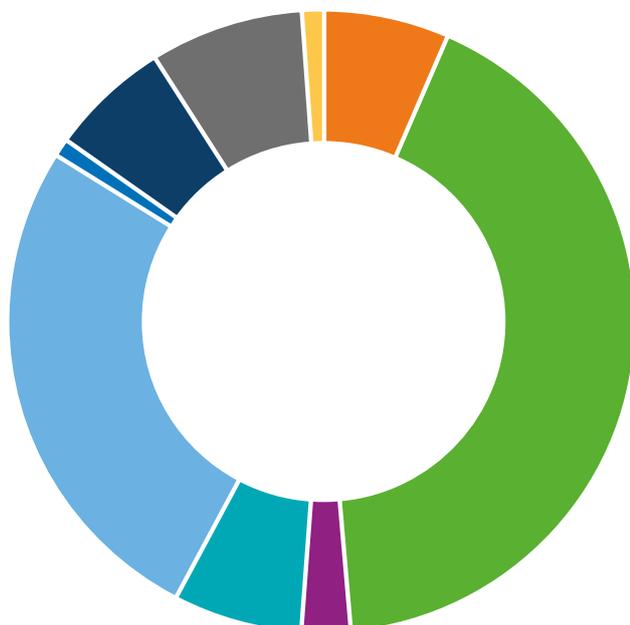
74% of staff use sustainable modes of travel to commute to work

Every October we ask our staff how they travel to work. In 2016 we received 2,815 responses to the survey (25% of staff) – Figure 11 shows the results. 74% using sustainable modes to commute is 1% down on last year, which means that we've slipped just below our target (75%).



F11 Modal split of staff travel to work

Bus	7%
Cycle	42%
Car - Share Passenger	2%
Car - Share Driver	7%
Car - Single	26%
Motorbike	1%
Train	6%
Walking	8%
Other	1%



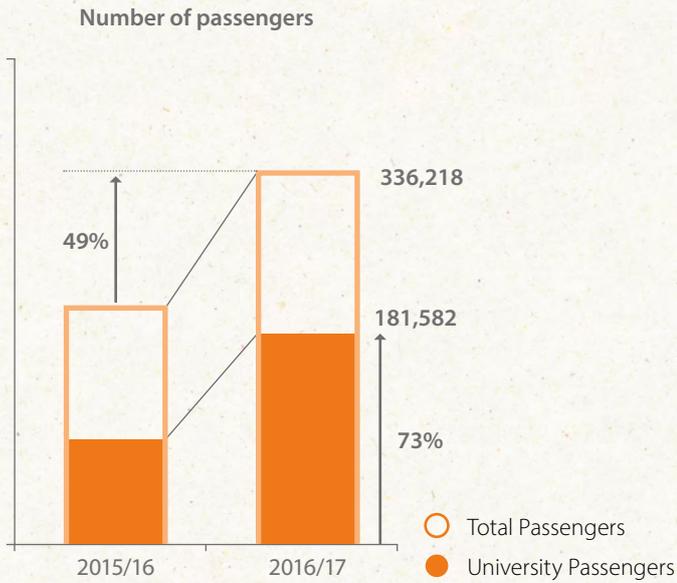
What we've done

The Universal bus continues to improve against all measures

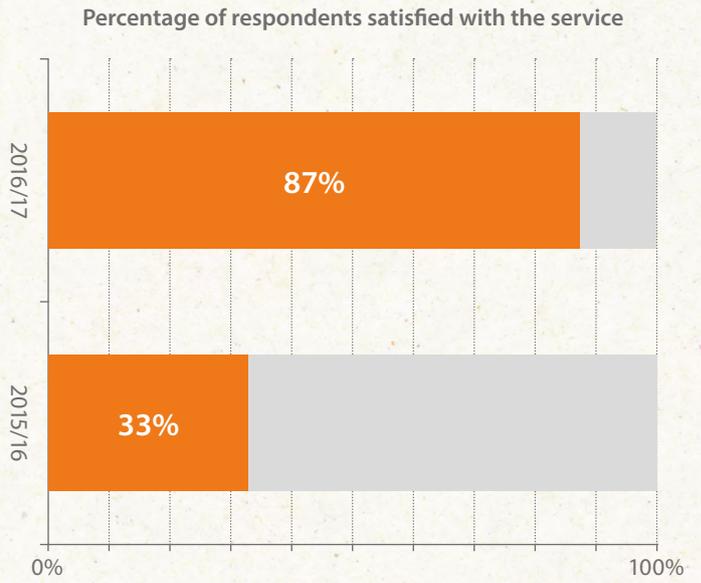
The University's subsidised bus service, the Universal, was launched on 23rd July 2016; connecting Madingley Road Park and Ride to the Cambridge Biomedical Campus via the railway station, it runs every 15 minutes on weekdays and every 20 minutes on Saturdays using a new fuel efficient fleet (Euro 6 compliant).

The Universal is going from strength to strength, with passenger numbers and satisfaction, as well as reliability all improving on the previous year.

F12 Passenger numbers split between University and non-University users, 2015/16 Vs 2016/17



F13 Passenger satisfaction rates 2015/16 Vs 2016/17

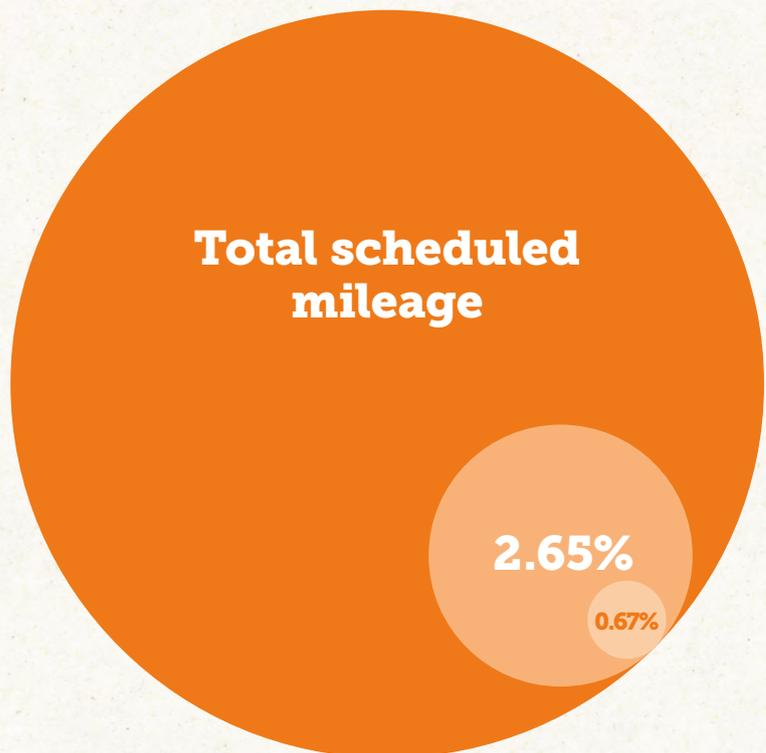


F14 Universal bus service total scheduled mileage Vs lost mileage, 2015/16 Vs 2016/17

"Lost mileage" is the mileage not operated due to vehicle breakdown, staff failures or severe traffic congestion and is measured as a percentage of the total scheduled mileage.

Lost Mileage

- Total scheduled mileage
- 2015/16 Lost mileage **2.65%**
- 2016/17 Lost mileage **0.67%**



More and more staff are getting on our bikes!

We've continued to develop our pool bike schemes at Greenwich House, the Maxwell Centre and David Attenborough Building. A survey carried out in 2016 highlighted that 92% of users are happy with the service and provided useful feedback on how the scheme could be further improved. In 2017, usage of the Greenwich House scheme increased considerably, from an average of 125 to 180 uses per month. We've also continued to install improved cycle parking, cycle lockers and tool stations at a number of sites across the University's estate to encourage people to use their own bikes too.

Sending a message on sustainable travel

We've continued to promote sustainable transport to our users through the 2017 Spotlight On Travel month, and ongoing events throughout the year, including promotion of cycle training, car sharing and discounts off rail tickets and cycling equipment. We also created targeted information, such as site based information guides and maps, for new developments and major refurbishments and we provide regular transport updates through our travel newsletter which is circulated to over 1,500 subscribers.

Implementation of the North West Cambridge Development Travel Plan

As part of the planning consent, the University must ensure 40% or less of journeys from the site are by single occupancy car. The NWCD has been designed to encourage sustainable travel, including provision of a segregated cycle and pedestrian route called the Ridgeway, restricted levels of parking and a bus gate on Eddington Avenue to reduce rat running through the site.

In 2016 we continued to work closely with the school to reduce the number of parents driving their children to school, holding road safety workshops, and other events. In addition, as residents started moving into Eddington, a series of measures have been offered including a cycle loan scheme, cycle training, cycle maintenance workshops and Personalised Travel Planning.

In 2017, we'll work closely with the other occupants to encourage sustainable travel, including the supermarket and community centre. A car club will be launched on site in 2018 and the bus has already been routed to serve the Eddington community.



In progress /future plans

✓ Approval of the Transport Strategy and establishment of a Transport Working Group

A 15 year Transport Strategy is being formulated to set out the University's long term aspirations for sustainable transport on the estate and for working with partners in Cambridge. Linked to this, is a 5 year implementation plan setting out the priority measures for implementation. Both documents are currently being taken through internal committees and will be adopted over the coming year.

A Transport Working Group (TWG) will be established in 2017/18 made up of representatives from across the University to support and oversee the implementation of the Transport Strategy. The TWG will be supported by a series of sub-groups, each looking at a different aspect of travel and transport.

Environmental sustainability in teaching and research

We aim to make learning opportunities available to all staff and students to develop their knowledge, skills and understanding of the environmental sustainability agenda. According to the most recent student survey, they agree³:

67% agree or strongly agree that Universities should be obliged to develop student's social and environmental skills as part of their courses

91% strongly agree (40%) or agree (51%) that sustainable development is something which universities / colleges should actively incorporate and promote



Overarching aim

To undertake world-leading research that is related to environmental sustainability and to ensure that our operations are informed by this research where possible.

For all staff and students to have access to formal and informal opportunities to develop their knowledge, skills and understanding relating to sustainability matters and solutions.

³based on sample size of 278, giving us 90% confidence and a 5% margin of error



What we've done

We're working to create opportunities for staff to learn about environmental sustainability

We've developed a new, online staff induction module to ensure environmental sustainability is on the agenda of all new starters and we're working with Human Resources to make this part of the standard induction process.

Courses and lectures on sustainability topics continue to take place across the University.

We've reviewed our own position, and that of others, to inform our plans

We've carried out a review of how teaching content is currently put in place across the University as well as looking at good practice from other institutions, in order to inform how best to support the aims set out in our policy on sustainability in teaching.

Another great year for the Living Laboratory for Sustainability

We're continuing the work of facilitating links between research and operational sustainability with 21 Living Lab projects completed, involving 64 students, 32 staff, 10 events and 623 participants! Highlights of what we've done this year include:

- The University's sustainable food policy was launched in February 2017, and has gained significant attention, including a Green Gown Award! Its ground-breaking approach involves the removal of ruminant meat from menus.
- The Living Lab is supporting the University's commitments and targets on biodiversity and ecosystems, through the newly established Ecological Advisory Panel.
- The Living Lab launched a new 'Cambridge Carbon Challenge' in October 2016. This competition invited staff and students to submit their ideas for reducing building energy use and carbon emissions across the University estate, and has led to two projects being taken forward for implementation.
- The Living Lab also provided support to the Cambridge Climate & Sustainability Forum, Cambridge Environmental Consulting Society, and gave lectures, inductions, careers advice, webinars, and supported a number of academic and voluntary sustainability projects.

You can see the detail of exactly what's been happening in the Living Lab annual report,

www.environment.admin.cam.ac.uk/living-lab/yearly-review

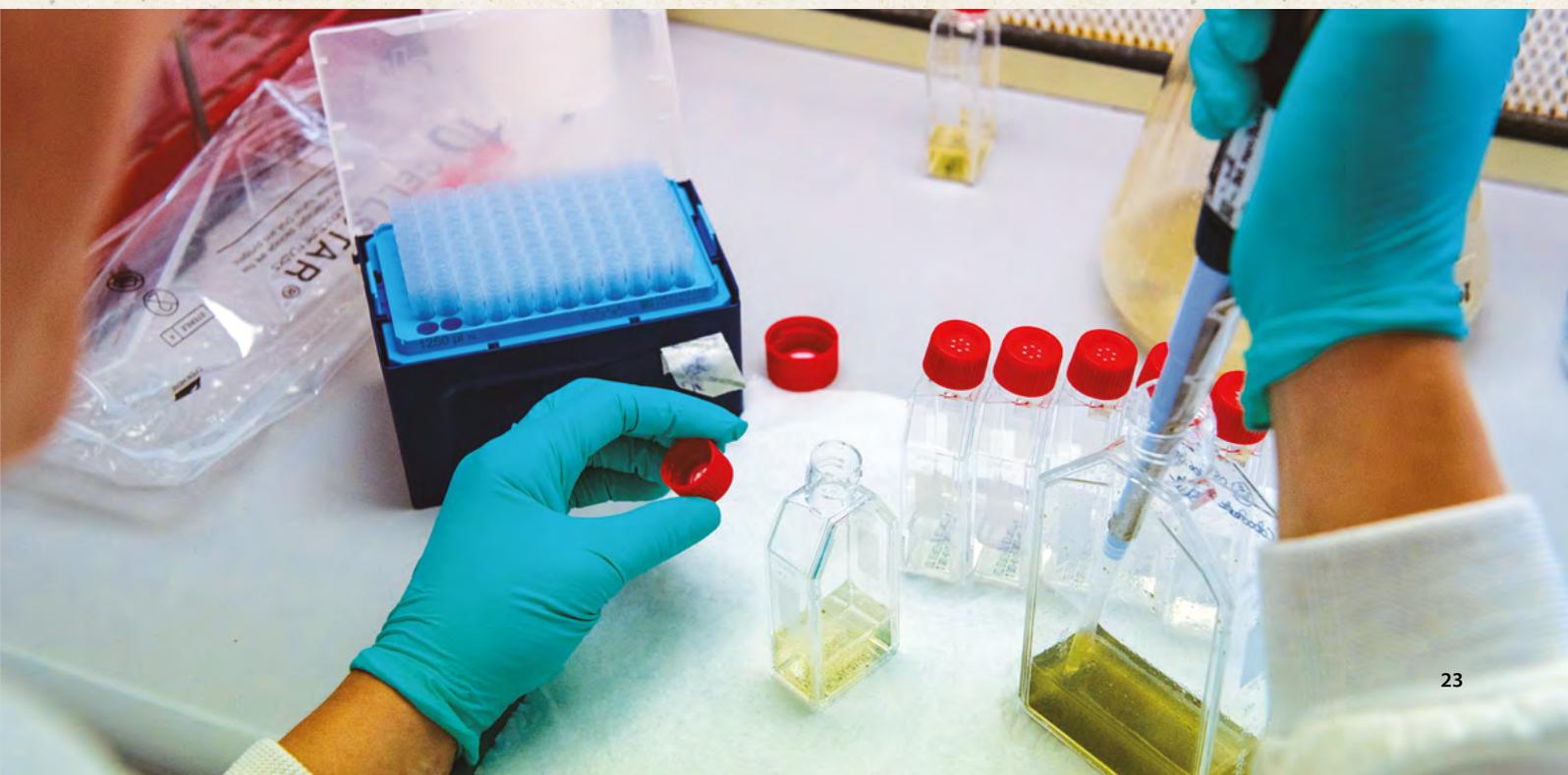
In progress/future plans

Mapping the landscape of environmental sustainability teaching

We know there is much teaching which, directly or indirectly, relates to environmental sustainability across the University. To help us understand that landscape, we're going to carry out an exercise to map the occurrence of sustainability within the curriculum across the University to inform our work.

We're looking at making learning a tool for engaging staff

We need to mobilise the considerable potential of our staff to support our aims, so we'll be investigating the potential to include environmental sustainability training sessions for staff through Personal & Professional Development.



Partnership and engagement

Engagement with our stakeholders is one of our key activities, and we have a whole range of ways to bring the Cambridge Green Challenge to our staff and students. From our monthly newsletter, Greenlines, and bi-monthly Environment and Energy Coordinator digest to our Facebook page and Twitter feed, we're trying to make it hard not to notice the environmental sustainability agenda.



Overarching aim

To facilitate opportunities where staff and students can develop and share their knowledge, skills and experience to engage with and contribute effectively to achieving the University's environmental sustainability aspirations.

What we've done

Greenlines

We've produced 12 editions of our monthly newsletter, distributed to 2,873 staff and students.

Travel newsletter

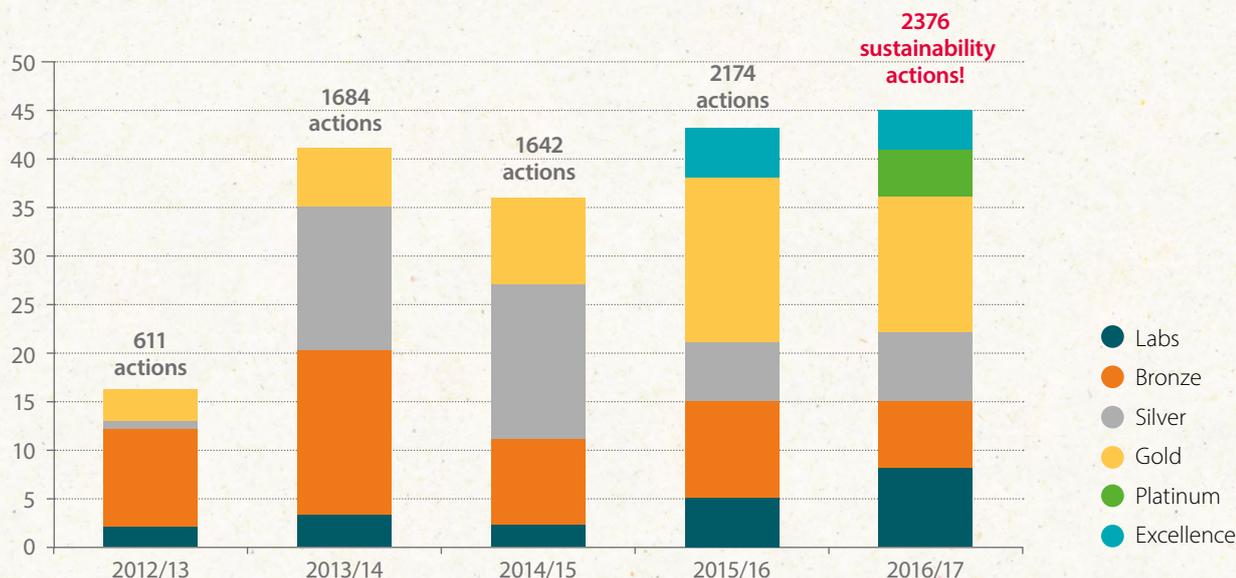
Three editions of our travel focused newsletter have been produced and distributed to 1,500 staff.

"Spotlight On" months

We ran three Spotlight On months this year focusing on Sustainable Food, Sustainable Travel and Energy. Throughout these months we ran events and produced communications to increase understanding and facilitate behaviour change. Roadshow events across the University engaged hundreds of staff, while an online induction module was also developed to provide all staff with access to information on their environmental responsibilities.



In the University's sustainability accreditation scheme, Green Impact, 2,376 actions were completed by teams of staff and students, who received a total of 45 Green Impact awards – both more than any previous year of the scheme at Cambridge.



Carbon Challenge competition

Teams of students and staff submitted their ideas for energy saving solutions as part of our new competition. The winner was 'Team Planit Green' with their plan to use hydroponics to lower building energy use by reducing the energy required for ventilation and heating. This, and a project, involving solar-powered battery charging for electric vehicles, are being taken forward for implementation.

Environment and Energy Coordinators network

One of the best ways to effect change is to mobilise the University community to work together and solve our environmental sustainability challenges. Our network of 100 dedicated EECs continued to support these efforts in their own departments over the last year, helping us to reach more individuals than we could hope to on our own.

Building Managers Network

We expanded our engagement with the University's building managers, providing 91 of them with a forum for learning about sustainability improvements in the buildings they manage.

We're reaching out to even more students

Student engagement on environmental sustainability continues to grow as evidenced by the NUS student skills survey. The addition of an intern to the Environment and Energy team allowed increased engagement with Colleges on the incorporation of sustainability information in student inductions – we know that at least 18 of the 32 Colleges have included information on sustainability in their student inductions at the time of writing.

In progress/future plans

We'll continue to support existing schemes and networks as well as developing new forms of engagements in 2017/18.

✔ A new engagement strategy to keep our approach fresh

We'll be working to map our stakeholders and to prioritise our engagement activities in a new engagement strategy. This will allow us to be more focused and effective in tailoring our engagement to the needs of our stakeholders, including some of those we've not reached so far.

✔ Institution level sustainability plans

With guidance from the Environmental Sustainability Strategy Committee, we're developing materials to help institutions create their own, local sustainability plans. The aim of these plans will be to support the implementation of our Environmental Policy through facilitating activity at a local-level and empowering communities across the University to take action. The emerging approach will be piloted in a few different institutions before being considered for wider implementation.

✔ Spotlight On months

Three 'Spotlight On' months will be held; Spotlight On Waste, Spotlight On Sustainable Research and Spotlight On Sustainable Travel.

Key performance indicators

Table 3 reports against the KPIs contained in our Environmental Sustainability Vision, Policy and Strategy.

T3 Key performance indicators

	2014/15	2015/16	2016/17
Total Scope 1 and 2 carbon emissions (energy and fuel use) (tonnes)	80,788	77,586	74,489
Carbon emissions from water use (tonnes)	383	381	369
Total Scope 1 and 2 carbon emissions per staff and students (tonnes/FTE)	2.9	2.7	2.6
Carbon emissions from water use per staff and student (tonnes/FTE)	0.014	0.013	0.013
Total Scope 1 and 2 carbon emissions per total income (tonnes/£1000)	0.095	0.084	0.081
Carbon emissions from water use per total income (tonnes/£1000)	0.0005	0.0004	0.0004
Percentage of energy generated from onsite renewable or low carbon sources (%)	0.25	0.42	0.43
Total water consumption (m ³)	343,535	338,656	332,580
Total water consumption per staff and student (m ³ /FTE)	12.3	11.8	11.42
Percentage of new buildings and major refurbishments confirmed by the Ecological Advisory Panel (EAP) as having no net negative impact on biodiversity.	The EAP now meets and has established the need for a baseline against which to judge the impact of developments – see Biodiversity and ecosystems section for more information		
Waste sent to landfill (tonnes)	2,030	2,448	2,201
Waste mass generated per FTE staff and students (tonnes/FTE)	0.29	0.28	0.68
Percentage of waste generated that is recycled or composted (construction and non-construction waste) (%)	74%	70%	83%
Level achieved on the Flexible Framework	4	4	4
The percentage of new buildings that are certified at least BREEAM Excellent or equivalent	50% (2 of 4)	50% (1 of 2)	50% (2 of 4) ¹
The percentage of annually certified buildings that have a minimum Display Energy Certificate rating of 'D'.	42%	46%	54%
External awards for sustainable construction/design.	0	0	1
Percentage modal split for commuting by staff single occupancy car journey	24%	25%	26%
Percentage modal split for commuting by staff car share	8%	8%	10%
Percentage modal split for commuting by staff bus	8%	7%	7%
Percentage modal split for commuting by staff train	6%	6%	6%
Percentage modal split for commuting by staff cycle	42%	42%	42%
Percentage modal split for commuting by staff walk	10%	10%	8%
Percentage modal split for commuting by staff motorbike	1%	1%	1%
Percentage modal split for commuting by staff other	1%	1%	1%
Per capita carbon emissions from flights.	0.77	0.74	1.0
Number of institutions participating in Green Impact.	37	43	45
Number of members of the Environment and Energy Coordinator Network.	97	103	100

¹The David Attenborough Building undertook a bespoke sustainability assessment instead of a BREEAM assessment which is considered equivalent to BREEAM Excellent.



Get involved

Take the Cambridge Green Challenge

Cambridge is strongest when we work together. That's true for all aspects of University life and never more so than for The Cambridge Green Challenge; it's both ours and yours, and there are many ways to be part of making the University a more sustainable place.

Environment and Energy Coordinators

Join your colleagues in our voluntary staff network and provide a focal point for environmental issues in your workplace.

www.environment.admin.cam.ac.uk/EECs

Green Impact

Create and work with a team in your building to implement a range of environmental actions and get recognition at the annual awards ceremony.

www.environment.admin.cam.ac.uk/green-impact

Living Lab

Use the University estate to support your student research or project on environmental sustainability.

www.environment.admin.cam.ac.uk/living-lab

Resources

Get environmental messages across to your team or Department using our posters, stickers and more!

www.environment.admin.cam.ac.uk/resources

The Carbon Challenge

Use this competition to develop your own ideas to reduce environmental impact.

www.environment.admin.cam.ac.uk/carbon-challenge

Find out more and keep up to date

Monthly newsletter:

www.environment.admin.cam.ac.uk/greenlines



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