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Policy development

Statement of policy

A carbon reduction target and strategy for higher education in England.

This report is for information

January 2010/01

Carbon reduction target and strategy for higher education in England



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Foreword



Sir Alan Langlands
Chief Executive, HEFCE



Professor Steve Smith
President, Universities UK
Vice-Chancellor,
University of Exeter

Climate change is one of the greatest challenges facing the world. Universities and colleges have a big role to play in tackling it. This strategy gives practical effect to our commitment to work together to help the UK to reduce its greenhouse emissions substantially.

As a sector, we are in a unique position to lead the way. Many institutions are already reducing their own carbon footprint through energy efficiency and better environmental management. They are buying more sustainable goods and services.

Our researchers are not only investigating the potential impact of climate change, they are working with industry and the public sector to develop innovative solutions to the challenges it creates. Our students and graduates are shaping and leading the debate and the responses to it at every level of society. As a sector, we can be leaders in our response at all levels.

There is no doubt about the seriousness of the issue. The UN Intergovernmental Panel on Climate Change has concluded that climate change is unequivocal and that human activities make a big contribution. The 2006 Stern Review showed how the benefits of strong early action greatly outweigh the costs of inaction. The overwhelming view of scientists is that unless we make deep inroads into our carbon emissions, we are likely to see adverse climate change with severe impacts on coastal communities, food supplies and the number of species in the world.

So we are pleased that, through our consultation, we have secured the commitment of the sector to

reducing its carbon emissions, in many cases building on work already under way. Of course, this is just one important aspect of sustainable development. HEFCE, Universities UK and GuildHE are working together on this and other initiatives to ensure a strong future not only for our environment but also for our sector.

We should not underestimate the size of this challenge, nor its cost. The targets that society and the sector must achieve will not be easy: reducing our direct emissions and those caused by our electricity purchases by 34 per cent by 2020 (against 1990 levels) and 80 per cent by 2050 will demand creativity, co-ordination and commitment throughout the sector.

Each university and college will need to turn those national goals into institutional targets that can be measured over time against regular milestones. How they do so will vary considerably. An arts-focused university may have a very different carbon footprint from one with a strong science base. But the need to act is universal, and we can all ensure that our buildings are better insulated, our energy use is better controlled and our purchases are more considered.

As you introduce your targets, you will not be on your own. We will continue to share examples of how others in the sector have made a difference. HEFCE's capital funding will provide financial incentives to support better carbon management as you renew your estate and buildings.

Together, we can – and must – meet the carbon challenge.

Carbon reduction target and strategy for higher education in England

To	Heads of HEFCE-funded higher education institutions
Of interest to those responsible for	Senior management, Estates, Finance, Procurement
Reference	2010/01
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Enquiries to	Joanna Simpson tel 0117 931 7411 e-mail sustainabledevelopment@hefce.ac.uk

Executive summary

Purpose

1. This document sets out HEFCE, Universities UK (UUK) and GuildHE's revised strategy for carbon¹ reductions for higher education in England following feedback received on our document 'Consultation on a carbon reduction target and strategy for higher education in England' (HEFCE 2009/27)².

Background

2. Responses to the consultation on HEFCE's 2008 sustainable development strategy and action plan ('Sustainable development in HE – consultation on 2008 update to strategic statement and action plan', HEFCE 2008/18) demonstrated a high level of support (70 per cent) for a higher education carbon reduction strategy.

3. The Climate Change Act 2008 aims to improve carbon management and help the transition towards a low-carbon economy in the UK. It sets the world's first legally binding reduction targets for greenhouse gas emissions of at least 34 per cent by 2020 and at least 80 per cent by 2050, against a 1990 baseline.

4. Higher education needs to play its part in meeting national targets for carbon reduction. The grant letters from the Secretary of State for Innovation, Universities and Skills to HEFCE of 18 January 2008 and 21 January 2009 contained specific requirements that incorporated the requirements of the Climate Change Act.

¹ In this document 'carbon' is used as a shorthand for carbon dioxide equivalents (CO₂e).

² All HEFCE publications can be read at www.hefce.ac.uk under Publications.

5. Setting targets is essential to identify the size of the challenge, co-ordinate efforts nationally and internationally, and demonstrate commitment to meaningful change. However, targets alone do not achieve results. They need to be supported by a strategy so that the methods by which the targets are to be achieved can be agreed and the necessary actions and investment put in place. The intention of this strategy is to focus efforts in areas that offer the greatest carbon reduction return and identify issues that need further action. It sets out areas where we will work with institutions and other stakeholders to achieve carbon reductions. It will be for individual institutions to decide, within a national set of targets, how to reduce, measure, review and report progress on their own emissions.

6. HEFCE has already signalled to institutions a more demanding approach to carbon reduction and the need for carbon plans. Our 2008 and 2009 grant letters from the Secretary of State asked us to establish a link between performance against carbon plans – in effect, carbon reduction – and future capital allocations. HEFCE will achieve this by adapting its Capital Investment Framework.

Key points

7. This strategy comprises:

- a. A sector-level target for carbon reductions that is in line with UK targets.
- b. A requirement for institutions to set their own targets for 2020 for scope 1 and 2 emissions³ against a 2005 baseline⁴. This year is being used as a baseline because it is used for reporting against UK targets, and work done for HEFCE by SQW Consulting⁵ demonstrated that robust data for scope 1 and 2 are available for that year at institutional level. This will provide consistency across the sector against which progress can be monitored and reported.

- c. A commitment from institutions to achieve actual improvements through actions that are appropriate for their institution, recognising the diversity of the sector.
 - d. Support from HEFCE, UUK and GuildHE for institutions to achieve carbon reductions.
 - e. Funding incentives – in particular HEFCE will link capital funding to performance against carbon management plans.
 - f. Plans for annual monitoring and reporting on progress against the sector-level target.
 - g. A method of regularly evaluating the approach and taking action to learn from progress to date.
8. Overall the consultation feedback demonstrated:
- a. A high level of support for sector-level targets that are in line with UK targets for carbon emission reductions. The sector agreed that it should commit to a reduction in scope 1 and 2 emissions of 34 per cent by 2020 and 80 per cent by 2050 against a 1990 baseline.
 - b. Widespread agreement that higher education needs to play its part in reducing carbon emissions and that it is uniquely placed to lead the way. This role extends beyond the traditional estates function as institutions have a valuable role to play in promoting carbon reductions through their other activities including teaching, research and public communications.
 - c. Commitment to reducing emissions across all scopes and a wish to develop consistent methodology for reporting scope 3 emissions.

Action required

9. Institutions are called on to contribute to the sector-level target by reducing their carbon emissions.

³ The World Resource Institute developed a classification of emission sources around three 'scopes': 'scope 1' emissions are direct emissions that occur from sources owned or controlled by the organisation, for example emissions from combustion in owned or controlled boilers/furnaces/vehicles; 'scope 2' accounts for emissions from the generation of purchased electricity consumed by the organisation; 'scope 3' covers all other indirect emissions that are a consequence of the activities of the organisation, but occur from sources not owned or controlled by the organisation – for example, commuting and procurement.

⁴ All baselines mentioned in this report are measured on an academic year. For example, a 1990 baseline measures emissions from August 1990 to July 1991 and a 2005 baseline measures emissions from August 2005 to July 2006.

⁵ 'Research into a carbon reduction target and strategy for Higher Education in England: a report to HEFCE' (SQW Energy, SQW Consulting, July 2009) can be read at www.hefce.ac.uk under Publications/Research & evaluation.

Introduction

10. In July 2009 HEFCE, Universities UK (UUK) and GuildHE jointly published a consultation on developing a carbon⁶ reduction target and strategy for higher education (HE) in England ('Consultation on a carbon reduction target and strategy for higher education in England', HEFCE 2009/27).

11. In February 2009 HEFCE published an updated strategic statement and action plan on sustainable development ('Sustainable development in higher education: 2008 update to strategic statement and action plan', HEFCE 2009/03). This recognised how individual higher education institutions (HEIs) could play their part as centres of teaching and research, as campus managers, as employers and as major influencers and participants in their local communities. Graduates will occupy future management and leadership roles and will need the knowledge and skills to make informed decisions, taking account of complex social, economic and environmental issues. Our researchers can work in partnership to help society find social and technical solutions to these challenges and our campuses can lead by becoming more sustainable and efficient, for example reducing consumption of fossil fuels.

12. The UUK/GuildHE Sustainable Development Task Group was established to consider issues related to climate change and environmental sustainability, and their impact on HEIs. The group's priority areas include: benchmarking the sector's sustainable development performance; retrofitting (improving the environmental performance of existing buildings); providing leadership for sustainable development in the sector; and wider networking across sectors and

internationally. As part of its work to provide leadership for sustainable development in the sector, UUK's statement of intent on sustainable development enables university leaders to demonstrate their commitment to tackling the challenges of sustainable development.

13. Responses to 'Sustainable development in HE – consultation on 2008 update to strategic statement and action plan' (HEFCE 2008/18) demonstrated a high level of support for a carbon strategy, with almost 70 per cent of respondents agreeing that a strategy should be developed⁷.

14. Tackling climate change is a challenging agenda and we need to move quickly to do it. Feedback to HEFCE 2008/18 shows that there is now widespread agreement in the sector that sustainable development is important. It is a growing political priority both nationally and internationally. The United Nations' Intergovernmental Panel on Climate Change has concluded that warming of the climate system is unequivocal and that human activities make a substantial contribution⁸. Lord Stern's review of climate change⁹ in 2006 concluded that the benefits of strong and early action will far outweigh the economic costs of not acting. In June 2008 Lord Stern said that the costs of stopping greenhouse gases rising to dangerous levels had already doubled since 2006 to 2 per cent of GDP. HE makes an important contribution to the UK's sustainable development strategy, updated in 2005¹⁰.

15. The Climate Change Act 2008¹¹ aims to improve carbon management and help the transition towards a low-carbon economy in the UK. It sets the world's first legally binding targets for greenhouse gas emissions of at least 80 per cent by 2050 and at least 34 per cent by 2020¹², against

⁶ In this document 'carbon' is used as a shorthand for carbon dioxide equivalents (CO₂e).

⁷ A summary of written responses to HEFCE 2008/18 is at www.hefce.ac.uk under Publications alongside HEFCE 2009/03.

⁸ 'Climate change 2007: the physical science basis', available at www.ipcc.ch under Publications and Data/Reports.

⁹ 'Stern Review on the Economics of Climate Change', available at www.hm-treasury.gov.uk under Independent reviews.

¹⁰ 'Securing the future: the UK's sustainable development strategy', available at www.sustainable-development.gov.uk under Publications.

¹¹ Further information is available at www.decc.gov.uk under Legislation/Climate Change Act 2008.

¹² The 2009 Budget set the first carbon budgets, as required by the Climate Change Act. This increased the level of the 2020 target from 26 per cent to 34 per cent.

a 1990 baseline. Major parts of the public sector such as the NHS¹³ and schools¹⁴ have developed carbon reduction strategies. In summer 2009 the Government published the UK Low Carbon Transition Plan¹⁵, which sets out how the UK will meet the 34 per cent cut in emissions on 1990 levels by 2020. Nationally, emissions have already been reduced by 21 per cent.

16. HE needs to play its part in meeting national targets for carbon reduction. The grant letter to HEFCE from the Secretary of State for Innovation, Universities and Skills of 21 January 2009¹⁶ contained specific requirements relating to climate change:

‘Last year, I set out our ambition that capital funding for institutions should be linked to performance in reducing emissions. Following your advice to me, I am now confirming that such links should be in place for 2011-12. In May 2008 I asked you to finalise during 2008-09 a strategy for sustainable development in HE, with a realistic target for carbon reductions that would reduce carbon emissions by 60 per cent against 1990 levels by 2050 and at least 26 per cent by 2020. This former target should now be upgraded to 80 per cent, in line with Parliament’s decisions in passing the Climate Change Act 2008.’

17. In parallel with this, the 2009 update to the HEFCE strategic plan for 2006-2011 (HEFCE 2009/21) contains a revised key performance target (KPT) relating to sustainable development. Formed following discussion with the then Department for Innovation, Universities and Skills, the new KPT¹⁴ is: ‘To develop during 2009-10 in consultation with stakeholders a realistic strategy and target for carbon reductions which are sufficient to ensure

satisfactory progress towards the government targets of reducing carbon emissions by 80 per cent against 1990 levels by 2050 and at least 34 per cent by 2020.’

18. HEFCE’s sustainable development strategy and action plan (HEFCE 2009/03) includes the following actions:

- a. To publish guidance for institutions on developing carbon management plans in summer 2009. We will then ask institutions to produce plans that have clearance from a governing body or its relevant committee and to publish these plans and subsequent progress against them.
- b. To explore how we can create a carbon reduction culture and act to help the sector play its part in meeting national climate change targets. The first stage of this is to consult and agree with the sector a carbon reduction target and strategy.

19. A strategy on carbon reduction alone does not imply that we believe carbon reduction to be more important than the other aspects of sustainable development. These form part of our overarching strategy for sustainable development. But HEFCE has specific requirements to meet in relation to carbon reduction and that is why this document is only concerned with carbon reduction.

20. This strategy comprises:

- a. A sector-level target for carbon reductions that is in line with UK targets.
- b. A requirement for institutions to set their own targets for 2020 for scope 1 and 2 emissions¹⁷ against a 2005 baseline. This year is being used as a baseline because it is used for reporting

¹³ ‘Saving Carbon, Improving Health: NHS Carbon Reduction Strategy for England’ may be read at www.sdu.nhs.uk under Carbon reduction strategy.

¹⁴ ‘Carbon Emissions from Schools: Where they arise and how to reduce them’ may be read at www.sd-commission.org.uk under Our work/Education, Young People and skills/Schools.

¹⁵ The plan is available at www.decc.gov.uk under Publications.

¹⁶ The full letter and our report on our plans may be read at www.hefce.ac.uk under Finance & assurance/Finance and funding/Grant letter from Secretary of State.

¹⁷ See paragraph 29.

against UK targets, and research done for HEFCE by SQW Consulting¹⁸ ('the SQW report') demonstrated that robust data for scope 1 and 2 is available for that year at institutional level. This will provide consistency across the sector against which progress can be monitored and reported.

- c. A commitment from institutions to achieve actual improvements through actions that are appropriate for their institution, recognising the diversity of the sector.
- d. Support from HEFCE, UUK and GuildHE for institutions to achieve carbon reductions.
- e. Funding incentives – in particular HEFCE will link capital funding to performance against carbon management plans.
- f. Plans for annual monitoring and reporting on progress against the sector-level target.
- g. A method of regularly evaluating the approach and taking action to learn from progress to date.

21. We received 120 responses to the carbon reduction consultation from higher education institutions, individuals and other organisations¹⁹. As part of the consultation we held two seminars²⁰ to provide a forum for delegates to share experiences of reducing carbon emissions and to discuss the consultation.

22. Overall the consultation feedback demonstrated:

- a. A high level of support for sector-level targets that are in line with UK targets for carbon emission reductions. The sector believes that it should commit to a reduction in scope 1 and 2 emissions of 34 per cent by 2020 and 80 per cent by 2050 against a 1990 baseline.
- b. Widespread agreement that higher education needs to play its part in reducing carbon emissions and that it is uniquely placed to lead

the way. This role extends beyond the traditional estates function as institutions have a valuable role to play in promoting carbon reductions through their other activities including teaching, research and public communications.

- c. Commitment to reducing emissions across all three scopes and a wish to develop consistent methodology for reporting scope 3 emissions.

23. The key revisions to the strategy are:

- the sector-level targets are set at a reduction in scope 1 and 2 carbon emissions of 34 per cent by 2020 and 80 per cent by 2050 against a 1990 baseline
- inclusion of an aspiration to achieve reductions beyond the sector targets
- milestones are set to measure progress against the sector-level target. To recognise growth in the sector since 1990, these are a 1 per cent increase by 2012 and a 18 per cent reduction by 2017 against a 1990 baseline. These are equivalent to a reduction of 20 per cent by 2012 and 35 per cent by 2017 with a target of 48 per cent by 2020 against a 2005 baseline. In 2012 we will review the 2017 milestone in the light of experience
- a commitment to undertake work to assess what is required in order to monitor and report scope 3 emissions, including the measurement of a baseline of carbon emission from procurement by December 2012 and setting target(s) for scope 3 emissions by December 2013
- an intention to seek further funds to increase the size of the Revolving Green Fund²¹
- a commitment to commission work to produce a range of scenarios for how different levels of emission reductions can be achieved

¹⁸ See paragraphs 25-27.

¹⁹ A summary of written responses to the consultation is at www.hefce.ac.uk under Publications, alongside HEFCE 2010/01.

²⁰ A report of the consultation seminars is at www.hefce.ac.uk under Publications, alongside HEFCE 2010/01.

²¹ For more information on the Revolving Green Fund see www.hefce.ac.uk under Leadership, governance & management/Sustainable development/Revolving Green Fund.

- clarification that offsetting²² may not be used to meet targets but may be used as part of a carbon management plan to compensate for unavoidable emissions
 - a commitment to investigate with stakeholders, for example the Association of Managers in Higher Education Colleges (AMHEC), the development of a shared service to provide carbon expertise to small institutions
 - inclusion of details of a deadline-constrained invitation to bid for funding from the Leadership, Governance and Management Fund for projects that support the implementation of the UUK/GuildHE statement of intent on sustainable development
 - inclusion of information on the carbon hierarchy, management of scope 3 emissions and adaptation
 - the reporting period is defined as the academic year so that carbon data links directly with other institutional and sector data.
24. We are very grateful to HEFCE's Sustainable Development Steering Group²³ and to the UUK/GuildHE Sustainable Development Task Group²⁴ for their valuable advice and support in developing this approach to carbon reduction. HEFCE's Sustainable Development Steering Group is chaired by Geoffrey Copland, formerly Vice-Chancellor of the University of Westminster, and the UUK/GuildHE Sustainable Development Task Group is chaired by Professor Patricia Broadfoot, Vice-Chancellor of the University of Gloucestershire.
25. In October 2008 consultants SQW were commissioned to undertake work to develop a carbon reduction target and strategy for HE in England. This work was supported by UUK and GuildHE. The key deliverables were:
- recommendation of an appropriate carbon reduction target(s) for the sector
 - a scientifically based method for measuring carbon performance and specific recommendations for measuring progress
 - a 1990 baseline established using scientifically based methods
 - a recommended strategy for achieving the target(s)
 - any necessary guidance for institutions in developing carbon plans. This will complement existing guidance and programmes, such as the Carbon Trust's HE Carbon Management programme.
26. Key aspects of the report are included in this document. The full report 'Research into a carbon reduction target and strategy for higher education in England: a report to HEFCE' is available at www.hefce.ac.uk under Publications/Research & evaluation/2009. This research by SQW, carried out in 2008, used 2007 guidance on carbon conversion factors from the Department for Environment, Food and Rural Affairs (DEFRA) which has since been updated. The latest, 2009 guidance from DEFRA and the Department of Energy and Climate Change (DECC) provides revised carbon conversion factors (including retrospectively) and introduces two methodological changes. Firstly, emissions from fossil fuel combustion are calculated on the basis of Net Calorific Values (previously the guidance used Gross Calorific Values) – in practice this leads to higher emissions calculations. Secondly, emissions from all six greenhouse gases (GHGs) are reflected and aggregated in the carbon conversion factors (as 'Total GHG') – this leads to a further increase in the emissions calculations.
27. As these methodological changes apply to all current and future carbon baselining, reporting and target-setting, for the purpose of consistency and clarity the baseline figures have been revised and are used in this strategy.

²² See paragraphs 88-91.

²³ For further information, see www.hefce.ac.uk under Leadership, governance & management/Sustainable development.

²⁴ For further information, see www.universitiesuk.ac.uk under Policy and research/Policy areas/Sustainable Development Task Group.

Baseline: the carbon footprint of HE in England

28. SQW was commissioned to measure the carbon footprint of the higher education sector in England to provide a better understanding of emissions and establish a baseline against which progress can be measured.

29. The World Resources Institute (WRI) developed a classification of emission sources around three ‘scopes’:

- **scope 1** refers to direct emissions that occur from sources that are owned or controlled by the organisation, for example emissions from combustion in owned or controlled boilers, furnaces, vehicles
- **scope 2** accounts for emissions from the generation of purchased electricity consumed by the organisation
- **scope 3** is all other indirect emissions that are a consequence of the activities of the company, but occur from sources not owned or

controlled by the organisation – for example, commuting and procurement.

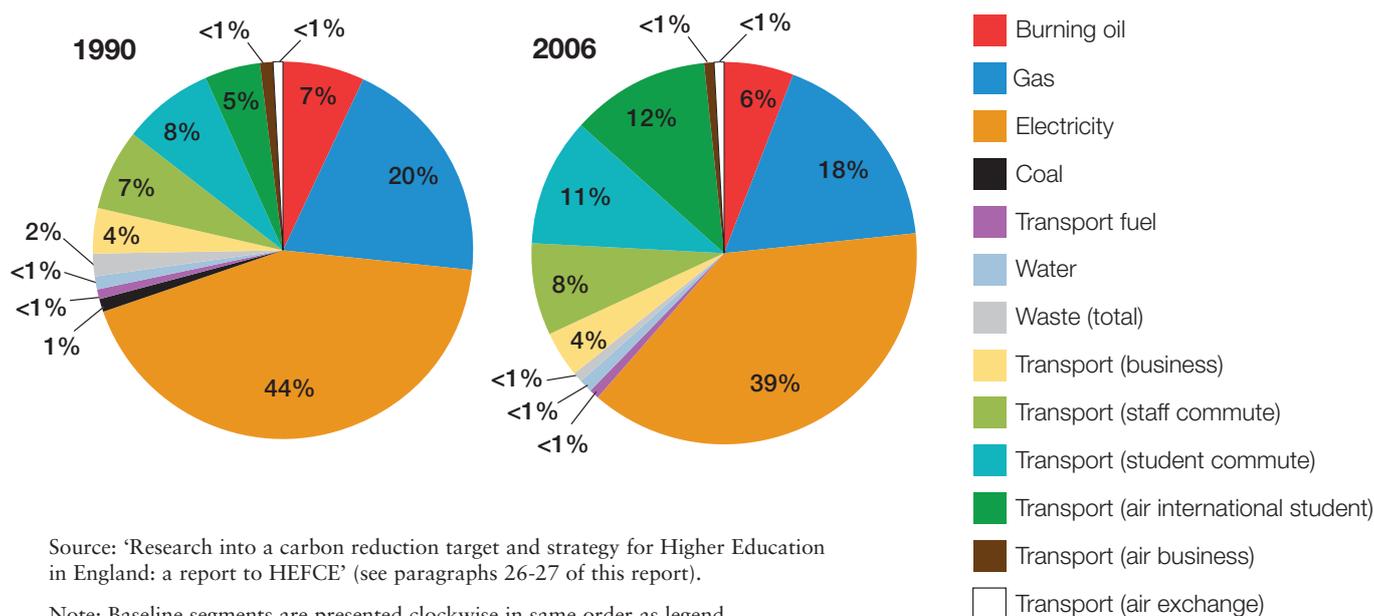
30. The summary results (scopes 1, 2 and 3) are:

- in 1990, total sector carbon emissions were 2.548 million tonnes of carbon dioxide (MtCO₂)
- in 2006, total sector carbon emissions were 3.361 MtCO₂, a rise of 32 per cent since 1990.

The 1990 baseline aligns with the national requirements under the Kyoto protocol, although the 2006 baseline uses more accurate data and is recommended as the basis for looking forward²⁵.

31. These figures include energy use within the estate (fossil fuel combustion – gas, coal, oil and electricity use); transport (institutions’ own vehicle fleet, business travel and commuting); water; and waste (see Figure 1). These results exclude procurement, which has a considerable indirect carbon impact, but the data for estimating emissions are not readily available. The SQW report suggests that including procurement could double the sector’s overall emissions figures. We intend to

Figure 1 HE sector carbon emissions baseline – breakdown in 1990 (left) and 2006 (right)



Source: ‘Research into a carbon reduction target and strategy for Higher Education in England: a report to HEFCE’ (see paragraphs 26-27 of this report).

Note: Baseline segments are presented clockwise in same order as legend.

²⁵ Scope 3 emissions included in the 1990 baseline have been estimated using inter- and extrapolations. Further information on these is available in the full SQW report.

work with the higher education centre for excellence in sustainable procurement (see paragraph 80) to measure a baseline of carbon emission from procurement. We recognise that it will take time to develop a methodology for measuring emissions from procurement and establish data collections systems and therefore we have set a target date of December 2012 for this.

32. For scopes 1 and 2, the HE sector baselines are:

- 1.831 MtCO₂ in 1990
- 2.124 MtCO₂ in 2006, which is a 16 per cent increase on 1990 figures (see Figure 2).

These figures include energy use from the estate (fossil fuel combustion (gas, coal, oil) and electricity use) and fuel used by institution's own vehicle fleet (Figure 3).

Figure 2 **Baselines for 1990 and 2006 in the HE sector**

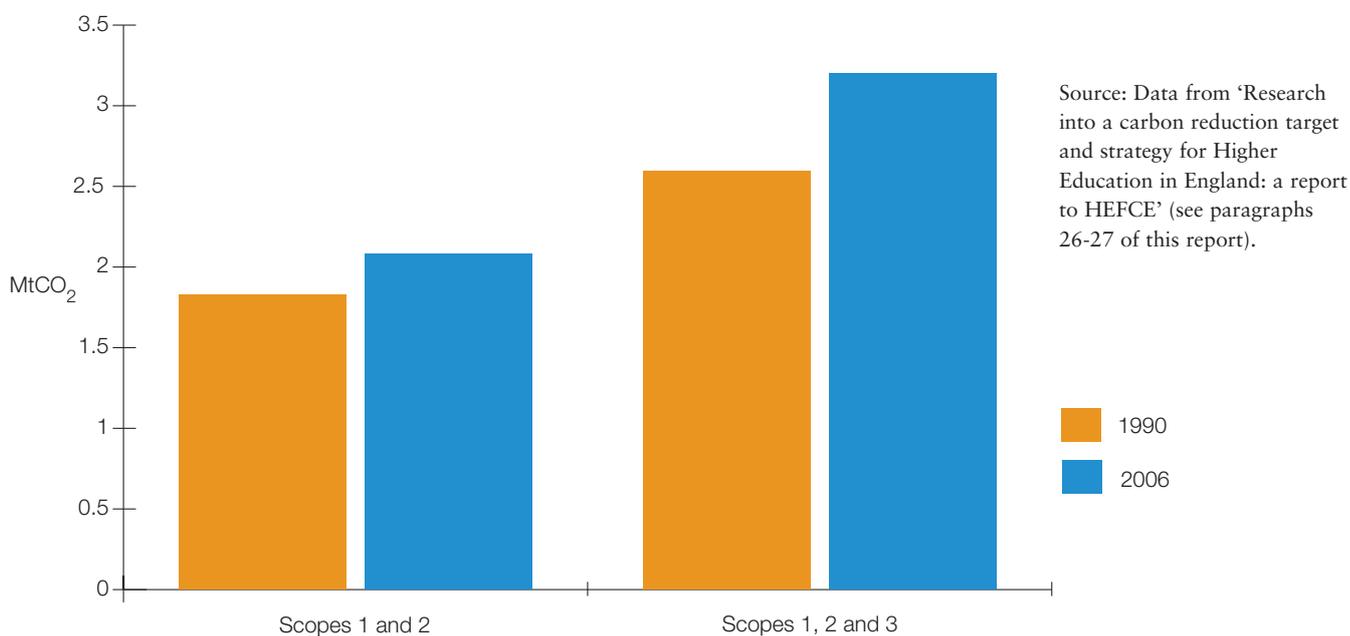
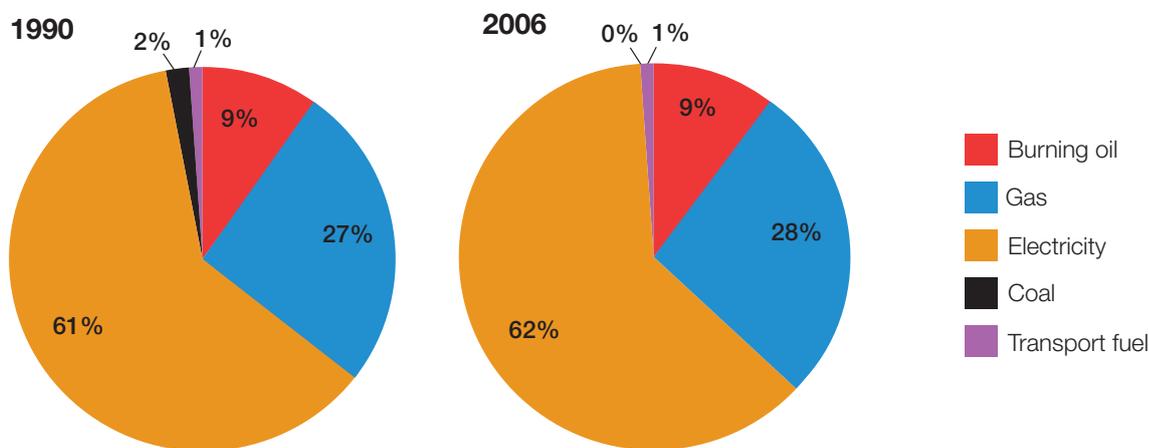


Figure 3 **Scope 1 and 2 emissions in the HE sector 1990 (left) and 2006 (right)**



Source: 'Research into a carbon reduction target and strategy for Higher Education in England: a report to HEFCE' (see paragraphs 26-27 of this report).

Note: Baseline segments are presented clockwise in same order as legend.

Targets

33. The higher education sector in England has agreed to commit to meet the government targets for carbon emission reductions in scopes 1 and 2 of 34 per cent by 2020 and 80 per cent by 2050 against a 1990 baseline. This is equivalent to a reduction of 0.623 MtCO₂ by 2020 and 1.465 MtCO₂ by 2050 against 1990 levels. A 2005 baseline is also used for reporting against UK targets. Against a 2005 baseline, this is equivalent to a reduction of 48 per cent by 2020 and 84 per cent by 2050.

34. Almost all consultation responses supported this commitment to meet the government targets although many considered it to be challenging. The consultation also demonstrated that, because the sector is uniquely placed to lead the way with its role in teaching and research, it wishes to aspire to go further and achieve carbon reductions in excess of the sector-level targets.

35. The sector targets are absolute targets, which mean actual carbon emission reductions against the levels in a fixed past year. The UK national targets under different policies and legislation are absolute and set against a 1990 baseline year. The rationale for this approach is based on the fact that the capacity of the Earth to manage carbon emissions is itself finite. Targets are proposed for scope 1 and 2 emissions only because this baseline has been calculated with a reasonable degree of confidence. There is a degree of uncertainty for scope 3 emissions for 1990. We will work with the sector to improve measurement of scope 3 emissions, including procurement, with the intention of setting sector-level targets for these emissions by December 2013. Our plans for doing this are outlined in paragraphs 95-97 of this document.

36. The sector believes that it is important to have milestones in order to monitor progress against the sector-level target. The milestones have been set in line with the five-year national carbon budgets and are a 1 per cent increase by 2012 and 18 per cent reduction by 2017 against 1990 levels. These take account of sector growth since 1990 and are equivalent to a reduction of 20 per cent by 2012

and 35 per cent by 2017 with a target of 48 per cent by 2020 against a 2005 baseline. In 2012 we will review the 2017 milestone in the light of experience. Our approach for monitoring progress against the sector-level target is set out in paragraph 93 of this document.

37. Recognising the significant diversity of the sector with its range of missions, priorities, histories, subject mix, infrastructure and research, institutions are asked to set targets and develop plans that are appropriate to their individual circumstances but within the national target framework. HEFCE will collate these targets through the next Capital Investment Framework and determine whether collectively they are sufficient to meet the sector target. If necessary, we will consider what additional policy levers can be used to achieve further carbon reductions.

Carbon hierarchy

38. The carbon hierarchy (Figure 4) provides a systematic and structured approach to managing and reducing emissions in a socially responsible and cost-effective way. Actions at the top of the hierarchy are more transformative and lasting in

terms of reducing emissions. A carbon hierarchy is being used by the Department for Children, Schools and Families' Zero Carbon Task Force to help move towards the Government's ambition of delivering zero-carbon school buildings from 2016.

Figure 4 **The carbon hierarchy**

REDUCE energy/fuel demand	Avoid unnecessary use	MONITOR <ul style="list-style-type: none"> • Learn from existing projects and practice • Apply control measures • Evaluate impacts
	Passive features (for example insulation, daylight, solar gain/shading, thermal mass)	
	Encourage energy-conscious behaviours	
EFFICIENCY of equipment and energy/fuel sources	Use energy-efficient equipment	
	Provide simple and effective controls Recover useful heat	
	Use clean fossil fuel technology	
DECARBONISE energy/fuel supplies	On-site or near-site renewable energy sources, including community schemes	
BEFRIEND	Seek partnerships to increase your capacity to do the above	
NEUTRALISE energy/fuel supplies	Consider responsible carbon offsetting schemes	
	Procure green electricity supplies	

Source: Adapted from the DCSF Zero Carbon Task Force and Parkin (2010 forthcoming), 'The Positive Deviant: sustainability leadership in a perverse world', Earthscan, London.

Strategy

39. Setting targets is essential to identify the size of the challenge, co-ordinate efforts nationally and internationally, and demonstrate commitment to meaningful change. However, targets alone do not achieve results. They need to be supported by a strategy so that the methods by which the targets are to be achieved can be agreed and the necessary actions and investment put in place. The intention of this strategy is to focus efforts in areas that offer the greatest carbon reduction return and identify issues that need further action.

40. Chapter 4 of the SQW report makes recommendations to HEFCE in defining a strategy including technical, structural and behavioural solutions. It states:

‘Our research suggests that there is growing awareness at all levels of the importance of carbon reduction in the overall sustainability (in the widest sense) of HEIs, indicating that there has been a significant attitudinal shift across the sector in recent years. But although there have been changes in attitude, there is still some nervousness (particularly around the need to protect the autonomy and independence of HEIs)... Any strategy produced should recognise that there is already a significant amount of work, guidance and best practice already targeted at the sector, and should seek to add value to what already exists.’

41. We agree with this and so this strategy sets out areas where we will work with institutions and other stakeholders to achieve carbon reductions. It will be for individual institutions to decide how to reduce, measure, review and report progress on their own emissions. The strategy does not have all the answers, but it is a starting point. It will require continued consultation and collaboration to help further understand the obstacles, challenges, issues and opportunities, and to develop solutions and incentives to make the step-change required in carbon emission reductions.

Legislative drivers

42. Financial instruments are being used to reduce carbon emissions. Some HEIs are required to participate in the EU Emissions Trading Scheme (EU ETS)²⁶, enabling them to sell surplus tonnes of CO₂ if they do not need all of their allowance. The Carbon Reduction Commitment Energy Efficiency Scheme (CRCEES)²⁷ is a mandatory emissions trading scheme starting in April 2010 which aims to promote energy efficiency and help reduce carbon emissions. It is UK-wide, covering large businesses and public sector organisations, and around 80 universities and colleges are likely to be within its scope. It has been designed to financially and reputationally reward those organisations that deliver proportionally greater energy reductions than others in the scheme. There may be large financial implications for these institutions.

Organisations participating in this scheme must monitor energy use, report on their equivalent CO₂ emissions and then purchase allowances, sold by Government, to cover these emissions each year. One estimate suggests that institutions may need to spend approximately 7 per cent of their energy bill on allowances. Participants will receive a revenue recycling payment from Government, based on relative performance in the scheme as published in a performance league table. The Energy Consortium has a carbon advisory desk to help participants in the EU ETS and the CRCEES and offers a free toolkit that provides information and advice on recording emissions, tracking performance and communicating with stakeholders²⁸.

43. Universities and colleges also need to comply with increasingly stringent Building Regulations, which are now requiring energy efficiency improvements to buildings that are being extended or having changes made to building services. Since 1 October 2008, all public buildings have also been required to have Display Energy Certificates showing their actual energy usage, as recorded by gas, electricity and other meters, so that the public can see the building’s energy efficiency in use.

²⁶ For more information on the EU Emissions Trading Scheme, see www.decc.gov.uk under What we do/Global climate change and energy/Tackling climate change/Emissions trading/EU Emissions Trading System.

²⁷ For more information on the Carbon Reduction Commitment Energy Efficiency Scheme, see www.decc.gov.uk under What we do/A low-carbon UK/CRC Energy Efficiency Scheme.

²⁸ For more information see www.energyconsortium.org.uk under tec news.

Key areas where carbon reductions could occur

44. We recognise the diversity of institutions and there are a wide range of areas for carbon reduction. These include: energy use within the estate from fossil fuel combustion (gas, coal, oil) and electricity use; transport (institutions' own vehicle fleet, business travel and commuting); water consumption; waste; and procurement. A number of 'big' and 'quick' wins are possible and these should be targeted as a priority. In addition, there will be external factors such as decarbonisation of the electricity supply and advances in technology that will help reduce the sector's carbon emissions.

45. As the SQW report identifies, the HE estate is the obvious area to target savings, across both the building portfolio and the energy supply. Although institutions will be required to have carbon management plans covering scopes 1 and 2 to access future capital funding, we expect that these plans will also cover aspects of scope 3. We are supporting institutions by providing guidance on developing carbon management plans, which complements existing programmes and standards such as the Carbon Trust's HE Carbon Management programme. This guidance 'Carbon management strategies and plans: a guide to good practice' (HEFCE 2010/02) has been updated in the light of consultation feedback.

46. Institutions have a valuable role to play in promoting carbon reductions through their other activities including teaching, research and public communications. These could be categorised as 'scope 4' activities. While we recognise that it will not be possible to measure the results of these activities, they could feature in institutions' carbon management plans.

47. According to the SQW report the six most viable interventions in terms of scale of impact and cost-effectiveness for the sector are:

- lights and electric appliances (including information and communication technologies (ICT))
- building energy and space management

- building fabric upgrade
- efficient energy supply (combined heat and power (CHP)/tri-generation, district heating)
- renewable energy
- behavioural change and new ways of working.

48. These measures can make a significant contribution towards achieving both the 2020 and 2050 targets. Table 1 provides information on the costs and benefits of these six interventions. Theoretically, these savings are possible but in practice they may not be realised due to barriers, including a lack of finance and structural issues such as planning constraints. However, this is a long-term strategy, and innovation and creativity are needed to develop and implement new technologies and ways of working together to meet the large-scale reductions required to help tackle climate change. Figure 3.6 in the SQW report contextualises the HE sector targets.

Table 1 **Costs and benefits of the six most viable interventions to reduce carbon emissions in HE**

	Cost-effectiveness (lifecycle)* (£/tCO ₂)	Estimated abatement potential for the sector (MtCO ₂)	Investment (£million)	Net benefits by 2020 (£million)
Behavioural change and new ways of working	-300 to -400	0.2	Minimal: interventions often only require human resources or integration into existing budgets and initiatives, such as staff/student induction, training and internal marketing activities.	50-70
Lights and electric appliances (including ICT)	-100 to -200	0.02 to 0.35	0.3 to 5.0	3 to 50
Building energy and space management	average of -150	1	30 to 50	150
Building fabric upgrade	-50 to -100	0.28	Hundreds of millions	15
Efficient energy supply (CHP/tri-generation, district	Average can be taken as neutral (£0/tCO ₂). Most standard on-site heating) CHP options are cost-effective, but depending on the circumstances (for example location, demand density) these, as well as district heating, could be non-cost-effective	0.05	Tens of millions	Marginal, yet positive
Renewable energy	200 to 300. There is a sub-set of technologies that are more cost-effective, such as biomass boilers, solar water heating and ground-source heat pumps.	0.3 to 0.6	100 to 130	These should be increasingly cost-effective closer to 2020 due to falling capital costs.

* These figures are based on Marginal Abatement Cost Curves. These are an assessment and decision-making tool regarding carbon-reduction interventions. The absolute cost-effectiveness is the cost (£) of saving a tonne of carbon (tCO₂) calculated on a lifecycle basis, capturing all costs and revenues and factoring in inflation and amortisation. A negative figure indicates that the intervention will generate net cost savings/revenues over its life.

Source: Data from 'Research into a carbon reduction target and strategy for Higher Education in England: a report to HEFCE' (see paragraphs 26-27 of this report).

Scenarios for a low-carbon higher education sector

49. The schools sector²⁹ and NHS³⁰ have both produced a range of scenarios for how emission reductions can be achieved. We intend to commission a similar exercise for higher education that will highlight areas in which to focus attention and produce plausible versions of possible futures to meet the 2020 or 2050 target. Internationally, the American College & University Presidents' Climate Commitment provides a framework and support for the USA's colleges and universities to reduce emissions³¹. As far as we are aware higher education sectors in other countries, with the exception of Australia, are not developing sector-level carbon reduction strategies although many international institutions are undertaking carbon reduction initiatives. We will also seek to share experiences with other countries and institutions on reducing emissions.

Partnership working

50. Universities and colleges do not exist in isolation. They are increasingly engaged with their communities and employers, and with their towns, cities and regions. Institutions should seek opportunities to work effectively in partnership to enable solutions that share learning and would not have been possible if working alone. For example, projects such as CHP and district heating may only be financially viable if implemented in partnership with other local organisations. Similarly, carbon management plans could be developed in consultation with staff and students, and include ways of working with them to achieve reductions.

Governance

51. The Committee of University Chairs' 'Guide for Members of Higher Education Governing Bodies in

the UK' (HEFCE 2009/14) states that: 'The governing body is responsible for oversight of the strategic management of the institution's land and buildings with the aim of providing an environment that will facilitate high-quality teaching and learning and research.' Carbon management is a key strategic issue, so it is a crucial area for governors who should be informed and involved in decision-making on the institution's approach to reducing its emissions. This is why we will be asking for carbon management plans to be signed off by the governing body.

Funding for carbon reduction projects

52. The Revolving Green Fund (RGF) is a partnership between HEFCE and Salix Finance³². There was £30 million available to provide recoverable grants to higher education institutions for projects that reduce their greenhouse gas emissions. Institutions are required to contribute a minimum of 25 per cent of the value of their fund and will repay the grant through the savings they make. The fund has two strands:

- an institutional small projects (ISP) fund
- a transformational fund.

53. The ISP fund uses Salix's traditional model where institutions receive ring-fenced money from the fund to be spent on carbon-saving projects. A key principle is that financial savings from funded projects are repaid into the ring-fenced fund held by the institution for re-investment in further projects. Once the original project investment is repaid to the fund, the institution is free to keep ongoing savings. The institution does not have to repay the money loaned while it continues to re-invest savings in eligible projects. Fifty-seven institutions have received a share of the ISP fund³³.

²⁹ 'Carbon Emissions from Schools: Where they arise and how to reduce them', available at www.sd-commission.org.uk under Publications/Browse/Climate Change.

³⁰ 'Fit for the Future. Scenarios for low-carbon healthcare 2030', available at www.forumforthefuture.org under Library.

³¹ For more information see www.presidentsclimatecommitment.org

³² Salix Finance is an independent, publicly funded company, set up in 2004 to accelerate public sector investment in energy-saving technologies through invest-to-save schemes. Salix has public funding from the Carbon Trust and the Learning and Skills Council and is working across the public sector with local authorities, NHS Foundation Trusts, higher and further education institutions and Government.

³³ For more information see www.salixfinance.co.uk under Higher Education/England/ISP Current Participants.

54. The transformational fund is for HEIs to tackle larger projects that will transform the institution's approach to managing its energy consumption and reducing its emissions. Three HEIs have been allocated £10 million between them for the following projects:

- the University of East Anglia will establish a biomass energy centre at its Norwich campus; it is set to be the first biomass gasification combined heat and power plant in England
- Harper Adams University College will develop anaerobic digestion to generate renewable power, using farm waste and food waste diverted from landfill
- Lancaster University aims to install two wind turbines to significantly reduce CO₂ emissions from electricity consumption and reduce reliance on imported electricity.

55. HEFCE has commissioned Oakleigh Consulting and Inbuilt to carry out an evaluation of the RGF to date. The evaluation has a number of key objectives including gathering evidence to build a case for further funding, considering lessons learned from the process, and recommending how the learning and good practice from both strands of the fund can be effectively captured and disseminated.

56. The 2009 Budget announced over £50 million in interest-free loans for the public sector to invest in energy-saving projects. This programme, running until March 2010, is also being managed by Salix, and all HEIs are eligible to apply³⁴. Phase Two of the Low Carbon Buildings Programme³⁵ is providing 50 per cent grants for the installation of microgeneration technologies such as solar

photovoltaics, ground source heat pumps and wind turbines. The guidance on developing carbon management plans (HEFCE 2010/02) includes information on other sources of funding.

Building and sharing good practice

57. There is much good practice already evident in the HE sector and in other sectors but we are keen that the higher education sector continues to develop new ideas and learn from the experience of others. So we will promote the take-up of good practice and facilitate the development of effective practice where none exists.

58. We are funding several sustainable development projects through special funding initiatives, such as the Leadership, Governance and Management (LGM) Fund³⁶, the Strategic Development Fund³⁷, Centres for Excellence in Teaching and Learning³⁸ and the Higher Education Innovation Fund³⁹.

Many of these promote the management of carbon emissions, such as: EcoCampus⁴⁰, an environmental management system for the higher education sector; and Universities that Count⁴¹, which is encouraging institutions to measure and report on their performance through a sector-specific version of the Business in the Community (BiTC) Environment and Corporate Responsibility indices. In 2009, 55 institutions participated in Universities that Count and the annual report is available on the Environmental Association for Universities and Colleges' (EAUC's) web-site⁴².

59. The sustainable development resource guide⁴³ on the HEFCE web-site is a directory of resources and examples of good practice. This covers all aspects of sustainable development, including carbon management.

³⁴ For more information see www.salixfinance.co.uk under Loans.

³⁵ For more information see www.lowcarbonbuildingsphase2.org.uk

³⁶ For more information see www.hefce.ac.uk under Leadership, governance & management/LGM Fund.

³⁷ For more information see www.hefce.ac.uk under Finance & assurance/Finance and funding/Strategic Development Fund.

³⁸ For more information see www.hefce.ac.uk under Learning & Teaching/Teaching initiatives.

³⁹ For more information see www.hefce.ac.uk under Economy & society/Business & community.

⁴⁰ For more information see www.ecocampus.co.uk

⁴¹ For more information see www.eauc.org.uk under Projects/Universities that Count.

⁴² 'Universities that Count Annual Report 2009', available at www.eauc.org.uk under Projects/Universities that Count.

⁴³ The guide is available at www.hefce.ac.uk under Leadership, governance & management/Sustainable development/Resource guide.

60. It will be valuable to capture the learning from the process of institutions taking action to reduce their carbon emissions. One option we are considering is providing small levels of funding for a number of institutions to undertake action-research projects on their own practice in carbon management. This would enable institutions to understand more fully how they are effective in reducing carbon emissions and provide insights that are useful to the HE sector and other sectors.

61. HE sector bodies are playing a key role in supporting institutions in reducing carbon emissions. For example, the UUK publication ‘Greening Spires’⁴⁴ showcases the contribution of higher education to sustainable development, the EAUC Resource Bank⁴⁵ is a repository of sustainability good practice, and the Association of University Directors of Estates (AUDE) included sustainability criteria in AUDE SAT, a self-assessment toolkit for developing the good practice of estate management⁴⁶.

62. We will continue to work with HE sector bodies and other stakeholders to facilitate the building and dissemination of good practice. In December 2009, HEFCE introduced a deadline-constrained invitation to bid for funding from the LGM Fund⁴⁷ for projects that support the implementation of HEFCE’s sustainable development strategy (HEFCE 2009/28) and the UUK/GuildHE university leaders’ statement of intent on sustainable development.

63. Award schemes help recognise and celebrate exceptional practice. There are several sector schemes that include awards for carbon reductions, including the Green Gown Award for Carbon

Reduction⁴⁸ and the Times Higher Education Award for Outstanding Contribution to Sustainable Development. The Sound Environmental Impact Awards scheme⁴⁹, organised by the National Union of Students Services Ltd (NUSSL), has been successful in reducing the environmental impact of student unions. The scheme facilitates new, collaborative relations between student unions and their institutions, which can play an important role in wider environmental initiatives.

Construction and refurbishment

64. Research shows that sustainable methods of construction and refurbishment make sense on both environmental and financial grounds⁵⁰. Considering whole-life impacts of buildings will help reduce embodied carbon through construction and carbon emissions during operation.

65. The Building Research Establishment Environmental Assessment Method (BREEAM) can be used to assess the environmental performance of buildings, rating them on environmental impacts, including management, health and wellbeing, energy, transport, water, waste, land use, ecology and pollution.

66. Together with AUDE and the other funding councils, HEFCE has funded the development of a BREEAM template specific to higher education⁵¹. BREEAM HE aims to assist the sector by providing an independent, high-quality and rigorous set of criteria for the environmental assessment of the majority of university buildings. A number of the sector’s projects have already performed very highly under BREEAM and the new scheme makes it easier, faster and cheaper for HE projects to be assessed.

⁴⁴ ‘Greening Spires’ is available at www.universitiesuk.ac.uk under Publications.

⁴⁵ For more information see www.eauc.org.uk under Resource Bank.

⁴⁶ For more information on AUDE SAT see www.aude.ac.uk under Info Centre/AUDE SAT.

⁴⁷ For more information see www.hefce.ac.uk under Leadership, Governance and Management/LGM Fund/Leading Sustainable Development in Higher Education.

⁴⁸ For more information see www.eauc.org.uk under Green Gown Awards.

⁴⁹ For more information on the Sound Environmental Impact Awards see www.nussl.co.uk under Ethical & Environmental.

⁵⁰ High Performance Buildings Reports, available at www.heepi.org.uk

⁵¹ For further information see www.breeam.org under Schemes/BREEAM Higher Education.

The scheme is also suitable for refurbishment projects, which are usually a more sustainable option because of the embedded carbon in building structures. BREEAM HE is part of the GreenBuild project⁵², which is also investigating ways to encourage energy-efficient laboratories.

67. Some organisations already attach BREEAM conditions to public funding. For example, the Scottish Funding Council, Higher Education Funding Council for Wales and central Government require BREEAM ‘excellent’ ratings on new builds and ‘very good’ is commonly required for refurbishments. HEFCE is not requiring specific levels of performance for capital projects, however BREEAM is expected to play an important part in the 2010 Capital Investment Framework.

68. ‘The legacy of the 1960s university estate’, an LGM Fund project led by AUDE, considers how to deal with the large proportion of the property portfolio that was built in the 1960s. Using case studies and research into how other sectors address similar issues, this project provides a toolkit and advice to assist institutions in making the ‘replace or refurbish?’ decision⁵³. Four key points emerged:

- academic buildings can often be refurbished more successfully than residential ones
- although the financial case for refurbishment might look poor, with costs in some cases as high as 80 per cent of new build, there are often other significant benefits from the refurbishment route, particularly environmental ones
- high standards of environmental performance can be achieved on refurbishment projects, provided that this objective is at the core of the design from the outset
- architectural excellence can still be achieved in refurbishment projects.

69. The University of Cambridge Programme for Sustainability Leadership (CPSL) has a Building Renovation, Innovation, Learning and Skills Project

that uses the renovation of current buildings to provide both a centre for excellence in sustainability at the heart of the city and a learning project that benefits the university, as well as tackling climate change. The renovation of CPSL should lead to a highly energy- and resource-efficient building that acts as a demonstration for other renovation projects within the university and elsewhere. CPSL will work closely with the academic community in the university to ensure learning from this project is captured in an appropriate way and by doing so it will provide a useful bridge between the academic research community of the university and the university estate management and building service.

70. The Clinton Climate Initiative, a programme of the William J Clinton Foundation, is working with the London Development Agency on a building retrofit programme. London is the first city in the world to have launched a framework of approved energy service companies, which provides a financial model enabling public sector organisations to retrofit their buildings with energy efficiency measures more easily. It is estimated that if all the public sector buildings in London used this model, they could cut around £500 million from bills, and the model can be replicated across the UK. The framework is available for use by any public sector organisation in the UK. The University of Cambridge and the Core Cities group (Birmingham, Bristol, Leeds, Liverpool, Manchester, Newcastle, Nottingham and Sheffield) have signed up to the framework.

Space management

71. Good space management not only reduces carbon emissions, it also frees up resources that can be used for teaching and research. The Estate Management Statistics provide benchmarks that institutions can use – in 2006-07 the median institution had 7.6 m² of non-residential space per full-time student⁵⁴, a level that has declined steadily from 8.9 m² in 2001-02. There are reasons for the considerable variation that exists in the sector,

⁵² For further information see www.hefce.ac.uk under Leadership, governance & management/LGM Fund/Projects funded/HE Estates.

⁵³ The full report is available at www.aude.ac.uk under Info Centre/1960s estate project.

⁵⁴ Figures from ‘Performance in higher education estates: EMS annual report 2008’ (HEFCE 2009/28).

notably building age and the needs of particular subjects. It is clear however that there is potential for space to be used more efficiently.

72. Between 2004 and 2008, the HEFCE-funded UK HE Space Management Group (SMG)⁵⁵ produced tools and reports whose overriding purpose is to promote better utilisation of space in HE. Included in the suite of good practice guidance is a report on the role of design in space efficiency⁵⁶. Among the findings were the importance of designing spaces that could be used for different activities, and of making active use of common areas. This work is being continued through projects led by Loughborough University⁵⁷ and the University of Lincoln⁵⁸, supported by HEFCE's LGM Fund.

73. HEFCE will seek to understand better how institutions are performing and to maintain focus on space management through the 2010 Capital Investment Framework. HEFCE's 2008 sustainable development action plan includes an action to communicate the link between efficient use of space and environmental sustainability, promote understanding of how institutions are performing and disseminate good practice. AUDE has received support from the LGM Fund for further development of the work of the SMG. It remains our intention to evaluate the work of the SMG as part of a proposed Estates Framework. This will assess current and future infrastructure requirements and challenges in the context of HE policy and practice.

On-site renewable energy

74. Institutions may have the potential to install effective energy generation on-site to reduce their reliance on fossil fuels and their vulnerability to large fluctuations in energy prices. Although renewable energy technologies are still being developed, some applications are already cost-effective. Partnerships for Renewables is a Carbon Trust Enterprise that works with public sector organisations to develop, manage and finance on-site renewable energy projects. HEFCE is working with the Energy Consortium⁶⁰ to facilitate increased generation and supply of electricity from renewable sources to the higher education sector.

Students

75. The student body is a valuable partner, able to play an important role in promoting sustainable development and encouraging behavioural change. There are numerous case studies of students successfully delivering change, many of which revolve around environmental campaigns led by students through their union. For example, the NUS's Sound Environmental Impact Awards scheme helps facilitate new, collaborative relations between student unions and their institutions which can help reduce carbon emissions and make wider environmental improvements⁶¹.

76. The National Union of Students (NUS) and NUS's Sound Environmental Impact Awards scheme helps facilitate new, collaborative relations between student unions and their institutions which can help reduce carbon emissions and make wider environmental improvements⁶¹.

⁵⁵ For more information see www.smg.ac.uk

⁵⁶ 'Promoting space efficiency in building design' (March 2006) can be read at www.smg.ac.uk under Reports/tools.

⁵⁷ 'Innovative, effective, enjoyable? Creating the evidence base to deliver productive academic workplaces', available at www.academicworkspace.com

⁵⁸ 'Learning landscapes: clearing pathways and making space – involving academics in leadership, governance and management of estates in higher education', available at <http://learninglandscapes.lincoln.ac.uk>

⁵⁹ Further information is available at www.pfr.co.uk. Carbon Trust Enterprises is a wholly owned subsidiary of the Carbon Trust, and, through the development of low-carbon businesses, supports the Carbon Trust's objective of making the business case for climate change.

⁶⁰ For further information see www.energyconsortium.org.uk

⁶¹ The Sound Environmental Impact Awards are organised by NUS's Sound Environmental Impact Awards. For more information see www.nussl.co.uk under Ethical & Environmental.

⁶² Previously known as 'Aiming Higher'. Further information is available at www.nus.org.uk/en/Campaigns/Green-Zone/Degrees-Cooler.

England. It is a partnership between the NUS, EAUC, People and Planet, and the Student Switch Off, and is funded by DEFRA. The Carbon Academy⁶³ is a project funded by the Carbon Trust that seeks to reduce the collective carbon footprint of student unions by 5,800 tonnes of CO₂ per year through training and best practice in energy management.

Behavioural change

77. 'Softer' methods can play a significant role in highlighting changing institutional priorities and in encouraging behavioural and cultural change. Studies suggest that carbon reductions of 5-10 per cent are realistically possible through behaviour change alone (see paragraph 4.43 of the SQW report). One example of such a behaviour-change programme is the University of Bristol's Green Impact Awards⁶⁴. This aims to empower staff, students and departments to reduce their environmental impact by encouraging, rewarding and celebrating environmental improvements. Participating departments are challenged to implement a number of practical actions; they score points for each action, leading to a bronze, silver or gold award. We expect institutions to consider including behavioural change activities in their carbon management plans.

78. Climate Solidarity⁶⁵ is a partnership of four trade unions (the University and College Union, the Public and Commercial Services Union, the National Union of Teachers, the Communication Workers Union) and the Climate Outreach and Information Network. It is a two-year project funded by DEFRA that aims to inspire community action on transport, housing and food. In the HE sector the project aims to set up 'climate action groups' of university staff in the workplace to work together on a chosen carbon reduction theme.

Procurement

79. Procurement decisions affect the rate of consumption and productivity of resources, and institutions are able to influence the social and environmental impact of companies in the supply chain. It has not yet been possible to include emissions from the usage of third party-generated goods and services procured by the sector in the sector baseline, but according to the SQW report (paragraph 2.48) it is likely that these form a significant proportion, possibly half, of the sector's total carbon emissions. Therefore, this is an area where significant carbon reductions may be possible. In the main these reductions will be achieved by influencing suppliers to deliver against more exacting carbon specifications.

80. To support the sector in realising these reductions HEFCE is providing funding for a sustainable procurement centre of excellence. Led by the North Eastern Universities Purchasing Consortium in partnership with the Association of University Procurement Officers (AUPO), this project intends to make demonstrable changes to the way HEIs embed sustainable procurement into their standard procedures, practices and policies. The centre will: build capacity in sustainable procurement; develop capability in influencing supply chains; address process issues; develop measurement and monitoring tools; and communicate a full understanding of CO₂ emissions, and other environmental impacts, in the specification, production, delivery, utilisation and disposal of goods and services purchased by the HE sector.

81. The UUK Strategic Procurement Group (SPG) also has sustainable development as part of its work. The SPG operates by influencing sector-representative bodies and institutional senior management to develop their procurement activities.

⁶³ For more information on the Carbon Academy, see www.nussl.co.uk under Ethical & Environmental.

⁶⁴ For more information on the Green Impact Awards, see www.bristol.ac.uk under S/Sustainability.

⁶⁵ For more information on the Climate Solidarity project, see www.climatesolidarity.org.uk

In this area the SPG is working with its partner AUPO to develop the adoption of the Sustainable Procurement Task Force Report Flexible Framework in institutions. This will support and enhance the activities of the sustainable procurement centre of excellence.

Shared services

82. The development of shared services in the higher education sector has the potential to be wide-ranging, with significant impacts on how institutions function and operate. At the heart of many developments is the increased use of technology which will facilitate these changes. But increasingly relying on technology means that carbon emissions could rise rather than fall. Therefore, integral to every project is the consideration of sustainable development and the impact of any changes. These considerations influence how projects are shaped. For example, the potential to consolidate computer infrastructure into fewer, but larger, data centres could significantly increase carbon emissions, not least because of the resources required to 'pipe' data around the country. To counteract this, the projects looking at data centres are considering migration to the latest, more environmentally friendly, hardware; the data centre provision will comply with TIA-942 standards (Telecommunications Industry Association standards for data centres).

Sustainable information and communication technology

83. Environmental sustainability will be a key priority for the Joint Information Systems Committee (JISC) in its new strategy for 2010-2012⁶⁶. ICT has a large carbon footprint in UK higher education⁶⁷ and JISC has already started to help institutions consider environmentally sustainable ICT practices in a number of ways⁶⁸. JISC's developing programme will help institutions

reduce their energy expenditure and carbon emissions directly related to ICT use, and also seek to explore ways that ICT can enable changes in ways of working and campus management that result in reduced energy usage. JISC is also exploring, with the help of its partners and key stakeholders, how the sector's research and innovation agendas can be harnessed to provide solutions across a range of environmental sustainability issues that will benefit not just the higher and further education sectors, but the UK economy as a whole.

Waste

84. Management of waste reduces the environmental impacts associated with disposal, including the production of the greenhouse gas methane, and helps conserve finite resources. The EAUC's online waste management guide⁶⁹ provides practical information on how to identify and manage the waste produced by institutions. A reuse implementation guide⁷⁰ has been compiled as part of the HEFCE-funded project 'Moving Towards Zero Waste' led by the London School of Economics and Political Science. The project worked with institutions in different English regions to implement, improve and extend reuse schemes in student halls of residence and on campus.

Travel

85. In 2006 emissions from transport (business travel, and staff and student commuting) accounted for 35 per cent of the sector's carbon baseline. Sustainable travel is about encouraging people to make informed choices about the way they travel and being aware of the consequences of these choices – on their health, their environment and their local community. The EAUC's transport database⁷¹ provides transport-related information and statistics and enables the user to access comparative information on practice within

⁶⁶ For more information, see www.jisc.ac.uk

⁶⁷ Source: 'Sustainable ICT in further and higher education', which is available at www.susteit.org.uk under Publications.

⁶⁸ For more information, see www.jisc.ac.uk under What We Do/Green ICT.

⁶⁹ For more information see www.eauc.org.uk under Resource Bank/Waste/Waste Guide.

⁷⁰ For more information see www.eauc.org.uk under Projects/Zero-Waste in Student Halls.

⁷¹ See www.eauc.org.uk under Resource Bank/Transport/Transport Database.

institutions. Guidance is also available from the Department for Transport, including how to reduce costs and carbon emissions from business travel and develop a travel plan⁷².

Learning and teaching

86. Institutions have a crucial role in enabling students to acquire the skills and knowledge to contribute to a low-carbon society. The Higher Education Academy is playing an important role to help support, develop and share good practice in the sector⁷³ through initiatives such as:

- working with the EAUC to develop a network of experts through the Supporting Higher Education Developers Act scheme, linking together carbon reduction with curriculum development and the student learning experience more broadly
- continuing its development grant scheme aimed at promoting and rewarding the development and sharing of good practice in Education for Sustainable Development (ESD)
- finalising a learning and teaching framework for institutions that will signpost ways in which ESD can be integrated, among other things, with carbon reduction schemes
- commissioning research that will look at what students bring to higher education, especially through their learning at schools, and how this can contribute to the development of a better and more creative understanding of sustainability issues. The Academy will offer some funding to student unions to provide case studies to support this.

87. Academy Subject Centres are all working towards developing a discipline-specific understanding of ESD. For example, the Geography, Earth and Environmental Science Subject Centre is developing an open educational resource database on teaching materials on climate change and the Engineering Subject Centre is running professional development seminars.

Carbon offsetting

88. When done correctly, carbon offsetting compensates for unavoidable emissions by paying someone to make an equivalent CO₂ saving elsewhere in the world. More and more individuals and businesses are volunteering to offset their emissions. Offsetting is not a ‘cure’ for climate change; the most effective way to combat climate change is to reduce emissions. However, good-quality offsetting can balance the impact of our actions and help raise awareness of climate change issues. The cost of offsetting can also provide an incentive to make further emission reductions at home.

89. Carbon offsetting may not be used to meet an institution’s carbon reduction target for scopes 1 and 2. However, carbon offsetting may form part of an institution’s carbon management plan for mitigating the effects of essential activities that create emissions under scope 3. Before choosing to offset, it is important that steps are taken to measure and, where possible, avoid and reduce emissions. To be able to offset, HEIs can then calculate their unavoidable emissions to know how many tonnes of CO₂ they wish to offset. Once the number of tonnes to be offset is known, credits can be bought from emissions reduction projects for the equivalent amount.

90. The carbon market is complex and there are numerous types of credits available for offsetting. To help consumers identify which credits are good-quality credits, the UK Government has established a voluntary quality assurance scheme for carbon offsetting. This provides assurance that the offsets equate to the advertised number of tonnes of CO₂ saved and the Department of Energy and Climate Change (DECC) recommends that organisations only purchase quality-assured offsets. More information about the carbon market is available in DECC’s ‘A guide to carbon offsetting for the public sector’⁷⁴.

91. Central UK government departments have been conducting carbon offsetting for several years

⁷² For further information see www.dft.gov.uk under Policy, guidance and research/Sustainable travel.

⁷³ For further information see www.heacademy.ac.uk under Our Work/Supporting Teaching and Learning/Sustainability.

⁷⁴ For further information see www.decc.gov.uk under What we do/A low-carbon UK/Carbon offsetting/Public sector offsetting.

(primarily to address the impact of air travel). Offset credits are delivered through the UK Government's Carbon Offsetting Facility which can be used by the whole public sector, including HEIs. The Facility is operated by Buying Solutions, the UK Government's procurement agency.

Adaptation

92. As well as taking action to reduce carbon emissions, behaviours will need to be modified to adjust to the conditions of a new environment. Many agree that a change in the global climate is inevitable. For example, the Met Office states that even if we stabilise our greenhouse gas emissions at current levels there is a 75 per cent chance temperature will rise by 2°C above present-day levels⁷⁵. The development of climate change adaptation strategies or incorporation into existing planning and risk management processes will help deal with the impacts of climate change. For example, the draft London Climate Change Adaptation Strategy outlines the key impacts that carbon emissions will have on London's climate and prioritises the actions necessary to manage the risks⁷⁶.

Monitoring, reporting and evaluation

93. Monitoring against a sector-level target will be through the Estate Management Statistics, which will be collected by the Higher Education Statistics Agency (HESA) from 2010. Alongside the move to HESA, provision of data on carbon emissions will be mandatory to enable progress to be measured and to inform assessments under the Capital Investment Framework. We will publish progress against the sector-level target annually.

94. With others, HEFCE will continue to develop the Estate Management Statistics and improve guidance where appropriate to ensure that parameters are being measured on a consistent basis. We will ensure that these are aligned with specific current and forthcoming carbon accounting requirements for institutions, such as the EU Emissions Trading Scheme and the Carbon Reduction Commitment Energy Efficiency Scheme. We will also develop new metrics as appropriate,

for example, carbon emissions from direct transport emissions for HEIs' own vehicle fleets and transport fuel use, which fall within scope 1.

95. We intend to undertake work to assess what is required in order to monitor and report scope 3 emissions within higher education, recognising that some institutions already measure these emissions and that it is important that reporting is done on a consistent basis. Once this work is complete in 2011-12 this data will be collected through the Estate Management Statistics. We expect that the metrics will follow WRI reporting guidelines but have been advised that institutions may find it challenging to collate the necessary data. Therefore, we may fund a small number of pilots to explore efficient internal data collection systems.

96. A comprehensive assessment of the sector's carbon footprint would include embedded carbon in, for example, construction and procurement. The SQW report identifies that the baseline is not comprehensive for scope 3 emissions because data were not readily available, in particular for procurement. Given that this area is broadly estimated to contribute up to half of all sector emissions, we consider it important to seek opportunities to improve data collection and analysis of this activity so that carbon emissions from procurement can be measured in the future. The centre of excellence in sustainable procurement (see paragraph 80) will have a key role in achieving this.

97. We expect that a baseline of emissions from procurement will be measured by December 2012 and this will be followed by target(s) for scope 3 emissions being set by December 2013.

98. This is not a static document; we view it as a starting point for a long-term strategy. Meeting the ambitious sector target will require continued consultation and collaboration to help understand obstacles, challenges and issues and develop solutions. We are committed to looking for other ways in which we can support the sector reduce its emissions and to reviewing this strategy periodically to help ensure its effectiveness.

⁷⁵ For further information see www.metoffice.gov.uk under Climate Change/Government/Taking action.

⁷⁶ For further information see www.london.gov.uk under Mayor/Publications/Environment/The London Climate Change Adaptation Strategy.

Carbon management plans

99. HEFCE has already signalled to institutions a more demanding approach to carbon reduction and the need for carbon management plans. The consultation on revisions to the Financial Memorandum ('Revisions to Financial Memorandum: Consultation on changes on the funding agreement between HEFCE and institutions', HEFCE 2009/46) states our intention to include in the Financial Memorandum a requirement for institutions to have carbon management plans. HEFCE's 2009 grant letter from the Secretary of State asked us to establish a link between performance against carbon plans – in effect carbon reduction – and future capital allocations (paragraph 16). This will be achieved by adapting the Capital Investment Framework (CIF). Developed in 2007 to assess the extent to which institutions had a strategic approach to infrastructure planning and investment, CIF lends itself to assessing institutions' processes and performance in reducing carbon emissions. The revised CIF is referred to as CIF2.

Guidance on developing carbon management plans

100. The Carbon Trust's Higher Education Carbon Management Programme⁷⁷ helps universities to develop, embed and implement carbon management plans. Sixty-eight UK universities participated in the first four phases of the programme and a further 17 institutions are participating in phase five. Participants receive consultant support to help analyse their carbon footprint and identify ways of managing carbon emissions, with a particular focus on reducing building and transport-related emissions. We advise institutions that do not already have a comprehensive approach to managing carbon emissions to consider participating in this programme.

101. Universities are also working towards the Carbon Trust Standard⁷⁸, which certifies that an organisation has reduced its carbon footprint and is committed to making further reductions year on

year. The Carbon Trust Standard will count towards the early action metric in the CRCEES during the introductory phase (2010-2013).

102. HEFCE has published good practice guidance on developing carbon management plans: 'Carbon management strategies and plans: a guide to good practice' (HEFCE 2010/02). This complements existing guidance and sets out what HEFCE's requirements are in this area. Institutions are encouraged to publish their carbon management plans so stakeholders, including staff and students, can see what their intentions are.

103. We have been told that small institutions would appreciate additional support as many are not in a position to employ a dedicated carbon manager. We will investigate with stakeholders, including AMHEC, the provision of a shared service to provide carbon expertise to small institutions.

Linking capital funding to carbon performance

104. The CIF relies on a mix of metrics, information submitted by institutions and our knowledge in order to make a holistic and balanced assessment. The 84 institutions that satisfied the requirements of CIF are now benefiting from a streamlined process for capital funding. In advance of the Government's next Spending Review we will remodel the process with a greater focus on carbon. In December 2009, HEFCE launched a consultation on the questions we will ask in CIF2⁷⁹.

105. The CIF2 consultation proposes adapting the framework as follows:

- expanding the metrics to include carbon emissions
- amending the strategic questions to include a more specific and demanding requirement in relation to carbon
- requiring institutions to report on progress in implementing the carbon plans, and on the results achieved.

⁷⁷ For more information see www.carbontrust.co.uk under Solutions/Public Sector Carbon Management.

⁷⁸ For more information see www.carbontruststandard.com

⁷⁹ 'Capital Investment Framework: Consultation on the assessment process' (HEFCE 2009/48).

106. HEFCE is not specifying how carbon plans should be developed or what they should contain. However, there are a number of key elements that HEFCE requires to be present in an institution's carbon management plan, needed to satisfy the requirements of CIF2. These are:

- a. A carbon management policy or strategy – this could be part of a wider environmental/sustainability policy.
- b. A carbon baseline for 2005 that covers all scope 1 and 2 emissions. This year is being used as a baseline because it is used for reporting against UK targets, and the SQW report demonstrated that robust data for scope 1 and 2 is available for that year at institutional level. This will provide consistency across the sector against which progress can be monitored and reported. Institutions are encouraged to measure a baseline for scope 3 emissions and in the longer term we will expect these to be included.
- c. Carbon reduction targets. These must:
 - cover scope 1 and 2 emissions, although institutions may choose to set additional targets for wider aspects
 - be set against a 2005 baseline. Institutions may choose to set their reductions in context by setting additional targets against an alternative baseline year
 - be set to 2020, because this is the timescale for interim government targets. This will provide consistency across the sector against which progress can be monitored and reported. Institutions may also set interim milestones
 - be publicly available.
- d. An implementation plan to achieve absolute carbon emission reductions across scopes 1, 2 and 3 including timescales and resources. These may cover capital projects and actions to embed carbon management within the institution, for example, through corporate strategy, communication and training.
- e. Clear responsibilities for carbon management.

- f. A commitment to monitor progress towards targets regularly and to report publicly annually.
- g. The carbon management plan and targets must be signed off by the governing body.

107. CIF2 will be published in summer 2010 with submissions in autumn 2010.

List of abbreviations

AMHEC	Association of Managers in Higher Education Colleges
AUDE	Association of University Directors of Estates
AUPO	Association of University Procurement Officers
BiTC	Business in the Community
BREEAM	Building Research Establishment Environmental Assessment Method
CHP	Combined heat and power
CIF	Capital Investment Framework
CO₂	Carbon dioxide
CPSL	University of Cambridge Programme for Sustainability Leadership
CRCEES	Carbon Reduction Commitment Energy Efficiency Scheme
DEFRA	Department for the Environment, Food and Rural Affairs
DECC	Department of Energy and Climate Change
EAUC	Environmental Association for Universities and Colleges
EMS	Estate Management Statistics
ESD	Education for Sustainable Development
EU ETS	European Union Emissions Trading Scheme
GHG	Greenhouse gas
HE	Higher education
HEFCE	Higher Education Funding Council for England
HEI	Higher education institution
HESA	Higher Education Statistics Agency
ICT	Information and communications technology
ISP	Institutional small projects (fund)
JISC	Joint Information Systems Committee
KPT	Key performance target
LGM Fund	Leadership, Governance and Management Fund
MtCO₂	Million tonnes of CO ₂
NUS	National Union of Students
NUSSL	NUS Services Ltd
RGF	Revolving Green Fund
SMG	Space Management Group
SPG	Strategic Procurement Group
tCO₂	Tonnes of CO ₂
UUK	Universities UK
WRI	World Resources Institute

**Higher Education Funding Council for England
Northavon House
Coldharbour Lane
BRISTOL
BS16 1QD**

**tel 0117 931 7317
fax 0117 931 7203
www.hefce.ac.uk**