

Carbon Reduction Strategy

23 February 2018

Introduction

Climate change presents challenges that will be with us for generations to come. While individuals can and must act to reduce carbon emissions, it is societal and institutional action, sustained through the decades, which must lie at the heart of meeting these challenges. The University is in a strong position to provide such sustained leadership based on actions that are well documented and rigorously evaluated. Our consultations of staff and students indicate that there is considerable appetite to provide this leadership and to exploit the expertise and research activities of the University.

Society as a whole faces the challenge of making absolute reductions in emissions while simultaneously seeking to improve quality of life, often through economic growth. The University faces a similar challenge: the likelihood is of continued growth, particularly in respect of our research activities.

We have had success in reducing our relative emissions, for example, emissions per member of staff. These relative improvements are the result of interventions and the reduction in the carbon intensity of the grid.

The University has in the past set ambitious *absolute* carbon reductions targets. Due to growth, we have actually increased our carbon emissions. The University will very likely continue to grow, but we must nonetheless reduce our absolute emissions. Therefore we need to reshape our institutional initiatives and policies in order accelerate our reduction programme.

This document sets out the University's Carbon Reduction Strategy. This strategy is concerned with the reduction of the University's carbon footprint, which is related to but distinct from, the education and research activities of the University that pertain to climate change or greenhouse gas emission reduction. The strategy is presented as a set of policies and approaches that we will take. *These approaches are rational, whatever our targets might be.*

A set of implementation plans based on this strategy will be developed following the adoption of the strategy. There will be difficult choices to make in the future, potentially leading to the University forgoing some opportunities. The strategy does not seek to make those choices, rather it provides a framework and approach to minimise the number and magnitude of those difficult decisions, recognising that even over the next ten years the landscape will change markedly.

This strategy will interact with the University's Transport and Spatial Strategies; all three strategies will have to be further developed in concert.

Aspirations and Targets

Greenhouse gas emissions are conventionally classified into one of three 'scopes':

Scope 1.

Emissions that arise from direct emission, primarily carbon-based fuel combustion, including operational vehicles, but also fugitive emissions due to leaks;

Scope 2.

Emissions which arise from purchased electricity, heat, steam, etc. – but whose production is from carbon-based fuel;

Scope 3.

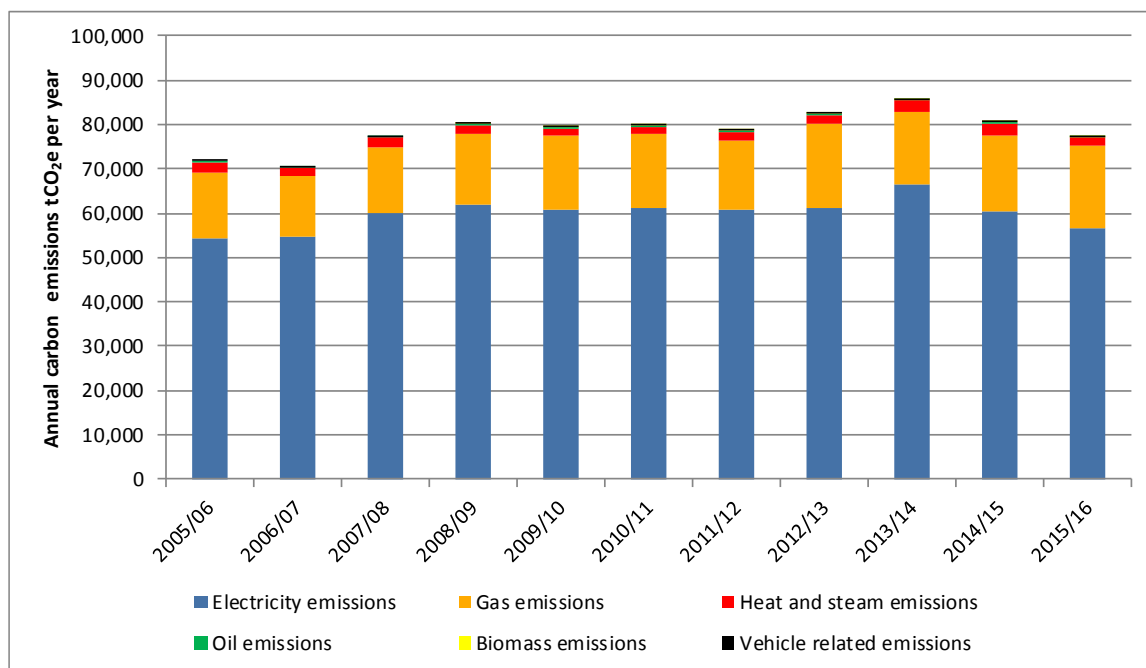
All other emissions, notably those that arise from:

- a. purchased goods and services, including the materials and processes used in constructing new buildings
- b. business travel
- c. employee commuting
- d. waste disposal
- e. investments

Our scope 3 emissions are someone else's scope 1 and 2 emissions.

While we have good understanding of our scope 1 and 2 emissions, we are not in a strong position with respect to scope 3. This is not uncommon; the usual approach of organisations has so far been to start by addressing scopes 1 and 2. But this is changing.

We need to take care that as we get a better understanding of our scope 3 emissions, we compare like-for-like when understanding our progress on reduction.



Annual Scope 1 and 2 emissions, 2005/06 to 2015/16

Our long-term aspiration is to have zero-carbon emissions for scopes 1 and 2 and minimal-carbon for scope 3, which will be offset to obtain net-carbon-neutrality.

For no more than two years, we will retain our current short and medium-term targets which were informed and developed through the *Carbon Management Review 2010-20* performed in 2016. We will monitor the impact that the actions described here have in reducing our emissions in line with these targets:

Scope 1 and 2:

- 6% reduction by 2020/21 (measured against a 2005/06 baseline of 71,989 tCO₂e)
- 21% reduction by 2025/26
- 53% reduction by 2035/36
- zero-carbon by 2050.

Scope 3:

- We will reduce per capita emissions from air business travel by 25% against 2014/15 levels by 2024/25, taking into consideration our current under-reporting.

These initial targets will be replaced by more stringent targets developed, in collaboration with the Science Based Targets (SBT) Initiative (<http://sciencebasedtargets.org>). We will engage with other research-intensive universities to see if we can carry out an exercise to produce a relevant sector-specific decarbonisation pathway. If not, we will adopt the generic SBT absolute targets. In any event this will result in a refinement of our targets by the beginning of 2020 at the latest.

The Strategy

University actions to reduce carbon emissions can be grouped into three broad categories:

1. Institutional actions that generate financial return, or at worst, are financially neutral, for example by reducing the amount of energy we purchase (*financial and environmental benefit*);
2. Institutional actions where financial return is negative (*environmental benefit*); and
3. Institutional actions to improve information and options for individuals making decisions (*empowerment*).

The strategy below is presented as seven pillars and two themes which cut across them. These focus on the first and third of these categories, but we will not lose sight of actions which do not generate a financial return. Consultations across the University show that there is appetite to take action beyond the merely financially viable.

In order to achieve our goals, there must be a shift in culture across the University to a greater awareness and acceptance of responsibility for carbon emission. Some of the pillars address this culture shift directly, but this shift will only be obtained if there are strong and visible institutional aspirations, actions, and incentives (which are the subject of the first four pillars).

The pillars are:

1. Whole-life-cycle carbon costs
2. Uncapping funding for rigorous business cases
3. Better information
4. Providing options
5. Providing teaching and learning opportunities
6. Promoting and assessing cultural change
7. The estate, transport and the region

The themes are:

1. Analysis, reflection and dissemination
2. Partnership

Each pillar is a development of current activities; however, they are material departures from their predecessors.

Pillar One: Whole-life-cycle carbon costs

The need to reduce emissions in absolute terms while continuing to grow requires a commitment to processes which ensure that additions to the estate are subject to more rigorous evaluation with respect to whole-life-cycle carbon costs. Furthermore, resource allocation procedures within the University need to align long-term incentives so that no individual or institution is exposed to a perverse conflict between capital and operational costs.

The way in which the University operates its capital projects gives rise to an unhelpful separation of capital and operational expenditure. Projects are tasked with delivering on time and on budget, and there is little opportunity to consider balancing a reduction of operational costs with an increase in capital expenditure. Indeed, the usual practice is to 'value-engineer' capital expenditure out, with little consideration for the potential knock-on effect for operational cost.

We often set targets in terms of external accreditation, for example BREEAM Excellent rating. However, these external targets do not necessarily coincide with our internal priorities. Moving forward we will examine the entire life-cycle costs of buildings, including projections for different future energy/carbon costs. We will establish a stronger link between bids for capital and bids to the Planning Round for recurrent operational costs.

The University's recurrent budget is set each year via a planning round; however, the running costs of a new building are not routinely scrutinised as part of this process. This will change; projected operational budgets for new buildings will be required to address running costs more comprehensively than at present, and will include for the first time a projected carbon footprint. Project approval will include approval of this recurrent budget. To avoid a disconnect between the planning round and the capital projects process, projects teams will be required to provide sufficient information on emerging building projects to inform planning round forecasts; project teams will in turn require fuller information on estimated running costs to complete the financial case for each building.

In general, we do not account for the carbon cost of construction projects, both in terms of energy expended on site or energy embodied in materials. The new Civil Engineering building is the only real exception to this. This will have to become the norm and is an example where we can make use of expertise within the University.

Pillar Two: Uncapping funding for rigorous business cases

Over the past seven years, the University's Energy and Carbon Reduction Programme (ECRP) has been funded to make interventions in the running of buildings or to replace equipment with more efficient models. Examples include LED lighting, freezer replacement, a substantial re-engineering of the exhaust system in Chemistry, and, (for illustration) at the small-scale, procuring custom insulation jackets for large valves in plant rooms. The ECRP has been funded by a modest Chest¹ allocation and seeks to fund schemes which provide payback times generally of less than 10 years. The opportunities, particularly in scale, tend to be limited by this recurrent allocation. If the payback times are arrived at rigorously and if the return on investment is sufficient to fund debt, then there is no reason why this activity should be capped financially.

The University will transform ECRP funding to be divided into

- 1. Chest funding for project scoping, pre-evaluation and post-assessment which would include the Environment and Energy Section in Estate Management, but supplemented with funds for consultants;**
- 2. An uncapped Green Capital Fund which would be drawn down in the form of loans to fund approved projects; and**
- 3. Chest funding for non-project activities (i.e. Pillars three to seven)**

Savings arising from project interventions will be used to service loans. Savings in excess of debt servicing will be used for activities that did not generate a financial return or to provide incentives for participation in projects.

The University will consider whether this programme should be wrapped in a governance structure which gives greater assurance about project viability and accountability on servicing of debt, but at the same time can take informed risks in translating research outputs into action. The possibility that this governance structure can be shared with some or all of the Colleges will be investigated.

In a framework where the ability to service debt is the benchmark, transaction costs, particularly for small interventions, can become key. It may be that the capabilities within Estate Management will need to be increased, for example (and simply for illustration) solar panel installation might become an in-house capability.

This Green Fund could be used to fund quite substantial projects, for example extensive retrofit of a major site, or a solar farm on University land outside the city.

A protocol for funding approval will need to be designed for ECRP Projects. This is in order to ensure rigour in business cases and in post-evaluation of interventions. This protocol must address externalities such as the removal of asbestos or improvement to monitoring. It will also be important to fit ECRP interventions in with maintenance and to understand when financially nonviable interventions might be at their lowest cost.

¹ A 'Chest allocation' is a recurrent allocation.

Pillar Three: Better information

The University will improve the data it has and communicates to its staff and students. This is particularly important in our Scope 3 emissions and thus our procurement and business travel activities. Moving to net carbon neutrality will necessarily involve carbon offsetting at some point in the future. It is vital that the University has information to inform offsetting deliberations.

As noted above, our understanding of our Scope 3 emissions is poor. Further, while we understand our Scope 2 emissions across the University, we are not very good at communicating the breakdown of these at a scale that is meaningful to departments or research groups. Some examples to improve this situation are given below.

An initiative to devolve energy expenditure to departments will require better metering of the estate, certainly at the level of individual buildings. This work is already underway. This information will be publicly accessible (and digestible).

The University is considering the implementation of new procurement system. While it is unlikely that provision of the embedded carbon content of goods will be a universal (or even common) practice for some time, consideration should be made to incorporate such a feature into the system, and, where appropriate, to present this information to users. Understanding Scope 3 emissions is becoming an issue of enormous importance to business; we have an opportunity to be part of developing the frameworks in which this is done. It is recognised that better information is necessary, not sufficient, to achieve rational procurement.

In future modifications to financial systems, expense claims forms will be designed to capture business travel (rather than relying on specific travel procurement) in a straightforward manner. Air travel information, including source/destination of each flight will be recorded. In Schools where research activity is not energy intensive, air travel may well dominate emissions. Moreover, it is difficult to see how we ever gain net carbon neutrality without offsetting air travel. In order to understand the implications for offsetting, we must have far better air travel information.

Related to this is the information gathering and dissemination required to support the Transport Strategy, noting that the Transport Strategy is only concerned with travel within and around Cambridge, that is, travel to work and travel at work, rather than travel for work.

Pillar Four: Providing options

We need to provide options for departments and individuals particularly with respect to procurement², travel (i.e. as in the Transport Strategy) and business travel. Again, the devolution of energy budgets is an example, as would be a good procurement system.

With regard to business travel, we should not be trying to discourage individuals from attending conferences where such attendance is a benefit to knowledge dissemination or career development. However, we will be supporting those who commit to pursue strategies that avoid and/or reduce long-range travel and promote alternatives, particularly for early career researchers. An enabling action, which would have the immediate benefit of reducing travel between sites within Cambridge, will be a clear implementation strategy for videoconferencing across a range of qualities.

Providing options is just that. It is not about 'punishing' current behaviour, rather it is about supporting and encouraging behaviours that lead to better carbon outcomes and elaborating co-benefits. Again air travel is an area where much can be done.

² We should recognise that we have a poor handle on our Scope 3 emissions. Pillar 3 will improve this, but care must be taken to report reduction on a like-for-like basis: our headline number will go up.

Pillar Five: Providing teaching and learning opportunities

There is a great deal of research carried on in the University which is directly relevant to environmental sustainability; there are also many courses in which environmental sustainability considerations are a key component; and the Living Laboratory for Sustainability supports use of the University estate as a test-bed/context for research and uses findings to improve environmental performance across the University. But these components of activity are not navigable by most students. We need to make it possible for all students to access teaching and project opportunities both inside and outside their formal teaching and learning programmes, including a tighter linking between the Living Laboratory and academic departments.

Pillar Six: Promoting and assessing behavioural change

It is important to recognise that much behavioural change, particularly in an academic environment requires intent, opportunity and information. We cannot expect constructive behavioural change without providing information on options and the opportunity to select options. Thus, this pillar is connected to pillars three, four, and five above.

We do have events to raise awareness of, and to recognise contributions to the reduction³ of, the Collegiate University's carbon footprint. These will be sustained. However, as we place more information and options before staff and students, it is also vital that we observe, at bulk level, the choices that are made in order that we may better understand behaviour, and thereby provide better options, better information and better teaching programmes.

Embedding carbon-awareness with University procedures is essential. We will place greater emphasis and *scrutiny* on carbon plans as part of the submission institutions and Schools make into the annual Planning Round.

Pillar Seven: The Estate, Transport and the Region

The long-term estate plan for the University must consider the carbon footprint of the University. This will necessarily include travel to work and thus must take into account where staff live, how the University's estate is developed and policies to influence the development of the Cambridge region.

The Transport Strategy, a companion document to this is broken into a number of components:

1. Cycling
2. Public Transport
3. Vehicle Electrification
4. Parking Policy

Each of these will have a direct impact on the carbon footprint of the University.

The University will also be developing a Spatial Strategy which will look at the future shape of the University and Region. This will be done in concert with local government, but also to influence local government.

³ Such contributions are often nationally recognised as well.

Theme One: Analysis, Reflection and Dissemination

For each of the activities that is undertaken in the implementation of this Strategy, we will actively monitor their impact, and use this information to refine our approach; to understand where our peers are doing better; and to provide the groundwork for sharing success. Consideration must include an examination of unintended consequences that can arise when a strategy is driven by a single metric. This analysis will be the responsibility of the Environmental Sustainability Strategy Committee.

In a rigorous academic environment, collaboration with colleagues will be facilitated by the availability of good evidence; we should view our experiences in reducing our carbon footprint as potential subject matter for teaching and research.

Theme Two: Partnership

Our collaborations must go wider than the Collegiate University. Collaboration will be inherent in the Transport Strategy where we need to co-ordinate our activities with regional governments and organisations, but these collaborations should go beyond transport to encompass for example, renewable generation and energy storage. We should also be engaging with our supply chain, and with organisations that are ahead of us in the management of their carbon footprints.

More immediately, we need to engage with peer institutions with a view to establishing a common basis for setting targets with a clear aim of doing this through the Science Based Targets process as mentioned above.