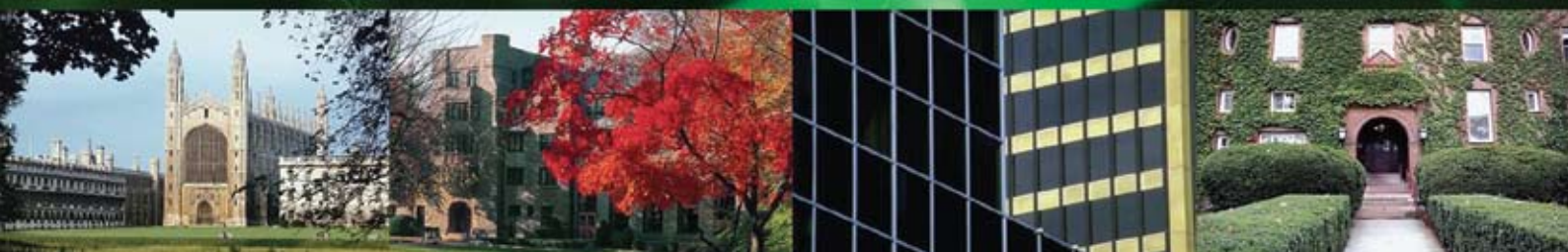


THE GREEN GOWN *Awards*

2006-7

transport
technology
sustainable
environmental
energy efficiency
education



Recognising Progress Towards More Sustainable
Further and Higher Education in the UK

Overall Awards in association with:



The Association of
University Directors of Estates



british universities
finance directors group



HIGHER EDUCATION
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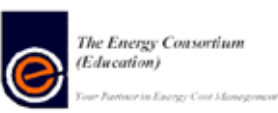




The Environmental Association
for Universities and Colleges



Universities UK

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Foreword



Professor David Eastwood
Chief Executive
Higher Education Funding
Council for England

Our vision for sustainable development is that “within the next ten years, the higher education sector in this country will be recognised as a major contributor to society’s efforts to achieve sustainability - through the skills and knowledge that its graduates learn and put into practice, and through its own strategies and operations.”

Achieving this vision is vital, for both moral and practical reasons: to preserve the natural world for future generations, to create a fairer planet, and to enlighten students and society about the challenges of the next century are compelling reasons for action even if they don’t result in direct financial benefits.

In practice, rising fuel prices and current and proposed regulations on reducing carbon emissions mean that actions to reduce energy consumption and carbon emissions can be financially advantageous, as two Green Gown winners demonstrate. The University of Southampton has used a whole life costing approach to justify an innovative Combined Heat and Power scheme, and King’s College, London, has admirably combined energy efficiency with sympathetic restoration of the historic King’s Building. Waste minimisation and increased recycling can also create financial and non-financial benefits - as demonstrated by another of this year’s winners, the University of York Students’ Union bicycle recycling scheme.

Entries in the Student Initiatives category also indicate the growing interest of our undergraduate and postgraduate students in sustainable development issues. Many are now using this as one criterion when deciding on their places of study. Institutions paying greater emphasis on sustainable development will therefore be well positioned for future success in the higher education market place. Employers will also be looking for more specialised courses, and more research and knowledge transfer, on the topic. The winning entries from the University of Bristol and Sheffield Hallam University show how this can be done successfully through an inter-disciplinary module for undergraduates and a specialised course for landlords.

Many of this year’s entries also demonstrate that universities and colleges are now taking a long-term, institution wide view of sustainable development and putting this into practice effectively. The former Pershore Group of Colleges not only provide an impressive example of how sustainable development can be implemented in land based colleges but also have lessons for larger peers. Another winner, the University of Leeds, provides an example of continuous improvement with ambitious targets and effective mechanisms for achieving them.

HEFCE has already done much to help achieve our vision, but we recognise that there is still much more to be done. For example, more effective utilisation of the existing estate will mean that fewer new buildings are needed - with consequent reductions in environmental impact. New buildings or refurbishments will increasingly meet and exceed existing standards in energy and water efficiency.

One noteworthy feature of this year’s awards is the importance of partnership, both within institutions, and between them and outside organisations. As the entries show, it is the understanding, creativity, energy and enthusiasm of our universities and colleges, and their staff and students, which is the key resource in achieving a more sustainable higher education sector.

Congratulations to all of this year’s Green Gown Award winners and I look forward to next year’s competition.

About the Awards

The Green Gown Awards were established to raise awareness of the growing pressures for more sustainable performance by UK universities and colleges, and to recognise positive responses to them. They have been sponsored by the Association of University Directors of Estates (AUDE), the British Universities Finance Directors Group (BUFDG), and Environmental Association for Universities and Colleges (EAUC), and Universities UK (UUK). Other organisations also sponsored individual categories (see Contents page).

The Judging Panel

Jamie Agombar, NUS Services Ltd

Alan Brock, Department for Education and Skills (DfES)

Brian Chalkley, Higher Education Academy, Geography, Earth and Environmental Sciences (GEES)

Tim Cobbett, Universities UK (UUK)

John Cunningham, De Montfort University (representing British Universities Finance Directors Group, BUFDG)

Richard Daniels, Department for Education and Skills (DfES)

Kevin Doyle, The Energy Consortium (Education)

James Fisher, BRE

Paul Goffin, University of Leicester (representing Association of University Director of Estates, AUDE)

Louise Greer, Learning and Skills Council (LSC)

Julie Hull, Department for Education and Skills (DfES)

Rory McMullan, Association for Commuter Transport (ACT)

Ilona Murphy, Learning and Skills Council (LSC)

Pravin Parmar, Learning and Skills Council (LSC)

Iain Patton, Environmental Association for Universities and Colleges (EAUC)

Bruce Pittingale, UK Centre for Economic and Environmental Development (UK CEED)

Joanna Simpson, Higher Education Funding Council for England (HEFCE)

Simon Smith, Higher Education Academy

Jim Whelan, GVA Grimley

Alan Yates, BRE

About HEEPI

The HEFCE-funded Higher Education Environmental Performance Improvement (HEEPI) project is based at the University of Bradford. Its management board includes representatives from the Association of University Directors of Estates (AUDE), BRE, the Environmental Association for Universities and Colleges (EAUC), Guild HE and Universities UK (UUK).

HEEPI's aims are to develop better information on the environmental performance of universities and colleges, and to strengthen the capacity of their senior and operational managers to use this information to drive improvement. Since its inception in 2001 HEEPI has:

- Run over 60 events - with over 2000 delegates - on issues such as sustainable construction, sustainable procurement, energy and water efficiency, and transport and waste minimisation
- Written case studies and guidance documents, most recently on carbon regulations and sustainable construction
- Developed a Sustainable Laboratories initiative, in partnership with the US Labs 21 programme
- Developed an on-line advice centre, the Environmental Virtual Campus
- Developed a database of energy and water consumption in over 300 buildings
- Developed for general use a low-cost on-line survey of university transport impacts.

For more information visit www.heepi.org.uk or contact the HEEPI Co-Directors, Professor Peter James and Dr. Peter Hopkinson via info@heepi.org.uk or at:

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HIGHER EDUCATION



ENVIRONMENTAL
PERFORMANCE
IMPROVEMENT



Colleges

WINNER

Learning for Life is the Legacy of Pershore Group of Colleges

On 1 August 2007 the Pershore Group of Colleges ended its life, with its Pershore campus merging with Warwickshire College, and the Holme Lacy farm campus joining the Herefordshire College of Technology. But one legacy remains, in the form of staff, students and stakeholders influenced by its successful integration of sustainable development into all of its activities. The journey began in 2000-1, with a sustainability audit of the Holme Lacy campus, and the training of 16 staff as sustainability champions. In 2002 sustainable development became part of Pershore's mission statement and a series of task groups set challenging goals. These included:

- A 50% reduction in carbon emissions by 2020
- Targets for the percentage of refectory food which is unprocessed (36% at Holme Lacy in 2006-7), local (35% from under 30 miles), campus grown (3%) and organic (2%)
- Targets for the percentage of purchases from local suppliers (64% achieved by 2006)
- Elimination of all green waste by composting (achieved by 2006).

Other initiatives included:

- Integrating sustainable development into all courses and tutorials for full-time students
- Innovative student projects on sustainability topics, including one on helping people with disabilities grow and sell organic vegetables (which was runner up in a national scheme)
- Increasing organic farming - to 650 of the College's 750 acres by 2006
- Mapping the College's ecological footprint
- Winning LSC funding for a sustainable development project to train internal champions and share best practice within all post-sixteen education and training institutions in Herefordshire and Worcestershire
- Highlighting food sustainability issues within local communities by selling College organic produce, working with schools and encouraging student volunteers
- Adapting College vehicles to use 20% biodiesel rather than the standard 5%.

Two non-environmental benefits from these initiatives were encouragement of more students to land based training at the College, and plaudits for sustainability activities in external inspections.

Former Pershore College Principal Heather Barrett-Mold says that "our aim was to embed sustainability practices into the day to day experience of students and staff, and to encourage them to actively consider sustainability issues in their future lives, work and relationships. I hope, and believe, that the results will live on, through staff influencing the activities of our successor organisations, and the personal development of our alumni."



Organic agriculture in Herefordshire

Judges' Comments on Colleges

Sustainability in colleges requires change across the entire establishment, and this has been the case with the Pershore Group of Colleges. The extent, width and depth of their community and environmental initiatives is most impressive, and has been maintained over time. They also demonstrate how much difference land based colleges can make to national and local life, by demonstrating alternative approaches to agriculture and food, and inspiring others to follow. However, the central message of their work is relevant to all institutions - an ongoing, progressive, commitment to sustainable development can create additional benefits such as enhanced recruitment and reputation.

- 16,306 animal, bird and plant species - including 1 in 3 amphibians, 1 in 4 mammals, and 1 in 8 birds of those assessed to date - are at risk of extinction, with human alteration of their habitat the single biggest cause

HIGHLY COMMENDED

Leeds Trinity and All Saints College - Travel Benefits from an Integrated Approach

Leeds Trinity has had a long standing commitment to resource efficiency, reducing gas and water usage by 20% and 16% per square metre respectively since 1991. As a result, it has the lowest carbon dioxide (CO₂) emissions of any church college. In 2003 a more comprehensive approach began, with the establishment of an Environmental Forum, development of an Environmental Policy, and the launch of new initiatives, including:

- Ensuring that all courses met an objective of "Engagement in consideration of ethics and values, including where appropriate sustainability, relevant to their discipline", as part of the revalidation of all college programmes in 2005-6
- Introducing recycling schemes for waste paper, glass, plastics, cans, IT hardware and printing consumables across campus and in residences - reflected in a 10% reduction of landfill waste between 2005 and 2006
- Enhancing biodiversity, with new planting schemes and other measures adopted following a campus survey by the Yorkshire Wildlife Trust
- Reducing car travel to campus through a comprehensive Travel Plan.

The Travel Plan was introduced in September 2005 and is reviewed annually. The main initiatives include a car parking policy; staff discounted Metrocard; improved public transport links; improved cycle and motorcycle parking; support of the local authority car share scheme; improved pedestrian access; preferential taxi access; and a reduction in the use of College vehicles by the promotion of public transport. These measures have resulted in a reduction of campus car parking spaces by 40%, without a comparable increase in off campus parking. The Plan is self-financing with any surplus generated ring-fenced for use in implementing travel improvements.

Mark Shields, Assistant Principal (Resources), believes that "you don't have to be a green warrior to take action on environmental issues - it just makes sense. The real gains are when a 'whole institution' approach is taken, and all parts of the organisation are united, including staff, students and the wider community, drawing on the talents of everyone to the full. It's amazing what people can do when they are interested and committed."

Richard Jasper, John Barrett and Graham Cooper - Leeds Trinity groundsmen - are proud of their diverse planting schemes



Judges' Comments on Colleges (continued)

Leeds Trinity College shows what can be achieved through a co-ordinated approach, even within a short period of time. Its Travel Plan in particular provides a successful example of a practical yet ambitious initiative, based on quantifiable measures and a sound evidence base. It is an exemplar of good practice for the sector.

Continuous Improvement

WINNER

Environmental Success at the University of Leeds

Since 2002 the University has more than doubled its recycling, become a Fairtrade institution, reduced carbon emissions and increased the numbers of staff and students walking, cycling and using public transport for commuting. These successes build on previous environmental initiatives, including an 18MW combined heat and power plant.



Keith Pitcher and Steffi Hasse

Two key implementation steps were the creation of an Environmental Management Steering Group - chaired by Deputy Vice-Chancellor, Professor John Fisher - in 2003, and establishment of an Environmental Management System in 2004. The latter is based on five key areas - Carbon Management (energy efficiency, sustainable buildings and renewable energy), Fair Trade, Sustainable Purchasing, Transport and Waste Management. Each area has a management group of staff and students, with targets and budgets. In 2006, Carbon Management had a budget of £180,000 (financed from a ring-fenced fund for energy savings and reductions), and Transport £118,000 (financed by car parking charges).

Staff capacity has been expanded by two new full time environmental posts (Environmental Manager, Dr. Keith Pitcher, and Transport Co-ordinator, Steffi Hasse). Specified time allowances are also given in the job descriptions of 40 staff environmental co-ordinators. Other University employees contribute time to the programmes, including 12 cleaning staff (one of them the cleaning manager, and another a supervisor).

This capacity has enabled the establishment of 'Green Teams' in areas of the campus, including Residential Commercial Services who appointed 12 student environmental reps in halls of residences and flats. They are supported by intensive communication to staff, students and stakeholders. The means include a dedicated web site, meetings with faculty and departmental heads, creation of a slot in all staff induction courses, seminars for staff and students on all new activities, and regular articles in the University's staff magazine.

Academic-Estates links have also been strengthened. Keith Pitcher sits on the management group for the University's Interdisciplinary Institute for Earth, Energy and Environment. In 2005 a school of environment teaching module was redesigned around environmental audits of internal facilities. One output has been the production of a Green Guide by students, which is distributed to all residents in University accommodation.

Keith Pitcher believes that "adopting a policy led environmental management system has provided resources and buy-in at all levels of the organisation for staff and students. A strategic view also highlights the long-term financial benefits of environmental improvement. For example, our investment of £92,000 in recycling facilities has a pay back of three years on current disposal costs, and will protect us against future increases. It also sends a signal that we're a University in tune with future trends, which helps with recruitment and research funding."

Judges' Comments on Continuous Improvement

There are many barriers to environmental improvement, some generic to all sectors, and others more specific to further and higher education. Overcoming these barriers requires a long-term commitment by senior managers, and effective, target-driven, implementation of policies and initiatives. All these were evidenced in the short-listed applications for this category, which made it exceptionally difficult to judge. We have therefore selected a mix of applications. Some demonstrate success in the exceptionally difficult task of achieving continuous improvement across the whole institution, while others focus on one topic area. And, whilst a steady long term commitment to improvement is always admirable and effective, several of the applications show that a committed approach can yield impressive results even within a few years.

- The Leeds Environmental Policy - "support continuous environmental improvement by establishing demanding but achievable and measurable environmental performance targets that are reviewed and externally reported annually"

Strategic Environmental Management - Performance Measurement and Targeting

The development of an environmental strategy, setting of quantitative targets, and the on-going measurement of performance in order to track progress, benchmark, and identify priorities are crucial parts of continuous improvement. The University of Leeds' provides a useful reference case for other institutions wishing to achieve this.

In 2003 the University established an environmental management structure that identified five strategic areas, with new financial resources and quantitative targets set for each. These were:

- Carbon Management - a 10% reduction in both energy-related CO₂ emissions, and in absolute energy consumption, per student FTE from their 2005/6 level by 2010. A reduction of 2% electricity consumption was achieved in the first 7 months of 2006/7 compared to a trend of 3% per annum increase. The University uses HEFCE's Estates Management Statistics to benchmark its energy consumption against other research-intensive universities (defined as members of the Russell Group), and is well below the mean for both per student FTE and per m² gross internal area.
- Fair Trade - a target of achieving University-wide Fairtrade accreditation (achieved in 2005).
- Sustainable Buildings - 2006 Estate Strategy requires BREEAM Very Good/Excellent ratings to be achieved for all new buildings and refurbishments.
- Sustainable Purchasing - a Buy Recycled project with Recycling Action Yorkshire is developing targets and programmes for recycled content in building construction materials and office supplies.
- Transport - a target of a 5% reduction in people travelling to the campus by car every three years, commencing 2003. In fact, surveys show that the number of staff driving a car to work dropped from 46% in 2004 to 28% in 2007, and students from 8% to 6% over the same period.
- Waste Management - targets of 25% and 33% recycling by 2005 and 2015 respectively. Overall recycling rates increased from c.16% in 2002 to 34.6% in 2006 (and are 50% - 75% in many office buildings).



Environmental progress is measured against other organisations - including universities - by participating in Business in the Community's Environment Index assessment. The university was ranked first in 2006 out of the 6 universities who participated, with a score of 91% (compared to 68% and 5th place in 2003). In the same year it came 22nd out of all 117 organisations participating in the Yorkshire region (again a significant improvement from the 63rd out of 120 ranking of 2002).

Recycling in the Vice Chancellor's office, with (left to right) Dr Keith Pitcher, Environmental Officer; Professor Michael Arthur, Vice Chancellor; Professor John Fisher, Deputy Vice Chancellor, and Chair of the Environmental Steering Group; Janet Willis, Cleaning Services Manager.

Judges' Comments on Continuous Improvement (continued)

The University of Leeds emerged as the overall winner because of its 'textbook' development and implementation of an articulate, strategic, and comprehensive approach to continuous environmental improvement, intended to move it to a higher level of performance. In the five years of its operation, this has resulted in impressive - and well evidenced - progress in many areas. The programme's noteworthy features include sustained high level interest and support; setting - and achieving - quantitative improvement targets; building capacity not only through an environmental champions network but also amongst sometimes neglected groups such as cleaning staff; working effectively with external partners; and making a considerable time commitment to sharing its experience with other universities and colleges, both regionally and nationally.

Continuous Improvement

HIGHLY COMMENDED

Minimising Water Usage at the University of Cambridge

The prospect of hose pipe bans in the late 1980s motivated the University of Cambridge's then Energy Manager, Dick Ramsay, to initiate a forward-thinking water conservation programme. By 2006 this had halved water consumption, and produced annual financial savings of £667,000, compared to the base year of 1987/88.

Modern leakage detection methods and intensive metering and tracking - around 90% of the University's annual usage is now remotely monitored - have meant that savings have increased rather than plateaued in recent years. Absolute water use fell by 13% between 2004 and 2006, despite a 6% increase in the size of the University Estate. This equates to an annual saving of £74,000, and a reduction in the CO₂ emissions associated with water supply of 14 tonnes. The 2006 consumption average of 0.43 m² per square metre of space (down from 0.52 m² in 2004) compares well with the average 1.05 m² consumption of research intensive universities. Paul Hasley, the University's current Energy Manager (and also responsible for water), notes that, "while all departments are involved in the programme, the academic and technical staff in the chemical and physical science areas have been a key target as modern laboratories are extremely water intensive."

Leaks are identified not only through careful analysis of data, but also by a novel acoustic noise logging system. This analyses the sounds transmitted by water flowing down pipes. This method helped pinpoint a leak of 3 litres/minute at the University's Vet School site, resulting in an annual financial saving of £2,600. Other examples of savings during 2005-6 included:

- A faulty humidifier at the University Library was running to drain wasting about 10 litres/min
- The cooling system for a laser was left running, wasting 30 litres/min over the weekend until the monitoring reports picked up the increased usage
- Mains water being used to continuously cool gel equipment in Biochemistry - almost 5m³/day was saved by slowing the flow rate and cooling only when necessary.

Detailed data on campus consumption also helps Cambridge Water, the local supply company and a longstanding supporter of the University's water conservation programme. They use it to analyse the performance of their own infrastructure, which in turn results in further detection of leaks.



Acoustic leak detection equipment

Judge's Comments on Continuous Improvement (continued)

The University of Cambridge's commitment to continuous improvement of its water efficiency over a 15 year period was highly commended in the 2004-5 Green Gown Awards. Since then, the programme has been strengthened, with an even greater rate of reduction in water use. A large element in this has been on-going investment in water metering and monitoring. This makes it easier to maintain the momentum even when, as at Cambridge, the original champion of improvement retires or moves on.

- The energy required to supply a megalitre of water creates 404kg of CO₂ emissions

HIGHLY COMMENDED

Personalisation Reduces Car Travel at the University of East Anglia

120 hot air balloons a year full of carbon dioxide saved through avoided car journeys is just one of the successes of the University of East Anglia (UEA)'s 2002 Travel Plan. Others include:

- A reduction in student car usage from 30% in 1998 to just 16% in 2005, and reduction in regular car journeys by staff by 20%
- Fewer regular drivers in 2005 than in 1998 despite the University growing by just over a third
- An increase in bus season ticket sales from under 500 pre-plan to over 4000 in 2006/07
- A 13% year-on-year increase in passenger numbers on University bus services
- Levels of student and staff cycling of 20%, twice the local average.



The Plan has involved the University working closely with local bus operator First Bus to improve services. The ring-fenced revenue from car park charges has also been used to support measures such as a car club, a journey sharing scheme, and a personalised travel planning service. The latter includes drop-in sessions held in key public areas where individuals can seek out advice, try-it-free bus passes, cycle loans or walking/cycling buddies. Kerry Davis, a Personal Travel Advisor, believes that "this helps drivers to see what is available and 'try before they buy', addressing two of the key obstacles to change."

Kerry Davis

Local residents have benefited from improved public transport and the University is helping other organisations, such as the local hospital, reduce their demand for parking and congestion. Wider benefits of the Travel Plan include enhanced recruitment and retention of staff and students, reclamation of green areas previously used for "fly-parking", and easier planning consent for new buildings.

Dawn Dewar, the Transport Co-ordinator, believes that "our Travel Plan has few headline initiatives, no UEA owned and operated bus services, no cash reward schemes and no presents of folding bikes at Christmas, yet it has proved to be a success with measurable positive outcomes. We've shown that a lot can be achieved even within limited resources and an inconvenient location."

The Association of Commuter Transport agrees, having awarded the University a "highly commended" certificate in 2005 for its "very comprehensive, well researched, travel plan strategy which it has been implementing with consistently improving results over the last few years."

Judge's Comments on Continuous Improvement (continued)

Many past winning and commended transport entries to Green Gowns have featured universities in urban areas, with locations at or near to their centres. With a campus 3 miles from the centre of a small city (Norwich), and within a very rural county, the University of East Anglia has had to adopt a distinctive 'accumulation of small steps' approach to the implementation of its 2002 Plan. Its innovative features include the provision of a personalised travel planning service, a car club, and a journey sharing scheme. The excellent results from this modestly resourced, but well planned and executed initiative, demonstrate how much can be achieved within just a few years. They are therefore a model for smaller universities and colleges in out of town locations.

Continuous Improvement

HIGHLY COMMENDED

A Shrinking Carbon Footprint at the University of Edinburgh



A CHP facility at the University

Edinburgh's improvement journey has a long history. "It began", says Energy and Sustainability Manager David Somervell, "in 1990 with a pioneering conference on Energy Management for Further and Higher Education, and continued in 1993 with adoption of one of the first university environmental policies. Since then we've invested over £15m in energy efficiency and related measures, and gained cumulative savings of £8m. This is partially financed by investing at least 5% of annual utilities spend on energy efficiency projects, and increasingly by the university's requirement for thorough whole life costing analysis of all investment and purchasing decisions."

These, and other initiatives on curriculum, research, procurement, transport and other areas, are co-ordinated by a Sustainability and Environmental Advisory Group (SEAG), convened by Vice-Principal Geoffrey Boulton. In 2003 the University formally adopted the following quantitative targets for improvement:

- Cut carbon dioxide emissions by 40% compared from 1990 levels by 2010 (30% achieved by 2006)
- Reduce water consumption by 20% by 2010 (2% achieved by 2006)
- Reduce waste to landfill by 5% by 2007 (stabilised by 2006, despite a campus 25% larger with double the students) and recycle 30% of all waste by the same year (achieved in 2007)
- Cut single occupancy vehicle (SOV) use by 5% over five years (achieved).

Measures to reduce carbon emissions have included:

- £12m invested in Combined Heat & Power installations in three Energy Centres - saving nearly £1m per year after loan repayments, and cutting emissions by over 4,300 tonnes CO₂ /yr
- Over £500,000 invested in Building Energy Management Systems (BEMS), and over £400,000 in enhanced Metering Monitoring and Targeting, which will enable devolution of utilities budgets in 2008
- Procurement of 25m kWh/yr of certificated Green Electricity since 2000 - 40% of consumption
- Investment in proactive energy efficiency measures such as condensing boilers, and upgrading insulation values beyond building standards whenever roofs are re-covered.

Measures in other areas include:

- £500,000 invested in improved cycle facilities (which has contributed to a 40% increase in cycle use)
- First Fairtrade University in Scotland, in 2004
- Collaboration with People and Planet and Students Association to produce brochures on a *Climate Change Survivors Guide* and *Greening the University*
- Presentations by Energy & Sustainability Office to the monthly induction sessions for all new staff
- Introduction of a new cross-disciplinary undergraduate course on Sustainability, Society and Environment (180 students registered in 2007), and taught MSc courses in Sustainable Energy, in Sustainable Development and in Sustainability and Development.

Judges' Comments on Continuous Improvement (continued)

The University of Edinburgh was one of the first institutions in the sector to have an environmental policy, and has an impressive long-term record of success in reducing impacts. Its actions are wide ranging, and include the improvement of its own estate, the development of teaching and research on the topic, and outreach activities both in the city and Scotland as a whole. Especially noteworthy are the University's 30% reduction in its energy-related carbon emissions since 1990 (which has been achieved despite a considerable increase in its estate), and its leading role in the adoption of CHP, BEMS, and metering, monitoring and targeting, within the sector.

- 22 minutes of cycling can take you 4 miles, compared to 40 minutes for the same distance in congested cities

HIGHLY COMMENDED

Racing to Reduce Travel Impacts at Oxford Brookes University

Asking a senior manager to get 'on your bike' is tempting for many university staff. Harriet Waters, Environmental Coordinator at Oxford Brookes, had that privilege in 2006 when she set up a top team race from station to campus on bikes, buses, foot and taxi to launch a new Sustainable Travel Plan.

The Plan was an updated and extended version of the Green Commuter Plan, whose promotion of improved bus services, reduced car usage and increased cycling and walking, was commended in the 2004-05 Green Gown Awards. Progress has continued since then, with the percentage of staff driving by car falling from 55% in 1998 to 48% in 2004 and 46% in 2006. The percentage of staff cycling to work also has risen from 13% in 1998 to 17% in 2004 and 19% in 2006.

This happened despite the University expanding into less accessible sites than its main campus, making the travel plan objectives harder to achieve.

The Sustainable Travel Plan was informed by a carbon footprinting exercise carried out under the Carbon Management Programme. This demonstrated that transport accounted for 61% of the University's total carbon emissions, and that several important drivers of this - such as staff business travel and visitors to the campus - were not being fully addressed. The new Plan also has targets of reducing the percentage of staff driving to work to 40% by 2010, and the percentage of students to 7% (compared to 12% in 2004).

One major factor in reducing car commuting has been the introduction of Brookesbus in 2003, and its subsequent expansion. It now connects all major sites of the University, and the cost of a season ticket is included in student hall fees. It is also used by nearby residents, who previously had a poor bus service. This benefit, and other aspects of the Plan, have improved relationships with the local authority, which can be beneficial in other areas such as planning consents.



More has also been done to encourage walking, including production of leaflets describing walking routes - and estimates of calorie burning! - to the University's Headington Campus; offering lunch hour 'health walks' at all the sites; and running an annual 'Brookes Goes Walking' day to raise awareness.

Harriet Waters believes that "along with senior management commitment, a key feature of our plan is a ring fenced budget, which recycles the £130,000 a year we receive from car parking charges and other sources into transport improvements. This then allows to support a large number of different initiatives for specific groups, and to create an overall momentum which helps to build support and change behavior."

Judge's Comments on Continuous Improvement (continued)

Transport at Oxford Brookes University was commended in the 2004-5 Green Gown Awards, and has continued to improve, for example, in patronage of BrookesBus, decline in car usage, and increased levels of cycling and walking. The new Sustainable Travel Plan is comprehensive and ambitious, and the University has disseminated its experience both within and outside the sector. Overall, its impressive achievements over the last decade demonstrate what can be achieved through sustained senior management support, and imaginative planning and implementation.

Course Content (Degrees)

WINNER

Sustainable Tradition at the University of Bristol

Only one course in Bristol's 2005 undergraduate calendar lacked a departmental prefix. This was UNIV10001, Sustainable Development, a new inter-disciplinary module open to all students without any prerequisites.

Following an introductory scene-setting session, the course had six blocks of sessions from different disciplinary perspectives (history, economics, engineering, law, environmental science and education). Inter-disciplinary tutorials (on energy generation) and seminars (on congestion charging) ran in parallel. The University's Energy and Environmental Management Unit (EEMU) also provided practical inputs.

The course recruited over 100 students from 14 departments, well above the University's Open Units average. Confidential student feedback at the end of the session was very favourable and resulted in some minor amendments for 2006-7, including a second interdisciplinary seminar on Estuary Management and the recording of lectures for podcasting.

The course convenor, Dr. Tony Hoare, summarises the course's benefits as "widening the personal contacts and intellectual horizons of students, enabling them to visit new physical and virtual spaces within the University, and providing access to some exceptionally lively and committed teachers. Lecturers also gain a better understanding of - and personal connections with - other disciplines, enjoy the excitement of innovating with sympathetic colleagues, and are inspired by the realisation that others share their commitment. All this is good for the University as a whole, which also enhances its reputation by showing that it preaches what it practices. "



Other unexpected benefits include an interest in developing additional modules as a result of the high numbers, and general learning about the issues of developing inter-disciplinary courses which can be applied to other topic areas.

Tony Hoare believes that "UNIV10001 demonstrates that even the most traditional HE institution has leverage points for innovation and change. Open-minded academics and university administrators can still be excited by the potential to experiment and take risks, rather than regarding existing practices as effectively 'no entry' signs to anything smacking of non-conformism."

The teaching team for an interdisciplinary Estuary Management seminar - (from left) Chris Willmore (School of Law), John Loveless (Civil Engineering), Tony Hoare (Geographical Sciences), Sarah Cornell (Earth Sciences), Suzi Wells (Science Faculty E-learning Coordinator) and Chris Macleod (Historical Studies).

Judges' Comments on Course Content - Degree

The best means of incorporating sustainable development into degrees varies by discipline, type of institution, and level. One difficult challenge is creating interdisciplinary courses within traditional universities that have strong disciplinary boundaries. The University of Bristol's new Sustainable Development module is therefore an exciting innovation - especially in a first year course - which combines many subject backgrounds and genuinely opens up new academic, and personal development opportunities to students. Its demonstration that a well-balanced and well-managed inter-disciplinary team can deliver intellectual cross-cutting and sparkiness without losing coherence should encourage more such courses in other universities.

- The goal of the United Nations Decade of Education for Sustainable Development is to integrate the principles, values, and practices of sustainable development into all aspects of education and learning

HIGHLY COMMENDED

Mastering Sustainable Development at Queen's University, Belfast

Launched in 2005, by the Gibson Institute for Land, Food and Environment, the Queen's Masters programme in Leadership for Sustainable Development is already making a difference within Northern Ireland. The action-focused projects and placements which form a large part of the course have included:

- Organising the first all-party debate - attended by 150 stakeholders - on the state's new Sustainable Development Strategy;
- Working with NGOs to organize a Northern Ireland Green Living Fair, with a University summer school;
- Identifying £10,000 of potential environmental savings within one host business.

The Masters programme - which is based on a Forum for the Future template - is run by the Gibson Institute, but taught by staff from across Queens. It has nine modules which include case study sessions led by practitioners, and panel sessions partially organized by students. There are also separate four week placements in each of five sectors (Business, Governance, NGO, Media, and Rural). Students take responsibility for prior briefing and post debriefing sessions. These are attended by experts and stakeholders from the sector, who contribute to assessments of student presentations. The course also emphasises reflective learning through Personal Position Statements, field trips, e-diaries, and student-led briefing and debriefing sessions.



Queen's Vice-Chancellor Professor Peter Gregson (second left) congratulates the Programme team: (far left) Dr Peter Doran (former Degree co-ordinator), Dr Claire Cockerill (current Degree co-ordinator) and Professor George Hutchinson (Director of Gibson Institute) (right)

A number of lectures, placements and projects have focused on sustainable development and leadership in post-conflict communities, and how it can support reconciliation and understanding. Former course director Dr. Peter Doran observes that "One of the most memorable, and poignant, events of the year was a panel and lecture session facilitated by Wilhelm Verwoerd. Wilhelm's grandfather was the architect of South African apartheid, but he now works for reconciliation with former combatants in paramilitary and military/policing organisations in both South Africa and Northern Ireland, several of whom attended the session."

Peter Doran characterises the course as one "which enables students to take responsibility for elements of their personal and collective learning experience. This requires drive, self-discipline and commitment - which are exactly the qualities needed to provide sustainable development leadership within organisations, and society."

Judge's Comments on Course Curriculum - Degrees (continued)

The exciting Masters in Sustainable Development Leadership at the Queen's University of Belfast has many innovative features. It makes excellent use of placements, which benefit both students and the host organisations. The focus on sustainable development and community reconciliation is distinctive if not unique. It is thoroughly integrated into the Northern Ireland community, and will surely create a well trained cohort of future sustainability leaders for the island of Ireland, and the UK, over coming years.

Course Content (Degrees)

HIGHLY COMMENDED

The University of Gloucestershire Speaks the Language of Sustainability

Dr. Arran Stibbe believes that “language is crucial in achieving sustainable development. The words that we use, and the concepts they embody, shape our thinking and that of other people. For example, representing animals and plants in very mechanistic ways - such as ‘stock’ or ‘raw material’ - suggest they have no intrinsic value beyond the economic and so helps to legitimate environmentally damaging intensive farming.”

This concern is now communicated to students on the new Language and Ecology first year module which Arran Stibbe co-ordinates from the University’s Humanities Department. The 31 students in the 2006 intake were mainly taking English Language degrees, but others came from Biology and Geography.

The module was developed over two years, with internal staff inputs supplemented with external ones from members of the Language & Ecology Research Forum, and staff at the Centre for Human Ecology, Edinburgh. It examines how issues related to sustainable development are represented in the mass media, and in specialised areas such as agriculture and economics.



Laura Heeps, Rebecca Pailing and Gregory Thacker at work on a Language and Ecology project

Student feedback - captured in learning logs and questionnaires - has been very positive (e.g. “it was really, really fun, interesting and insightful”). The comments made also indicate an enhanced critical awareness (“I read newspapers differently now”), a more holistic view of the topic and its relationships to others (“I do think about how my courses relate to each other whereas before I didn’t think they had any relation”) and a greater interest in changing personal lifestyle (“made me think more about the environment and what I can do to help.”)

One of the unique features of the module is that students contributed comments and articles to the international Language & Ecology Research Forum, with some students going on to publish in an online journal, write a book chapter, and receive offers of funding to attend conferences.

Other non-environmental benefits of the course include the development of communication and team-working skills amongst students, and valuable experience in developing interdisciplinary links.

Arran Stibbe believes that “courses on language and ecology have the potential to integrate seamlessly into many subject areas, because they analyse something common to all students - language - and relate it to environmental issues. For example, language awareness can help science students present their work in ways which not only provide information but also persuade readers to care deeply about sustainability issues. This is important because formal, scientific, and technical styles of language, on their own, have been found insufficient to inspire the fundamental shift in values necessary for people to work towards a sustainable society.”

Judges’ Comments on Course Content - Degree (continued)

The University of Gloucestershire’s first year module on Language and Ecology is impressive in demonstrating that sustainability can be integrated into even the most unlikely academic homes. It demonstrates that humanities subjects have significant potential to unlock some of the deeper causes of environmental destruction, and to help develop new forms of sustainability skills. The University’s commitment to making the lessons available to the sector is also commendable.

- The construction industry employs 111 million workers around the world and consumes 40% of all materials extracted from the earth's crust

HIGHLY COMMENDED

Surveying Construction Futures Builds Sustainability at the University of Plymouth

Undergraduate degrees in construction and surveying are traditionally dictated by the requirements of professional bodies, and employers. As Paul Murray, Principal Lecturer in Environmental Building, notes: "introducing sustainable development issues beyond the scope of these requirements is not easy. However, we were the first British university to validate environment-themed construction and surveying degrees - back in 1996 - and wanted to build on this by greening all the degrees we offer on these topics."

An opportunity came in 2004, when the Higher Education Academy awarded Paul a National Teaching Fellowship. The first stage comprised an international literature review to identify around 100 specific knowledge/skill/value sets (some about generic sustainability and others more discipline-specific) that a sustainability literate construction professional would ideally possess. This was followed by a review of all programme specifications, module syllabi, course work, examination and dissertation activities against the sustainability requirements.



Paul Murray

The next stage was developing workshops to cover missing areas, and updating course curricula to reflect the audit findings. The workshop format and style was designed to be adaptable for three different target audiences - internal lecturers (through their integration into an internal departmental 'Away day'), lecturers in other institutions through incorporation into an international conference, and students.

All the fifty plus student attendees recommended that the workshops be integrated within the formal curriculum. This was done through a 20 credit 'project' based second year module, introduced in September 2007. At the same time many first and third year courses were modified to achieve more sustainable development content. (Second year ones were updated in 2006).

The outcomes of the sustainability audit process have been widely disseminated through academic papers, and other publications aimed at audiences involved in professional construction and surveying, and education for sustainable development. A copyright free "Sustainability in Construction Lecturers' Toolkit" - incorporating advice and exemplar student learning materials from 81 academics in 40 universities and colleges - has also been produced for the sector.

For Paul Murray, the benefits include "raising the awareness of construction and surveying graduates, with impacts both on their personal lives, and their ability to help the sectors they become involved in to respond to the enormous environmental and sustainability challenges that undoubtedly lie ahead. The changes have also motivated lecturers to embrace sustainability personally and professionally, and made courses more attractive to females, which is one reason for strong recruitment in recent years."

Judge's Comments on Course Content - Degrees (continued)

Sustainability concerns are of obvious relevance to construction and surveying, and professional bodies are requiring more time to be spent on them. However, the University of Plymouth's experience shows that proactive institutions can lead rather than follow, and that this can be beneficial not only for the environment, but also course recruitment and relevance. Its research-led basis, and dissemination activities, are also most impressive.

Course Content (Vocational)

WINNER

Sheffield Hallam University Landlords Swap Rentbook for Textbook to Help Environment

The Landlords for Excellence Programme is a 25 hour course spread over 10 weeks aimed at improving the business effectiveness, safety, and sustainability of people renting property in Sheffield. It also helps provide better conditions for the many Sheffield Hallam students who are private tenants. The course is targeted to private landlords, especially those from BME (black, minority and ethnic) backgrounds, and those with properties in areas of regeneration. After satisfactory completion, participants receive a certificate and a logo to use in their marketing.

Landlords for Excellence is part financed by a grant from Transform South Yorkshire, and raised £75,000 for the University from the first 6 courses (which attracted 132 students). Participants are recruited by Sheffield City Council. Local organisations such as the Benefits Agency and South Yorkshire Police also provide input into the programme.

The course is run jointly by Development and Society academics and the Facilities department. It has sessions on waste management, energy and water efficiency (covering both design issues in refurbishment and day to day opportunities). It also covers other topics

such as fire safety planning, marketing, dealing with anti-social behaviour, property law and taxation, safety and substance abuse awareness, as well as supply and demand issues to try to avoid future dilapidation in some areas of the city. Hands on projects help to maintain interest and test understanding. The course is constantly evaluated by the Landlords, City Council and Transform South Yorkshire. A review by the National Black Community Forum also found that “the course was central to improving the sector, is excellent at providing participants with legal and management advice and (participants) would recommend the course to other landlords.” Some attendees have also enrolled on further courses, and have expressed interest in funding bursaries to fund poor students from their communities.

Marie May, Sheffield Hallam’s Community, Sustainability and Residential Development Manager, believes that the course “has helped landlords not only in providing information, but also by creating a peer network that they can use for support. It’s also improved the relationship between landlords, the University and the Local Authority, which at times was confrontational, and done wonders for our relationship with local residents.”

She also highlights staff benefits from the course. “Our academic colleagues are now much more aware about the issues involved in housing students, both for private landlords and university residence managers. And facilities staff have had an opportunity to teach and become involved in course administration which has been an eye opener. It’s also created lots of fun and personal satisfaction.”



Course members with Marie May (right)

Judge’s Comments on Course Content - Vocational

Sheffield Hallam University provides a commendable example of reaching adult learners and employers in a specialist area, and of effective collaboration both between different sections of a university, and between higher education and the private and public sectors. The success of the Landlords for Excellence programme is shown by its excellent feedback, and the fact that it has never had to advertise. We are also most impressed by the energy and enthusiasm of all the participants.

- The richest 20% of the world's population consumes 86% of its resources

HIGHLY COMMENDED

Swansea Institute and Swansea University Living Sustainably Together

Recognising that not every programme developer has the time or expertise to develop or deliver a sustainability module, Swansea Institute of Higher Education and Swansea University have jointly developed an easily adaptable taught module, *Living Sustainably*. This is offered to students at both institutions in addition to, or as part of, a degree programme, as well as to staff and the general public.

Elizabeth May, Environment Manager at the Swansea Institute, believes that: "the module provides a cost effective way of providing high quality education for sustainable education for students who don't have the opportunity to do this within their subject area. For students themselves, it provides a deep level, experiential, means of applying its ideas to their main subject, work, educational institution or personal life."

The module is offered at different times in each institution and is open to students from either. A comprehensive range of sustainability topics are delivered by a group of enthusiastic practitioners. There are also field trips with an emphasis on real-life applications, and an assignment tailored to the student's personal circumstances and interests.

In the three years since it was developed the module has raised awareness of sustainability issues in both institutions, led to the 'greening' of additional courses and achieved considerable local publicity. An abbreviated version *Lecturing Sustainably* has also been developed for use in 'training the trainers'. The course won a certificate of good practice from the National Institute of Adult Continuing Education (NIACE)/Cyfanwyd in 2006, and featured in the winning entry for the Swansea Environmental Education Forum Higher Education Group for the Cyfanwyd/NIACE award in 2007.



Course students have included fine art undergraduates, PhD researchers, Swansea University's head of catering, and the general public. For many, it has been a springboard to further study and action, ranging from enrolment on more specialised sustainability courses, dissertations on the topic, and joining or initiating campaigning groups. Ken Harding; Facilities Manager of Neath Port Talbot Council, says that "the course has changed the way in which we now think, and this is also coming out in our every day working life."

Dr. Michael J. Isaac, Dean of Health and Human Sciences at Swansea University, also believes that "by creating a network of ex and current students, the course has increased the critical mass of environment champions in both institutions, resulting in greater pressure for improvement."

Lucy the pig - highlight of a field trip to a local organic farm running a box scheme

Judge's Comments on Course Content - Vocational (continued)

The sustainable development course created by the Swansea Institute of Higher Education and Swansea University provides a very replicable example of how sustainable development can be integrated into the curriculum. The course covers all aspects of the topic and is clearly attractive to learners, staff and the general public. It also provides an excellent demonstration of how different kinds of educational institution can work together effectively for the good of the community, and the environment.

Energy and Water Efficiency

WINNER

Low Carbon and High Efficiency at the University of Southampton

The University's £3.2 million scheme for a combined heat and power (CHP) plant, and associated upgrading and extension of the existing district heating scheme, has many distinctive features. The selected option - two Jenbacher units supplied and installed by Clarke Energy - had a 16% higher capital cost than the cheapest. However, its exceptionally high efficiency - 76% of the energy in the gas it burnt was converted to useful electricity and heat in its first year - meant that its whole life costs were considerably lower than alternatives. This high efficiency results from:

- A very sophisticated control system, which allows the engines to be run with very lean fuel/air mixes without encountering the usual problems of 'engine knock'
- A design based on using natural gas as fuel (rather than, as is more commonly the case, by modifying engines designed to run on oil)
- Use of condensing economisers - these capture an additional 326kW (enough to heat several large office buildings) from the latent energy in the exhaust steam.

To achieve maximum utilisation of the CHP plant, two existing campus district schemes were merged, and other buildings were linked and had their old local boilers retired. One of these is the new Entrance, Education and Engineering Building, which contains a 600kW absorption chiller. This utilises the hot water from the CHP plant (which is otherwise wasted in summer) to provide cooling by generating cold water for circulation through chilled ceilings in the offices, and through a displacement ventilation system in the main lecture theatre.



Mark Turner (right) and visitors admire the CHP engine

Low return temperatures (generally important in maximising CHP efficiency, and especially so when condensing economisers are employed) have been engineered through improved heat exchangers; replacement of existing domestic hot water storage calorifiers with direct provision using plate heat exchangers (thereby eliminating the substantial standing losses associated with hot water storage); and the installation of 'two port' fully variable flow controls. The latter allows the main distribution pumps to be inverter driven - creating large energy savings, particularly at times of low demand.

The scheme also contributes to learning and research. In 2006-7 24 Civil and Environmental Engineering students worked with the Estates Team on CHP-related projects, including a feasibility study of using alternative, carbon neutral, fuels.

According to Mark Turner, the University's Energy Manager, "the scheme is already saving £200,000 a year on heat and electricity costs, and this is set to increase as a result of the summer cooling from the absorption chiller and the addition of a major new building. But the most important thing from my perspective is the reduction in CO₂ emissions of over 2000 tonnes a year compared to the systems that it replaced."

Judges' Comments on Energy Efficiency

There is much scope to reduce energy consumption in universities and colleges, and new incentives to do so in the form of high energy prices, and the need to reduce carbon emissions.

One important means of doing this is through on-site CHP plants, which use the waste energy resulting from electricity generation for heating purposes. Many institutions already have CHP but the University of Southampton's scheme stands out for its whole-life approach and benefits, and the innovativeness of its technology. The developer's willingness to accept higher capital costs for greater efficiency and additional fuel and financial savings is impressive. So too is the systematic planning, and the solid and innovative engineering of its design and implementation. The result is a 'state of the art' installation which is a model for future schemes in the sector.

- For every 1°C of heating above recommended temperature ranges (19-24°C for offices and residences, and 19-21°C for teaching buildings) fuel consumption will increase by 8-10%

HIGHLY COMMENDED

Cooling - A Hot Issue at the University of Bristol

Bristol University's energy consumption for cooling has been rising - to the point where, in 2006, its summer peak electrical load matched that of midwinter. To reverse this trend, the University has devised more energy efficient methods of supplying chilled water, and policies to control air conditioning.

The pilot site for chilled water was the highly serviced Dorothy Hodgkin Building, where it accounted for 36-40% of normal electricity consumption. To reduce this, a Liquid Pressure Amplification (LPA) pump was added to the main chiller to create a constant outlet pressure. This reduces compressor load and enables the plant to operate within optimum design parameters, regardless of ambient conditions. The more uniform load should also extend lifespan, and require fewer replacement units and parts. In addition, the Building Energy Management System (BEMS) was modified to optimise loading, and variable speed drives were installed on the primary chilled water pumps. The total cost of the project was £71,950.

During the summer of 2006 electricity consumption for the building was reduced by 10%, equivalent to annual savings of up to £30,000 and 145 tonnes of CO₂. The payback of the project was therefore 2.4 years. Subsequent improvements have increased savings to 18% of the December 2005 level. Following the success of the project, the Energy & Environmental Management Unit has prepared a case study and commissioned a refrigeration specialist to review all of the University's 22 chilled water systems with a view to replication.



The LPA pump (photo: Excalibur)

The project co-ordinator, Karen Gallagher, highlights "the collaborative approach needed for the initiative, both internally - e.g. between the in-house design team and maintenance staff - and with external organisations such as the LPA pump distributor, the chiller manufacturer (who was initially sceptical that the technology would work) and the BEMS suppliers." She also believes that the project has raised staff awareness about the high costs of chilled water.

In parallel, the University is now tackling air conditioning. In 2006 the University had several hundred split units, with a summer load of up to 2.7MW. According to Energy and Environmental Manager Martin Wiles, "these units are often inefficient and poorly controlled. The problem is also worsening, with almost 100 requests for new units in 2006."

All new requests must now use a specially developed decision tree to check that special cooling needs do exist, and then apply a heat gain tool to analyse whether the load is sufficient to require cooling. If so, a new specification ensures that equipment is energy efficient, and is properly installed. Martin Wiles believes that these measures "should control the growth of new installations. The next stage is to roll back consumption by auditing all existing applications, and identifying opportunities to remove them, or increase their energy efficiency."

Judge's Comments on Energy and Water Efficiency (continued)

The University of Bristol's installation of liquid pressure amplification to its chilled water units is 'state of the art'. Its introduction required considerable commitment and team working, both internally and with external suppliers. Bristol's leadership now makes it easier for other universities and colleges to make an informed decision about using this exciting technology. The parallel campaign to reduce air conditioning load is at an earlier stage, but has developed an impressive and co-ordinated approach, and practical tools, which should ensure continued savings in future.

Student Initiatives

WINNER

Extending Life Cycles at the University of York Students' Union

The University of York has many keen cyclists, but some students leave without their bikes. In the past, security staff sent unwanted machines for scrap, or to landfill. Now they are handed to the Union, who get as many as possible in working order and auction them early in the autumn term. In 2006 the auction raised £1650 from the sale of 80 bikes.

Half the proceeds have gone to Target Tuberculosis, which has used them to buy 25 bicycles for African doctors. Now they can visit more villages, and treat more people. The remainder funds the work of the Union's elected Environmental and Ethical Campaigners (Charlotte Bonner and Clare Hawley in 2005-6). In addition to organising the bike auction itself, this includes establishing recycling facilities in all campus residences, setting up awareness raising events, and helping achieve the University's Fairtrade accreditation.

The bike auction is accompanied by a 'Bike Doctor's clinic' provided by a local bike shop. With funding from the University's Sustainable Transport Fund, this offers free minor 'on the spot' adjustments or repairs to purchasers, or other students and staff. The shop also offers discounted rates for any major repairs. The police attend to provide free microchip security tagging (paid for by the University's Security Department). The first year's auction had a representative from the City of York Council offering safety information and discounted cycle training, and this was reinstated for 2007.



Bikes awaiting auction

Charlotte Bonner believes that "the scheme challenges the disposable nature of modern society, and positively promotes cycling. Many students here drive cars, or use taxis. One reason is the initial cost of purchasing a decent bike, which the auction has reduced for many people. The free electronic tagging also reduces the risk of bicycles being stolen, which is a big problem in York."

Clare Hawley adds that "the simplicity of our scheme makes it incredibly easy to replicate. The only resources required are a reasonably sized outdoor space, some parcel tags, a loudspeaker and the facilities to fill out the paperwork required on the day."

Judge's Comments on Student Initiatives

The right student initiatives can unleash enormous amounts of creativity and enthusiasm whilst requiring little or no resource. This has been the case with the innovative bicycle recycling scheme developed by University of York Students' Union. This has been cleverly shaped to address a range of sustainability agendas, from cash-strapped students on campus to poor people in Africa, and has achieved great success from modest funding by the University. It encapsulates everything student initiatives can achieve, and should be highly replicable across other universities and colleges.

- 76% of students believe that lifestyles need to radically change for human civilisation to survive the next century, and 46% say that environmental considerations are important or very important when deciding what organisation to work for - UCAS Future Leaders Survey 2007

HIGHLY COMMENDED

Kingston Borough, Students' Union and University Create a Positive Environmental Partnership

Positive Environment Kingston (PEK) uses student mentors to improve the sustainability performance of local organisations, and to help reduce the Borough's ecological footprint. It is a joint project between Kingston Council's Environment and Sustainability Department (who find and co-ordinate placements), Kingston University Students' Union Volunteer Service and the University's Sustainability Team.

The work counts as a 48 hour credit module (comprising 16 hours of training, and 32 of mentoring). In 2006-07 13 students were recruited and assigned to 9 local organisations to help and support them reduce their environmental impact. Each mentor visits their organisation(s) regularly to help them improve through research, monitoring, inspiration and ideas, and advice. In particular they help the organisation to develop an Environmental Action Plan, prioritising areas such as reducing waste, recycling, buying locally, using alternative transport, saving energy and water, and procuring green energy. The volunteers have so far contributed over 600 hours.



Hannah Smith and Daniel Czako, PEK mentors

these. The students develop learning and skills in a real life situation, enhance their career opportunities, and can gain academic benefits - for example, one of the students researched the Borough's eco footprint for their dissertation. The University improves its standing within the community, local organisations save money and improve their environmental performance, and the Borough reduces its ecological footprint. In addition a local sustainability network is emerging, sharing and promoting environmental best practice in the area."

The mentors also help the organisations to explore and identify ways of increasing the environmental awareness of the people they work with, in ways that contribute to delivery of their organisational aims. For example, *Learn English At Home* taught English to their clients through organic gardening activities and reading about ecological footprints.

The scheme was an exceptional winner in the Higher Education Active Community Fund volunteering awards, and *Learn English at Home* won a local Green Guardian Award for best environmental champion.

Nicola Corrigan, Sustainability Facilitator at Kingston University, believes that "everybody wins from projects like

Judge's Comments on Student Initiatives (Continued)

Positive Environmental Kingston is an impressive model of community collaboration between 'town' (Kingston Council) and 'gown' (Kingston University and its Students' Union). The initiative's use of student mentors to engage in a range of local volunteering tasks is reducing energy, minimising waste and producing other environmental benefits, whilst providing educational and personal development benefits to participants.

Student Initiatives

HIGHLY COMMENDED

University of Loughborough Students' Energised into Hall Rivalry

'I charge by the hour' and 'Don't just turn me on and leave me' are two of the eye-catching marketing slogans used in an inter-hall energy competition. Some 3000 residents are enticed to reduce energy consumption through a reduced price bar at a termly party, and the 'feel good' factor of monthly payments for carbon sequestration.

The competition was financed by a £4,000 grant from Imago Services, the University's residence management organisation. In 2005-6 it resulted in an overall 4% decrease in energy from the halls involved, financial savings of £6,243 and nearly 60 tonnes fewer carbon dioxide emissions. Some of the halls achieved savings as high as 22%. The savings were maintained in the 2006-07 period, with a further 5% reduction.

Campaign material using the catchy marketing slogans were distributed throughout halls, along with hall energy events, placement of notices and the display of results on the Students' Union web site.

According to Simon Alsbury, the Union's then Ethical and Environmental Officer, and founder of the scheme, "the competition has changed the image of ethical and environmental issues within the student body, and led to a substantial increase in the level of awareness and volunteering." This has enabled the Ethical and Environmental Group to do more, such as organising a well attended Fairtrade fortnight, and a campus sustainability awards scheme.

Simon Alsbury also notes other benefits. "The students who have become more involved in hall teams and/or Union activities have developed useful personal skills such as marketing, event organisation and team working. The competition has helped develop the working relationship between the Union, Imago Services, and Estates Services, which has to be good for everyone."



Rutherford Hall, where a blackout was held during the competition.

Judge's Comments on Student Initiatives (continued)

Loughborough Students' Union's league table of hall energy savings is an original and enterprising project which motivates students to use less, and raises awareness of sustainability issues. It cleverly updates the university tradition of friendly rivalry between residences into a modern form, taps the energy of students by putting them in the driving seat, and can be readily replicated in other institutions.

- For students studying education, social sciences, architecture, and building and planning, 45% said an institution's record on sustainable development was important or very important in choosing where to study - UCAS Future Leaders Survey

HIGHLY COMMENDED

North Devon Student Green Group Has a National Impact

North Devon College is a relatively small further education college in Barnstaple. To have an active student group promoting green issues is unusual for such an institution - and all the more so when it has an impact outside the college, and even a national influence.

The Student Green Group was founded in 2005. Although it has received modest support from the College - three hours of staff time a week to facilitate discussions and actions, and funding for stationary and similar expenses - it is autonomous and sets its own objectives.

At campus level, the Group has been represented on the College's Environmental Working Group, run successful campaigns to increase recycling facilities, lowered the price of Fair Trade products in food outlets, and organised lunchtime debates and volunteering activities with the National Trust. It has also contributed to local debates through protests, letters in the press and other means.

One especially successful initiative has been the creation of a peer-to-peer educational tutorial on climate change which emphasises the impact of individual choice on sustainable and equitable development. This tutorial has been delivered to over 200 people, many of them outside the College - including students at a local secondary school and the University of Plymouth, and teachers at a training day.

At a national level the group have participated in national demonstrations, had articles published in national magazines, and participated in an Environment Agency Conference. In addition, the group have been successful in raising funds and awareness for local and national charities, including Oxfam, World AIDS Day and Operation Christmas Child.



Pete Jolly, a youth worker at the College who assisted the founders, believes that "groups such as this provide a practical demonstration that many young people are passionate, motivated and committed to learn and act for change on socio-environmental issues of concern to them. They simply need a voice and a role in the decision-making process. It also helps the College by enhancing relationships between students, staff and senior managers, and reputation. For example, the work attracted favourable comment in the recent Ofsted inspection."

Group members Rachel Rowan, Ellie Hanson and Alex Lodge on the march

Judge's Comments on Student Initiatives (continued)

The Student Green Group at North Devon College is an impressive example of what can be achieved even within relatively small institutions. This campaigning group has had a regional and even national impact through its successes in areas such as recycling, fair trade, charity initiatives, and peer education. It demonstrates how much can be achieved through harnessing and encouraging student energy and enthusiasm.

Sustainable Construction

WINNER

Doing up the Strand - Sustainable Refurbishment at King's College, London

Since its opening in the 1830s, the listed King's Building has been modified many times. Refurbishment of an 8,800m² wing - much of it unoccupied because of poor condition, and relocation of previous users - became a priority in 2002. The conventional solution, according to Director of Estates, Ian Caldwell, "would have been to accept the modified structure, and to modernise its services, including installation of a central air conditioning system. However we wanted a sustainable solution to make the building more attractive to users and the community, and also to reduce or contain energy and other operating costs."

The solution was removal of accretions such as mezzanine floors, book lifts, and partitions, and consolidation of services into 'micro-risers' in the main corridors. This allowed restoration of the more open spaces, higher room volumes, and greater window area of the original design, and enabled high use of natural lighting and ventilation. Re-establishing a visual relationship between circulation spaces and staircases also reduced lift requirements.



Anti-glare shutters in a King's Building teaching room

Other measures to restrict air conditioning to a few specialist areas include opening windows and ceiling fans, purpose-designed internal shutters to control solar gain (and provide better light control for presentations), and renewal - with insulation - of the double-storey slate roof to reduce summer solar gain (as well as heat loss in winter). Integral rooflights also bring natural light into the heart of the building.

Additional sustainable features include an 80% recycling of demolished materials, 100% use of FSC certified timber, occupancy sensing control of lighting and urinals, and an advanced building energy management system.

Feedback on the building has been very positive, especially after training about its features. According to Energy Manager, Keith McIntyre, the "energy benefits are enormous. Even with more usable space, annual electricity consumption is down 18%, and gas by 11%. This has saved £96,790 a year, with little if any additional capital expenditure needed to achieve it."

Judges' Comments on Sustainable Construction

"Refurbishment is a topic of growing importance. Much of the sector's estate is in poor condition, and financial pressures require maximum use of existing space (which is also environmentally beneficial). The renewal of the King's Building shows that - by simply doing the right things - this can be achieved in a very sustainable way. The considered quality of the design, and the efficient delivery in practice, is most impressive. In particular, the imaginative decision to remove the many retrofits which occurred over previous years has both optimised the use of natural ventilation and day-lighting, and restored the College's heritage. The 80% recycling or reuse of wastes was also a major achievement, which required very thorough record keeping. The end result is a revitalised nineteenth century building with an interior that meets all the requirements of third millennium higher education."

- UK universities construct around 250 new buildings each year, and refurbish many more

HIGHLY COMMENDED

Dundee's Green Tribute Saves Money and Attracts Students and Staff

The University of Dundee's Queen Mother Building consolidates the previously separated activities of the Department of Applied Computing. The computer and research labs, plus offices, are in clusters of circular 'pods', grouped around a central services spine. The teaching rooms and other public spaces are free-standing within a triple height atrium. The simplicity of this pod design facilitates natural ventilation, makes maintenance straightforward (as does the use of simple interior finishes), and enhances flexibility, especially in the public areas. The building has also been designed for easy expansion by adding an additional storey. Other sustainable features of the building design include optimisation of:

- **orientation** - smaller windows on the south side minimise solar gain and glare on computer screens, whilst larger ones on the north side take advantage of good natural light and the views
- **thermal mass** - load bearing brick walls buffer internal and external heat gain and loss
- **internal layout** - the shape of the pods allows cross ventilation and enables a cellular form which gives most building users access to windows that can be opened
- **insulation** - the building has U-values of 0.18W/m² for the roof, 0.23W/m² for the walls and 0.25W/m² for the floor, while the windows are double-glazed with low-E glass.

The University's Combined Heat and Power (CHP) station provides the building's electricity and heat. This generates financial savings and reduces carbon emissions by 75%, compared to a conventional, air conditioned, computer laboratory.

According to Michael Sinclair, the building's Project Manager, the University "achieved these benefits with a cost of £1,670 per m², which is fairly low for a computer facility, and comparable with industry norms. The building's airy feel and pleasant working spaces have also made it hugely popular with users. Perhaps too much so, as both staff and students prefer to work and study in it rather than use some of the other facilities on the campus. But we've certainly achieved our objective of an iconic building, which enhances networking, and allows us to attract some of the best staff and students in a very competitive field."



Judge's Comments on Sustainable Construction (continued)

The Queen Mother Building is not pioneering, but provides an exemplar of how to achieve sustainable new build. It demonstrates a very detailed and well thought through RICS A-D design phase with the sustainability agenda at its core. This has produced an uncomplicated but effective design to achieve a very successful building for both users and the environment. The design also makes excellent use of its site, for example, by having a small façade area facing south to limit solar gain in the summer. The use of waste heat from the CHP plant is also commendable, as is the high local content of its materials.

Colleges and Smaller Institutions

Continuous Improvement

Course Content (Degrees)

Course Content (Vocational)

Energy & Water Efficiency

Student Initiatives

Sustainable Construction

Annual energy costs for the FHE sector (which are around £200 million, and result in CO₂ emissions of around 3½ million tonnes) could be reduced by 20%

Carbon Trust