

December 2014/30

**Policy development**

**Policy framework**

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This report is for information

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This document sets out some of the ways in which higher education contributes to sustainable development, and proposes a framework for HEFCE's support for the sector. It encompasses our earlier policy statements on sustainable development and carbon reduction, and will influence our future funding.

# Sustainable development in higher education

## HEFCE's role to date and a framework for its future actions

# **Sustainable development in higher education: HEFCE's role to date and a framework for its future actions**

To	Heads of HEFCE-funded higher education institutions
Of interest to those responsible for	Senior management, Academic and support staff, Students
Reference	2014/30
Publication date	December 2014
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## **Executive summary**

### **Purpose**

1. This document sets out some of the ways higher education can contribute to sustainable development, and includes a framework for HEFCE's support for the sector. It encompasses our earlier policy statements on sustainable development and carbon reduction, and will influence our future funding. The document has been informed by a formal consultation which included events in Leeds and London.

### **Key points**

2. Protecting and enhancing quality of life for current and future generations is central to sustainable development. There are social, environmental and economic dimensions to this, and the benefits and the challenges are considerable.

3. Higher education is working to address these challenges from a unique position in society. Its institutions can play a substantial role through teaching and research, through influence on staff and students, through business operations, and through the sustainability of their campuses. We want sustainable development to be central to higher education.

4. This document is arranged in the following sections:

- Reducing environmental impacts
- HEFCE's support of higher education institutions engaging in the 'green sector' of the economy
- HEFCE'S role in engaging students
- The framework for HEFCE actions, 2015 to 2020.

### **Action required**

5. This document is intended to enthuse and to encourage change.

## Introduction

6. Sustainable development recognises that depletion of finite natural resources and the degradation of the environment pose significant risks to economic development and the quality of human life. Dealing with these risks requires both technological invention and behavioural changes.
7. Science, social science and the arts and humanities all have important roles in improving our understanding of the issues, engaging society in discussion and debate, and through this devising solutions and making them work.
8. This requires constant assessment and evaluation as our knowledge and understanding develop. It requires a commitment to future generations as well as our own.
9. Universities and colleges are well positioned to make a key contribution to the challenges and opportunities posed by sustainable development through their teaching and research, through their influence on students, staff and communities, and through their own operations.
10. In its 2013-14 grant letter to HEFCE, the Government recognised the higher education sector's 'good progress on sustainable development'. It called for further support to be given, 'to build on the achievements of universities and colleges and the enthusiasm of students', and asked for a new framework for sustainable development<sup>1</sup>.
11. This framework responds to that request and follows consultation and discussion with the sector. The draft framework was considered by HEFCE's Leadership, Governance and Management Strategic Advisory Committee in May 2013, and by the HEFCE Board in July. It was issued for consultation on 1 November 2013, with a deadline of 7 February 2014<sup>2</sup>. Consultation events were held in Leeds and London during January 2014. A separate outcomes document provides a summary of the consultation responses, feedback and reports of the events<sup>3</sup>.
12. Definitions of what can or should be included under the umbrella concept of 'sustainable development' are broad ranging. Many aspects are inter-related and complex; some are controversial. This can make it challenging to evaluate projects or programmes supporting 'sustainable development', using only standard measures of return on investment. Higher education, with its essential tradition of academic freedom, is a valuable forum where differing views, metrics, and interpretations of evidence are articulated and their implications debated.
13. There can be tensions between competing aims of higher education. For example, over the last 10 years there has been an increasing recognition of the need to educate

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<sup>1</sup> HEFCE grant letter from the Department for Business, Innovation and Skills, available at [www.hefce.ac.uk/news/newsarchive/2013/news76313.html](http://www.hefce.ac.uk/news/newsarchive/2013/news76313.html)

<sup>2</sup> 'Sustainable development in higher education Consultation on a framework for HEFCE', available at [www.hefce.ac.uk/pubs/year/2013/201331/](http://www.hefce.ac.uk/pubs/year/2013/201331/)

<sup>3</sup> Available online at [www.hefce.ac.uk/pubs/year/2014/2014??/](http://www.hefce.ac.uk/pubs/year/2014/2014??/)

our students to become 'global graduates'. Often this has meant providing UK students with opportunities to travel overseas to study at partner institutions, conduct research, or contribute through voluntary work to community development in another country. Similarly, international students, who bring so much to life on UK campuses, have to travel in order to study here. But air travel in particular has a carbon cost associated with it.

14. The first section examines HEFCE'S role in reducing environmental impacts, including carbon emissions, and other aspects of eco-campus management. The second part looks at how HEFCE is helping higher education institutions to contribute to the growth of the 'green technologies' sector of the economy, through research and knowledge exchange. The third section outlines how HEFCE has encouraged the engagement of students in the sustainable development agenda. A major movement across the globe has been education for sustainable development (ESD), emphasised by the United Nations Decade of Education for Sustainable Development (DESD). Curriculum development is rightly a matter for institutions and the academics within those institutions, and this is protected by statute. However, while recognising its legal limitations, HEFCE has sought to encourage the development of new approaches and the sharing of emerging practice, and in this role has the support of many who responded to our consultation.

15. HEFCE has thus played several important roles in relation to sustainable development: it has provided funding and co-funding for projects; it has provided sector-level data against which individual institutions can benchmark themselves; it has collaborated with other organisations to build capability in the higher education sector and to share good practice. In this report we illustrate, through the use of case studies, how these roles have been deployed over the last decade. Collaboration with sector bodies and Government, notably the Department for Business, Innovation and Skills, the Department for Energy and Climate Change and the Department for Environment, Food and Rural Affairs, has been and will continue to be of benefit. HEFCE's actions have been driven by a constant vision which we have only slightly amended during that period:

*'HEFCE's vision is that universities and colleges are widely recognised as leaders in society's efforts to achieve sustainability – through the understanding, skills and attitudes that students gain and put into practice, through research and knowledge exchange, and through community involvement, as well as through their strategies and operations that bring all these together.'*

16. HEFCE's performance has been commended in the 2014 United Nations Education, Scientific and Cultural Organisation's DESD report<sup>4</sup>:

*'[HEFCE] has provided leadership, resources and targets for whole-institutional change towards sustainability during the DESD. In 2008, HEFCE produced a strategy and action plan for the higher education sector which provided a framework for sustainable development relevant to the areas of carbon*

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<sup>4</sup> 'Shaping the future we want: UN decade of education for sustainable development (2005-2014) final report', available at [www.unesco.org/new/en/unesco-world-conference-on-esd-2014/esd-after-2014/desd-final-report/](http://www.unesco.org/new/en/unesco-world-conference-on-esd-2014/esd-after-2014/desd-final-report/)

*management and estates, curriculum, student engagement and community outreach. Funding was awarded on a competitive basis to some universities to embed sustainability as a whole-of-institution concern. Through grant letters, it can be argued that HEFCE has influenced higher education bodies to identify ESD as a key priority, resulting in investment and activity across the sector. More recently, HEFCE has partnered with the National Union of Students and funded £5 million to support student engagement and learning in education for sustainability across 25 institutions in England. HEFCE's influence has been far-reaching and can explain the depth and quality of progress in this area in England but also indirectly across Wales and Scotland.'*

17. While this is pleasing recognition for the UK, HEFCE fully appreciates that the credit for these achievements must be given to those who have made the real gains: institutions themselves and, in particular, a large number of individual academics and professional support staff working to a common purpose. The drive for progress is now firmly located within the sector.

18. This report concludes with a framework to guide HEFCE's work on the sustainable development agenda over the period to 2020. Much will depend on the priorities of the new Government from 2015 onwards. We include some specific actions in the proposed framework, but recognise these may need to be changed or adapted as particular policies and financial settlements become clear.

## **Section 1: Reducing environmental impacts**

19. At the request of Government, much of HEFCE's funding has been directed towards carbon reduction. This helps to implement international commitments made by the UK Government, and recognises the severity of the threat of climate change evidenced by the Intergovernmental Panel on Climate Change and in Britain by respected economists, most notably Lord Stern. However, while focusing on carbon reduction, our approach recognises the need to address wider environmental impacts and to help develop and improve the mechanisms required to change behaviours.

20. The higher education sector has demonstrated strong commitment to a carbon reduction strategy, and each higher education institution has produced a carbon management plan which moves the sector substantially towards government carbon reduction targets<sup>5</sup>. For example, research published by HEFCE in 2010 showed that for the 45 universities with data for both years, emissions per full-time equivalent student were on average 39 per cent lower in 2005 than in 1990<sup>6</sup>. As the case study from Cranfield shows, the reductions can be considerable.

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<sup>5</sup> 'Carbon reduction target and strategy for higher education in England' (HEFCE 2010/01), available at [www.hefce.ac.uk/pubs/year/2010/201001/](http://www.hefce.ac.uk/pubs/year/2010/201001/)

<sup>6</sup> 'Carbon baselines for individual higher education institutions in England: Report to HEFCE by SQW', available at [www.hefce.ac.uk/pubs/rereports/year/2010/heicarbonbaselines/](http://www.hefce.ac.uk/pubs/rereports/year/2010/heicarbonbaselines/)

### **Case study: Cranfield University**

The Carbon Brainprint project at Cranfield University set out to quantify the impact of universities on carbon footprint reduction. Previous assessments of university impact had focused on the reductions in their own emissions, while innovations created through research and the application of that research can have a far bigger impact. One of the findings was that just two Cranfield projects led to reductions of 120,000 tonnes of greenhouse gas emissions in one year alone – 50 times Cranfield’s own annual carbon footprint<sup>7</sup>. A short video about the project is at [www.youtube.com/watch?v=9GSjDaWO9dQ](http://www.youtube.com/watch?v=9GSjDaWO9dQ)

21. In 2010, HEFCE, Universities UK and GuildHE demonstrated co-leadership by publishing carbon reduction targets for higher education in England. These targets were based on extensive research and wide consultation. The overall sector target is reduction of Scope 1 and 2 carbon emissions by 34 per cent by 2020 and 80 per cent by 2050, against a 1990 baseline<sup>8</sup>. Against the higher 2005 baseline, this is equivalent to a reduction of 43 per cent by 2020 and 83 per cent by 2050.

22. The overall target is very challenging. 2011 data indicated that the collective impact of institutional targets would lead only to a 38 per cent reduction between 2005 and 2020, about 5 per cent short of the sector target. Anecdotally, some institutions report strong progress: for others, expansion and increased research programmes present particular challenges to reducing carbon despite the opportunities offered by high-performance laboratories, more efficient use of space and equipment sharing. We will revisit performance against this target to assess whether the 5 per cent gap has narrowed and, if not, what can be done to achieve the target and whether the target should be linked to the size of the sector.

23. Research, particularly in the important science, technology, engineering and mathematics disciplines, can be carbon-intensive. Solutions are often technical and require collaboration between laboratory technicians, academics and estates professionals. One example of HEFCE supporting the emergence of good practice across the sector has been its funding for the S-Lab project through the Catalyst Fund. This has been successful in advancing sustainable practice in the design and operation of laboratories<sup>9</sup>.

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<sup>7</sup> For more information see [www.carbonbrainprint.org.uk](http://www.carbonbrainprint.org.uk)

<sup>8</sup> The World Resources Institute classifies ‘Scope 1’ emissions as those occurring directly from sources that are owned or controlled by an organisation, for example emissions from boilers and vehicles; ‘Scope 2’ describes emissions resulting from the generation of electricity purchased by the organisation; ‘Scope 3’ covers all other emissions that occur as a consequence of the activities of an organisation but arise from sources it neither owns nor controls, for example procurement and commuting.

<sup>9</sup> More information is available at [www.goodcampus.org/](http://www.goodcampus.org/)

### **Case study: S-Labs**

The S-Lab: Supporting World Class Science initiative provides a forum for laboratory stakeholders such as academics, support staff (including technical, estates and facilities, human resources, information technology and procurement staff), designers and suppliers – who normally operate within separate silos – to engage with each other around issues of laboratory improvement, including - but not confined to - energy and environmental impacts. It underpins this with events (with over 1,000 delegates annually), information dissemination, good practice guidance, and assessment and awards schemes (see [www.effectivelab.org.uk](http://www.effectivelab.org.uk) for examples of this).

S-Lab has been mainly financed by the UK higher education funding bodies, especially HEFCE. Current areas of work include: developing guidance for laboratory refurbishment; a laboratory environmental assessment scheme that has been used by National Union of Students Green Impact to audit hundreds of HE laboratories under its Green Impact scheme; a laboratory equipment initiative aimed at improving effectiveness and efficiency; and development of strategic laboratory leadership skills. The initiative's success highlights opportunities to link sustainability agendas to others of importance to the sector, such as modernisation and workforce development.

24. HEFCE is mindful of the need to minimise the environmental impacts of research. Accordingly, we included provisions in Round 3 of the UK Research Partnership Investment Fund asking applicants to identify key positive and negative environmental and social impacts likely to occur as a result of their proposal. Applicants needed to explain how projects would make the most of any positive impacts and manage any negative impacts. The assessment panel now takes this information into account when deciding which bids to recommend for funding.

25. A 2013 report from the Department for Energy and Climate Change indicated that energy prices are expected to rise by 20 per cent between 2013 and 2020, and suggested that such increases would further stimulate energy efficiency measures<sup>10</sup>. It is therefore not surprising that resource efficiency is becoming an increasing focus for competitive advantage and resilience in our universities and colleges.

26. Given this focus, HEFCE has made over £60 million available over three rounds through its Revolving Green Fund (RGF) for energy efficiency and carbon reduction projects.

27. A report on the third round of RGF identified the 43 institutions that had received funding under RGF3 and set out project details<sup>11</sup>. The 2014 evaluation of the RGF has found that projects have average payback periods of four and a half years, predict

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<sup>10</sup> 'Estimated impacts of energy and climate change policies on energy prices and bills 2013', available online at <http://goo.gl/5P2gD>. The estimate is based on figures in Table 2 for medium-sized businesses which are not subject to the Carbon Reduction Commitment.

<sup>11</sup> 'Revolving Green Fund 3: Application assessments and outcomes', a report to HEFCE by Atkins, available at [www.hefce.ac.uk/pubs/rereports/year/2013/rgf3/](http://www.hefce.ac.uk/pubs/rereports/year/2013/rgf3/)

expected lifetime savings of £281 million and will generate annual carbon savings of 103,000 tonnes, around 12 per cent of the sector's 2020 carbon targets<sup>12</sup>.

**Case study RGF1: University of Lancaster Wind Turbine (£3.4 million)**

Originally a project for two wind turbines, the proposal was reduced to a single turbine to secure planning permission. The primary objective for Lancaster was to reduce carbon emissions, but with the development of the scheme it has established an energy company through which other energy-related projects can be developed.

The revised project was completed on programme and under budget, and delivers planned objectives. Lancaster has contributed to a number of national conferences to highlight the issues and outcomes of the planning and procurement process.

**Case study RGF2: University of Bradford Green Library Environment and Education (£1 million)**

The project illustrated how an ageing library can be transformed into a modern, efficient building with an improved environment without significant construction work. An innovative refurbishment was achieved at a cost far less than a new build, with active service maintained during the works.

The building is an exemplar: it is highly flexible, is lit naturally and provides a space that promotes wellbeing.

The project has had a positive effect on energy consumption with a carbon reduction benefit of 500 tonnes of CO<sub>2</sub> per year.

**Case study RGF2: University of Leicester, 11 energy-efficiency projects (£491,000)**

Actions were based on historic energy audits and a priority list, based on fastest paybacks. A collaborative approach between building and maintenance managers and the energy manager provided the confidence to follow a number of options.

Voltage optimisation in the largest student hall of residence is an example. The total carbon saved is 99 tonnes, and the actual energy and carbon savings are 53 per cent more than predicted with a payback of three years.

The carbon saving from all 11 projects is 872 tonnes.

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<sup>12</sup> 'Evaluation of rounds 1 to 3 of HEFCE's Revolving Green Fund', a report to HEFCE by Blue Alumni June 2014, available at [www.hefce.ac.uk/pubs/rereports/year/2014/rgf1to3/](http://www.hefce.ac.uk/pubs/rereports/year/2014/rgf1to3/)

### **Case study RGF3: Brighton 'Let there be light' (£500,000)**

This project is close to completion (in autumn 2014) and is based on principle as much as the financial and carbon savings it will bring.

The project implements a major refreshment of the university's lighting, replacing fluorescent tubes with modern energy-efficient light-emitting diodes. This will lead to longer-lasting components, reduced energy bills, lower maintenance costs and improved lighting.

28. These positive evaluations informed our decision to join again with Salix Finance in developing RGF4. At £34 million this will be the largest round yet, with projects commencing in 2015 leading to significant efficiency savings<sup>13</sup>.

29. HEFCE has also linked the capital funding it distributes to higher education institutions with environmental performance, efficient use of space and carbon reduction, through its Capital Investment Framework (CIF). This has been an effective light-touch process to encourage change, and an efficient distribution of the available funds with minimal transaction costs to the sector<sup>14</sup>.

30. The CIF2 process undertaken in October 2010 used the annual Higher Education Statistics Agency estate management data return to generate 15 key metrics gauging estate and environmental capability and infrastructure investment. The metrics continue to be produced each year, and serve as a monitor to assess performance.

31. The procurement of goods and services is an important aspect of sustainable development. A report in July 2009 referred to case studies in schools and the NHS which estimated that emissions from procurement might account for half of the sector's total<sup>15</sup>. HEFCE therefore supported the Centre for Sustainable Procurement in 2009 by providing £298,188 and the case studies and other materials have been adopted by the British Universities Finance Directors Group and others. We will continue to work with sector bodies to support more sustainable procurement.

32. Procurement emissions are, like waste, water and commuting, classed within Scope 3: emissions that arise from an organisation's activities, but from sources which the organisation neither owns nor controls. To improve understanding of Scope 3 carbon emissions, HEFCE commissioned guidance on measuring them<sup>16</sup>. An output from this was a tool which applies the Department for the Environment, Food and Rural Affairs' carbon intensity factors to different expenditure categories. Regional purchasing

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<sup>13</sup> For further information see [www.hefce.ac.uk/whatwedo/lqm/sd/rqf/](http://www.hefce.ac.uk/whatwedo/lqm/sd/rqf/)

<sup>14</sup> For more information see 'Arrangements for the second Capital Investment Framework' (HEFCE Circular letter 17/2010), available at [www.hefce.ac.uk/pubs/year/2010/cl172010/](http://www.hefce.ac.uk/pubs/year/2010/cl172010/)

<sup>15</sup> 'Research into a carbon reduction target and strategy for Higher Education in England: a report to HEFCE' by SQW Consulting and SQW Energy, available at [www.hefce.ac.uk/pubs/rereports/year/2009/carbonreductionforhe/](http://www.hefce.ac.uk/pubs/rereports/year/2009/carbonreductionforhe/)

<sup>16</sup> Reports and good practice on measuring Scope 3 emissions are available at [www.hefce.ac.uk/pubs/rereports/year/2012/scope3carbon/](http://www.hefce.ac.uk/pubs/rereports/year/2012/scope3carbon/), [www.hefce.ac.uk/pubs/year/2012/201201/](http://www.hefce.ac.uk/pubs/year/2012/201201/) and [www.hefce.ac.uk/pubs/year/2012/201202/](http://www.hefce.ac.uk/pubs/year/2012/201202/)

consortia automatically provide the outputs to their members, making it easy for institutions to receive an estimate of their procurement emissions. This is an example of HEFCE establishing efficient collaborative practices in the sector.

33. Universities are major users of information and communications technology, which accounts for around 2 per cent of global carbon emissions, as well as impacts in the form of resources used in manufacturing, re-use or disposal. Jisc's 'SustelT' programme (worth £2 million and funded by HEFCE grants) has supported sustainability projects at institutions and developed good practice materials<sup>17</sup>. There is also growing appreciation of the role that information technology can play in online learning, which reduces the need for travel for teaching and research.

## **Conclusion**

34. Institutions have risen to the challenge of reducing environmental impacts by setting themselves stretching targets for carbon reduction. They have made significant investments and altered their ways of working, monitoring their progress with increasingly sophisticated systems. HEFCE has supported these developments by providing specific funding and by ensuring that the conditions placed on general HEFCE funding require environmental assessments and, where necessary, mitigations. Good practice dissemination helps institutions learn from each other. Although these achievements are creditable, more needs to be done if the sector's contribution to internationally agreed target carbon reductions is to be achieved.

## **Section 2: HEFCE's support of higher education institutions engaging in the 'green sector' of the economy**

### **A modern sustainable economy**

35. According to the United Nations Environment Programme<sup>18</sup>, a 'green economy' is one that 'results in improved human wellbeing and social equity, while significantly reducing environmental risks and ecological scarcities'. Modelling in 2011 showed that if countries around the world allocated up to 2 per cent of global gross domestic product (GDP) over the next 40 years to jump-start a transformation of the global economy, this would generate as much growth and employment as the so-called 'brown economy', where no investment would have been made into greening.

36. Global investment in renewable energy rose by 32 per cent in 2010 to a record £130 billion, with China the largest investor in renewable energy projects. In the UK the Confederation of British Industry has identified opportunities to 'become the leading destination for low-carbon investment', and estimates that supporting a low-carbon economy could potentially add £20 billion to the UK's GDP by 2015. According to the Confederation of British Industry, in 2010-11 the UK's share of the £3.3 trillion global

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<sup>17</sup> For more information see [www.jisc.ac.uk/guides/go-green-for-a-sustainable-future](http://www.jisc.ac.uk/guides/go-green-for-a-sustainable-future)

<sup>18</sup> More information is available at [www.unep.org/](http://www.unep.org/)

green market reached £122 billion, around 8 per cent of GDP, employing 940,000 people<sup>19</sup>. The three main findings of the 2011 UN Green Economy Report were that:

- a. The transition to a green economy generates increased wealth, particularly in natural capital, as well as a higher rate of GDP growth.
- b. There is an inextricable link between the conservation of ecological capital and poverty eradication, because of the benefit flows from natural capital directly to the poor.
- c. A green economy would create new jobs<sup>20</sup>. (A later 2012 report estimated that these could be up to 60 million globally<sup>21</sup>.)

37. This transition represents a beneficial opportunity for universities and colleges, which the case studies show are well placed to contribute through skills development; research, innovation, and knowledge exchange; policy development; and stimulation at a local level of the demand for goods and services.

#### **Case study: Brunel University aluminium reuse project**

In the UK we send 300,000 tonnes of aluminium to landfill each year, representing £775 million of direct economic loss and an energy loss equivalent to 11 million barrels of oil.

Researchers at Brunel are developing techniques to revolutionise the production of metal components, using recycled metals to cast items that require very little subsequent machining. This will radically reduce the energy and materials needed to manufacture high-quality parts.

If reliable methods can be found to reuse and 'up-cycle' existing metal, then enormous amounts of energy and resources, currently spent on disposing of used metal and extracting fresh supplies, can be saved. Reductions in mining and waste disposal will have major environmental benefits, reducing pollution and preserving landscapes and wildlife habitats.

38. HEFCE's support for knowledge exchange, through its Higher Education Innovation Fund, has resulted in a range of projects that have a sustainability dimension, for example electric vehicles, aerospace, carbon-related behaviour change, and town planning.

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<sup>19</sup> 'The colour of growth: Maximising the potential of green business', CBI 2012, available at [www.cbi.org.uk/campaigns/maximising-the-potential-of-green-business/](http://www.cbi.org.uk/campaigns/maximising-the-potential-of-green-business/)

<sup>20</sup> 'Towards a green economy: Pathways to sustainable development and poverty eradication', available at [www.unep.org/greeneconomy/greeneconomyreport/tabid/29846/default.aspx](http://www.unep.org/greeneconomy/greeneconomyreport/tabid/29846/default.aspx)

<sup>21</sup> 'Working towards sustainable development: Opportunities for decent work and social inclusion in a green economy', available at [www.ilo.org/global/publications/books/WCMS\\_181836/lang--en/index.htm](http://www.ilo.org/global/publications/books/WCMS_181836/lang--en/index.htm)

**Case study: Research Councils UK Centre for Sustainable Energy Use in Food Chains**

With £12 million in funding from Research Councils UK and the Manufacturing the Future Programme, UK industry partners and three universities (Brunel, Manchester and Birmingham) will develop a new research centre dedicated to energy reduction in the food chain. This will establish a cross-disciplinary hub of engineers, scientists and industry experts to develop energy-efficient food manufacturing, distribution and retail systems, to support the UK Government's target of 80 per cent CO<sub>2</sub> emissions reduction by 2050. The Centre will be supported by 33 partners, including seven major food manufacturers (such as Kraft, Heineken and Heinz); four retail partners (including Tesco, Waitrose and Marks and Spencer); seven equipment manufacturers and suppliers; and a number of professional institutions and trade associations.

39. Meanwhile, through the Catalyst Fund in 2013, HEFCE supported sixteen projects delivering advanced training, applied research, or business support which had a sustainability dimension. Collectively they are expected to create more than 500 new companies, 1,200 products and 3,000 jobs, and thus to contribute more than £3 billion to the UK economy.

**Case study: Harper Adams University National Centre for Precision Farming**

This project supported the development of an engineering building for the new National Centre for Precision Farming. Precision farming uses new technologies and advanced engineering to improve the efficiency and effectiveness of arable and livestock agricultural operations. An important element of precision farming is its potential to minimise the use of pesticides and herbicides, improve animal welfare and protect natural resources such as soils and water. The new facility is already having national and international impact, and is providing a major boost to the UK's contribution to global food security.

**Case study: University of Brighton Green Growth Platform**

This five-year business programme is designed to support the growth of 1,000 Sussex-based environmental small businesses. It offers a suite of services to members including 1-2-1 business support, innovation R&D, training and events. These services are offered to companies in Sussex with a particular focus on four sectors: sustainable buildings and retrofit, renewable energy, waste management and water. It aims to support innovation, address skills shortages and stimulate growth in low-carbon environmental goods and services. This activity is planned to lead to the creation of 250 new jobs, 25 new or enhanced products or services and 15 new modules or courses.

The platform will work closely with local authorities, further education colleges and corporates to catalyse green economy initiatives in Sussex.

40. Through research, universities make advances that help other organisations apply sustainable solutions<sup>22</sup>. The new system for assessing the quality of research in UK higher education institutions, the Research Excellence Framework (REF), includes an explicit assessment of the impact that research has had on the environment, as well as on society, the economy, culture, health and quality of life. The assessment will inform the allocation of research funding from 2015; the REF therefore incentivises institutions to demonstrate the impact of their research in sustainable development.

41. In assessing the quality of research outputs, HEFCE has considered how to ensure that excellent research in all forms can be assessed on an equal footing. This includes multi- and inter - disciplinary research, which is considered particularly important for sustainable development because many of the challenges span discipline boundaries. In developing the REF we consulted on this issue and, although submissions continued to be made in subject-based units of assessment, enhancements were added.

- a. The unit of assessment and panel structure were changed so that there were fewer panels with broader remits and broader expertise.
- b. The panels included appropriate expertise in this kind of research.
- c. Institutions were invited to identify this kind of research, thereby drawing it to panel members' attention.
- d. Work that spanned boundaries between units of assessment could be cross-referred to other panels for advice where more appropriate expertise was available.

42. We will publish the results of the REF in December 2014, and the submissions made by institutions, including nearly 7,000 impact case studies, in early 2015. The impact case studies and our analysis of them will be a high-level resource available to researchers.

## **Conclusion**

43. The scale and importance of the green economy are recognised throughout the world. There are attractive opportunities for UK business in general and for universities and colleges working with them. HEFCE has supported the higher education sector with direct funding through the Higher Education Innovation Fund and the Catalyst Fund (see above). Research assessment (through the REF) has also been reformed to ensure that the quality and benefits of research with a direct impact on sustainable development are properly evaluated and rewarded.

## **Section 3: HEFCE'S role in engaging students**

44. University or college can be a formative time for students. Many students care about the environment, and therefore hold views in sympathy with the goals of sustainable development. We believe that students can be given opportunities to explore

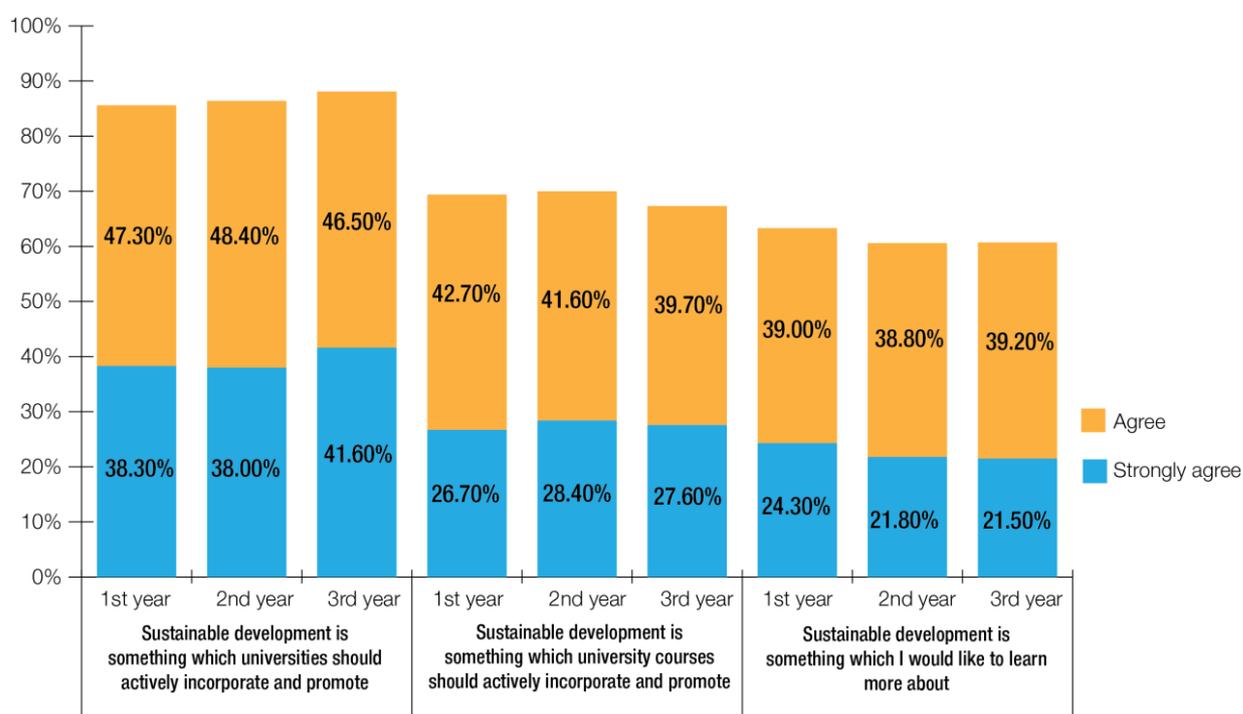
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<sup>22</sup> Universities UK's 2008 report 'Greening spires: Universities and the green agenda', available at [www.universitiesuk.ac.uk/highereducation/Pages/GreeningSpires.aspx](http://www.universitiesuk.ac.uk/highereducation/Pages/GreeningSpires.aspx), showcases some of the work carried out by universities.

and test these views and then to determine how they might be applied in their daily lives. The National Union of Students (NUS) also recognises the importance of students' views on sustainability. About 10 per cent of its 200 staff work in dedicated sustainability roles: their three award-winning green programmes are provided to 77 higher education institutions across the UK<sup>23</sup>.

45. In the UK, students also want sustainability issues to be reflected in their studies and their overall experience. As Figure 1 shows, a series of surveys by the Higher Education Academy (HEA) and NUS has found that around 85 per cent of first-year students think universities should actively promote sustainable development, while around 60 per cent want to learn more about it<sup>24</sup>.

**Figure 1: Responses from the annual HEA-NUS survey on the attitudes of students to sustainability 2010-12**



46. A 2008 study for the HEA found that social and environmental ethics and competencies are also important issues for employers and applicants. HEFCE has for a number of years invited the HEA, as a body it provides funding to, to recognise education for sustainable development as a cross-cutting priority and to support and encourage this agenda. In particular, HEFCE asked it to support institutions through its Green Academy programme, which worked with 18 higher education providers to lead change for sustainable development across their institutions. The programme was designed to assist universities in embedding education for sustainable development into the student

<sup>23</sup> For more information on Green Impact, Student Switch Off and Student Eats see [www.nus.org.uk/greener](http://www.nus.org.uk/greener)

<sup>24</sup> 'Student attitudes towards and skills for sustainable development' can be found on the Higher Education Academy web-site at [www.heacademy.ac.uk/node/2770](http://www.heacademy.ac.uk/node/2770)

experience, and expanded into other areas related to curriculum at many of the participating institutions.

47. HEFCE has funded a project on 'Leading curriculum change for sustainability', which won an award for Outstanding Flagship Project at the eighth Global Regional Centres of Expertise on Education for Sustainable Development Conference in 2013. The £201,375 project, hosted by the University of Gloucestershire, produced a practical and strategic guidance manual for senior managers in higher education, with five institutions identified as case study exemplars of how education for sustainable development has been embedded into academic infrastructure.

48. In June 2014, as part of the HEFCE-funded work, on behalf of HEFCE and the Quality Assurance Agency for Higher Education, the HEA published guidance on Education for Sustainable Development and the skills, aptitudes and knowledge that graduates need. We will continue to encourage the HEA's work in this important area.

**Case study: University of the West of England**

The University of the West of England believes it has a duty to ensure that graduates are able to play a part in leading society to a more sustainable future. All the university's departments consider incorporating sustainable development into the curriculum within their subject areas to be either 'important' or 'very important', and concepts of sustainability are now included in the programmes of study for 90 per cent of the university's students studying in the UK. Activities include staff training and the development of web-based learning resources which draw together good practice from across the university. Consideration of ESD is now embedded within UWE's Quality Management and Enhancement Framework to support reporting and enhancement activities.

**Case study: University of Nottingham**

In 2011 the university decided to develop sustainability within the curriculum, on the basis of the university's mission and values and of student demand, and to enhance teaching and learning.

Nottingham created a small team of academics, professional staff and students who were supported by sustainability and change management specialists through the HEA's highly regarded 'Green Academy' programme. The first phase of work comprised focus groups with students, seminars, discussion with departments, a one-day conference and a key-word search of the module catalogue to estimate a baseline of relevant teaching. The next stage involved developing online educational resources such as webinars, reflective blogs, analysis of university strategy, e-books and other resources linked to sustainable literacy, social justice, ethics and ecology.

The online resources continue to develop as a virtual learning environment, used by over 1,500 staff and students, enhancing the curriculum and contributing to Nottingham being ranked first in the 2013 Greenmetric ranking of world universities.

49. Students and their representatives are valuable partners for higher education institutions, providing both human resource and enthusiasm. There are opportunities for student volunteering and employment in sustainability-related roles, giving students experiences which they and future employers will value.

**Case study: University of Worcester and Worcester City Council**

A partnership between the University of Worcester and Worcester City Council has increased recycling rates among Worcester's student community and is giving student volunteers additional skills in communication, professionalism, teamwork and equality. Representatives contacted 329 privately rented student properties, as well as 21 halls of residence, and recycling rates increased by 123 per cent. To assist on visits, the partnership produced a short video showing students sorting typical household waste ([www.youtube.com/watch?v=53v5qW4SWM0](http://www.youtube.com/watch?v=53v5qW4SWM0)) and created a Facebook page.

**Case study: University of Southampton**

A campus-wide energy audit at the University of Southampton was completed by 255 students and staff in 2012. Its aims were to deliver carbon savings, empower students and staff in sustainability actions, and raise the profile of sustainability.

In less than four hours and across 34 buildings, student and staff groups audited 5,570 computers, plus all printers and lights.

The volunteers switched off all non-essential office equipment left on for the weekend, reducing energy usage by 6 per cent, and saving 7 tonnes of carbon and £1,600 compared with a typical term-time weekend.

50. Recognising this, HEFCE has provided £5 million from its Catalyst Fund to support the NUS Students' Green Fund<sup>25</sup>. In turn, this has funded 25 student-led projects at universities and colleges in England, which have attracted widespread interest and led to new conversations between students' unions, university management, and other partners in local communities. The projects have created 53 dedicated sustainability positions in students' unions and are engaging 50,000 students in a variety of projects, including growing food on campus, making energy savings in student homes, and establishing green transport for the disabled in local communities. The projects involve 82 other campus and community organisations.

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<sup>25</sup> For more information on the Student Green Fund see [www.nus.org.uk/sgf](http://www.nus.org.uk/sgf)

**Case study: University of Bristol Students' Union – Get Green**

The project embeds sustainability into what students learn, and how students live in a more sustainable way. It engages students in halls of residence, supporting a network of sustainability champions to extend a model based on the NUS Student Switch Off campaign. 'UBU Get Green' aims for a 10 per cent reduction in electricity usage, and to increase recycling from 38 per cent to 65 per cent using face-to-face engagement tools and events that will culminate in a year-end 'Bristol Big Give', leading to the reuse of 88 tonnes of household items and thereby raising over £100,000 for local and national charities.

Bristol University Students' Union intends to reach the private sector using the NUS Green Impact model, to engage households with sustainable campaigns like decreasing meat consumption, Grow Your Own, recycling and energy reduction.

Aside from encouraging behaviour change in students' living habits, UBU Get Green will also work on education for sustainable development, helping students to make curricular changes.

**Case study: University of Exeter Students' Guild Students' Green Unit**

This project won the 2014 International Sustainable Campus Network Excellence Award for Student Leadership and was described as 'an outstanding example of excellence and initiative by a student group'.

Students are working with staff to deliver projects under five themes: operations, education, student engagement and community, research and employability.

The project secured funding from the Students' Green Fund.

51. The National Student Survey (NSS) gathers information from final-year students about their experiences, to inform potential students. A review of the NSS delivered its report in summer 2014. It is important that the core NSS remains a short survey designed to provide focused information on the student academic experience. However, HEFCE is keen to support institutions which wish to use the optional question bank in the NSS to understand their students' views on sustainable development, and have suggested this to the review group.

52. The annual Green Gown Awards administered by the Environmental Association for Universities and Colleges (EAUC) recognise achievement in higher education institutions across the broad spectrum of sustainable development. HEFCE continues to provide funding alongside others to support these awards. Now in their 10th year, the awards were emulated in Australia five years ago and have recently been taken up in French-speaking countries in Europe (France, Belgium, Switzerland and Luxembourg) as 'Les Trophées des campus responsables'.

53. As an example of the range of programmes and innovations recognised by these awards, the case study box below details some of the 2014 Green Gown winners.

### **Green Gown Awards: 2014 winners**

The Green Gown Awards are administered by the Environmental Association of Universities and Colleges (EAUC)<sup>26</sup>. The 2014 winners included:

- a. Exeter University, for the refurbishment of Cornwall House, a tired and energy-hungry building. The process has delivered a vibrant building which is popular with students and staff and much cheaper to run.
- b. Lancaster University, for developing a wind turbine which provides 13 per cent of the university's electricity.
- c. Manchester Metropolitan University, for 'Met Munch', a student-led food network which offers affordable, nutritious, local and sustainable food. The project develops entrepreneurship, has built links with the curriculum and has enthused people to adopt healthier lifestyles.
- d. Plymouth University, for involving design students in the nursing curriculum to develop products with the resilience for use in disaster areas and other challenging environments. Prototype products are tested by the nursing students, and some are being commercialised.
- e. Plymouth University, for a community interest company which provides dental treatment to 16,000 NHS patients in Devon and Cornwall. Schools, elderly groups and vulnerable members of society are also supported through a community programme.
- f. Plymouth University, for catering provision which is founded on local and ethical sourcing: supporting small producers, making cafes an informal learning resource and welcoming the community.
- g. Queen's University, Belfast for low-cost easy-to-use technology using solar power to disinfect water. This has the potential to improve the lives of the 768 million people who rely on unimproved water supplies.
- h. University of the Arts, London for installing innovative timer switches on industrial irons in the London College of Fashion. Specially designed ironing board covers also raise awareness of energy consumption.
- i. The University of Worcester, for an affordable, easily-administered bike loan scheme. Young people with learning disabilities develop practical skills and increase their self-esteem by maintaining the bikes and managing the bike shop.

### **Conclusion**

54. Students are better informed than ever before about the risks to the environment and the need to manage and mitigate these risks. There is a high demand for sustainable development issues to be reflected in the curriculum and in the operational practices of

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<sup>26</sup> For more information see [www.eauc.org.uk/green\\_gown\\_awards](http://www.eauc.org.uk/green_gown_awards)

universities and colleges. HEFCE has supported HEA, the NUS and Quality Assurance Agency for Higher Education in their work with the sector to respond to these demands. We have also supported the work of the EAUC in recognising and celebrating the achievements of universities that have led the way in bringing about change.

### **The framework for HEFCE actions, 2015 to 2020**

55. We will commission further research on progress in meeting sector carbon targets of a 43 per cent reduction in carbon emissions by 2020 against a 2005 baseline. We will seek ways to improve the estimation of the carbon emissions arising from the procurement of goods and services, drawing on the experiences of other sectors where appropriate.

56. We will deliver a fourth round of the Revolving Green Fund, and make the case in the forthcoming government spending review for additional investment in cost-saving carbon reduction through further rounds of the RGF.

57. Future capital funding for the sector will be influenced by the forthcoming general election and the government spending review. It is not clear whether, and to what extent, sustainability will remain a criterion for funding. If HEFCE continues to receive capital funding to distribute to institutions, either by formula or on a project basis, we will maintain the link between capital and sustainability as we have with CIF and the UK Research Partnership Investment Fund.

58. The Catalyst Fund will continue to be open to innovative sustainability projects where these meet the criteria for the fund.

59. Sustainable development is cited as a key criterion for local enterprise partnership (LEP) strategies. HEFCE will support higher education institutions in their engagement with LEPs and in applying for European Structural and Investment Funds. In this connection, the new National Centre for Universities and Business was recently established with funding from HEFCE to strengthen collaboration between universities and business. There is a current consultation proposal that the National Centre for Universities and Business host the new Smart Specialisation Advisory Hub to work with LEPs, local businesses and universities. The Hub will assist local partnerships to ensure that their priorities for investment are consistent with the approach of smart specialisation, and, in particular with the Industrial Strategy Sector Strategies and the Eight Great Technologies. This should assist collaborations which advance sustainable development and green technologies.

60. In evaluating the REF, we will analyse whether or not multi- and inter-disciplinary research was treated appropriately, and whether there is evidence that the REF inhibited or incentivised this kind of research.

### **Information and analysis**

61. Providing information, benchmarking and guidance is important for progress, and we have supported or undertaken work in a number of such areas. This has included:

a. A review of the Higher Education Statistics Agency's Estates Management Record, and the publication of reports on the record now undertaken by the Association of University Directors of Estates<sup>27</sup>.

b. Projects run by the EAUC:

- Sustainability Exchange<sup>28</sup>
- Learning in Future Environments<sup>29</sup>.

c. The EcoCampus benchmarking and accreditation schemes<sup>30</sup>. We will continue to support dissemination from the annual Green Gown Awards, and will review our guidance on producing carbon management plans<sup>31</sup>.

62. The provision of information relating to carbon emissions is problematic given the complex rules and retrospective nature of some of the changes. Accordingly we propose to explore the feasibility of establishing a Carbon Information Service to provide advice and support, including on measuring and reporting carbon emissions, interpreting UK government policy such as the accounting treatment of renewables projects, and the feasibility of scope 3 reduction targets. We envisage that this will include providing advice to institutions.

63. UK Performance Indicators (UKPIs) in higher education provide information on the nature and performance of the sector. They are intended as an objective and consistent set of measures of how an institution is performing. The UK Performance Indicators Steering Group has recently undertaken a review of the indicators to determine their future scope and purpose<sup>32</sup>. Following this, the steering group has given higher priority to ensuring that existing UKPIs are fit for purpose, and has also committed to exploring the feasibility of broadening the measures into new areas in the longer term. Exploratory work relating to new areas will only begin once in-depth reviews of existing UKPIs have been completed. Sustainability is one area which respondents to the review consultation exercises noted as having some potential for consideration in future UKPIs.

64. We have passed the results of the sustainable development consultation to the NSS review team so that they can consider including one or more questions about sustainable development in the optional question bank.

65. We will publish a progress report in 2017 to set out progress with the actions.

### **HEFCE policy and practice**

66. We believe we should lead by example, and will continue to improve our own performance, in the following ways:

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<sup>27</sup> See [www.aude.ac.uk/resources/ems/](http://www.aude.ac.uk/resources/ems/)

<sup>28</sup> See <http://sustainabilityexchange.ac.uk/index.php>

<sup>29</sup> See [www.thelifeindex.org.uk/](http://www.thelifeindex.org.uk/)

<sup>30</sup> See [www.eauc.org.uk/ecocampus](http://www.eauc.org.uk/ecocampus)

<sup>31</sup> 'Carbon management strategies and plans' (HEFCE 2010/02), available online at [www.hefce.ac.uk/pubs/year/2010/201002/](http://www.hefce.ac.uk/pubs/year/2010/201002/)

<sup>32</sup> How should we measure higher education? A fundamental review of the Performance Indicators', available online at [www.hefce.ac.uk/pubs/rereports/year/2013/ukpireview/#d.en.85232](http://www.hefce.ac.uk/pubs/rereports/year/2013/ukpireview/#d.en.85232)

- maintaining certification to the ISO14001 environmental standard and the Carbon Trust Standard<sup>33</sup>
- participating in the NUS Green Impact programme
- reviewing and implementing our corporate social responsibility policy, and publishing an account in our annual report<sup>34</sup>
- using the relocation of our London and Bristol offices as a catalyst to create a more sustainable organisation.

67. In 2012 we were a West of England carbon champion for achieving a 17 per cent reduction in our carbon emissions between 2010 and 2011, and we have since achieved a gold rating for the refurbishment of our new London office<sup>35</sup>. Our corporate social responsibility policy includes objectives and targets relating to:

- business ethics
- managing environmental impacts
- procurement
- our people
- the community
- working with the sector.

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<sup>33</sup> ISO 14001 specifies the requirements of an environmental management system. For more information on the Carbon Trust Standard, see [www.carbontrust.com/client-services/footprinting/footprint-certification/carbon-trust-standard/](http://www.carbontrust.com/client-services/footprinting/footprint-certification/carbon-trust-standard/); for more information on Green Impact, see [www.nus.org.uk/greener/](http://www.nus.org.uk/greener/); for more information on our Corporate Social Responsibility policy, see [www.hefce.ac.uk/about/howweoperate/corporatesocialresponsibility/](http://www.hefce.ac.uk/about/howweoperate/corporatesocialresponsibility/)

<sup>34</sup> These documents are available online at [www.hefce.ac.uk/about/howweoperate/corporatesocialresponsibility/](http://www.hefce.ac.uk/about/howweoperate/corporatesocialresponsibility/)

<sup>35</sup> For more information on the West of England Carbon Challenge, see [www.westofenglandcarbonchallenge.org/](http://www.westofenglandcarbonchallenge.org/). The gold rating was achieved under the Ska methodology, which featured in the UK Government's Low Carbon Action Plan. Ska is an environmental assessment method, benchmark and standard for non-domestic fit-outs, led and owned by Royal Institution of Chartered Surveyors. The gold rating is the highest of three thresholds.

## **Annex A: Abbreviations and glossary**

<b>CIF</b>	Capital Investment Framework, a methodology to assess the way universities and colleges approach capital investment. It asks them to demonstrate that they are managing their physical infrastructure as an integral part of their strategic and operational planning, and that their plans in this area are environmentally sustainable.
<b>DESD</b>	The Decade of Education for Sustainable Development 2005-14, established by the United Nations because 'education is an indispensable element for achieving sustainable development'.
<b>EAUC</b>	The Environmental Association of Universities and Colleges.
<b>ESD</b>	Education for Sustainable Development, the process of equipping students with the knowledge and understanding, skills and attributes needed to work and live in a way that safeguards environmental, social and economic wellbeing, both in the present and for future generations.
<b>GDP</b>	Gross domestic product.
<b>HEA</b>	Higher Education Academy.
<b>HEFCE</b>	Higher Education Funding Council for England.
<b>HEIs</b>	In this document the terms 'institutions', 'higher education institutions' ('HEIs'), and 'universities' all refer to HEFCE-funded universities and colleges of higher education.
<b>Jisc</b>	The UK's expert on digital technology for education and research.
<b>NSS</b>	National Student Survey.
<b>NUS</b>	National Union of Students.
<b>REF</b>	Research Excellence Framework, the system for assessing the quality of research in UK higher education institutions. Its outcomes inform the selective allocation of research funding by the UK higher education funding councils.
<b>RGF</b>	The Revolving Green Fund, which provides recoverable grants for HEFCE-funded institutions to reduce carbon emissions.
<b>The sector</b>	HEFCE-funded universities and colleges of higher education.
<b>UKPI</b>	UK Performance Indicators, which provide information on the nature and performance of the higher education sector.
<b>UN</b>	United Nations.