

GREEN UCL



UCL



UCL
SUSTAINABILITY
ANNUAL REPORT
2013-14



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Back to the future: a university in transition

Professor Graham Hart is Dean of the UCL Faculty of Population Health Sciences and Chair of UCL's Environmental Sustainability Steering Group

In 1826, work first began to transform eight acres of marshland and waste ground – in what is now North-Central London – into the flourishing University you see today.

Over decades, through expansion, improvement and recovery from damage during the Blitz, UCL's estate has supported and enabled our work.

We know that for UCL to continue its vital mission, many areas of our estate need to undergo a transformation: to improve teaching and learning spaces; to become more accessible; to be more efficient.

UCL is embarking on the largest set of building projects since construction began in that muddy field nearly 200 years ago. And this work will help ensure that the University continues its pioneering research, breakthrough discoveries and world-class teaching for generations to come.

However, we know that to achieve sustainability this transformation cannot be limited to our estate.

We face a world of new challenges: a changing climate, depleted resources, declining biodiversity.

So whether it's through your research or teaching, the way departmental resources are managed, taking part in volunteering or campaigning, how you get to work, the products and services you consume: we all have a part to play. Join us in helping to build a UCL fit for the future.

This year's Annual Report maps our challenges and progress in embedding sustainability across UCL. For me, some of this year's highlights include:

UCL's highest ever number of building and refurbishment projects shaped by stringent sustainability criteria; ensuring elements like FSC timber, low-energy lighting, occupant wellbeing, recycled furniture and 99% of waste diverted from landfill are at the core of how projects are designed and built.

Testament to the dedication of a large number of our staff, 44 departmental teams took part in the UCL Green Impact programme,

taking over 1,000 actions to improve the environmental performance of their workplaces.

And as usual, a diverse range of inspiring public engagement and outreach took place, helping to widen the influence of our teaching and research. Projects like UCell, a group of doctoral researchers using their micro hydrogen generator to bring this pioneering technology to new audiences.

I commend this year's report to you.

Professor Graham J Hart FMedSci

Dean, UCL Faculty of Population Health Sciences. Chair, ESSG

A year of challenges and successes

Richard Jackson is Director, Sustainability at UCL. His main focus is driving forward UCL's Sustainability Strategy.

Driving forward environmental improvements is an inherently collaborative task. With hundreds of buildings, a huge variety of research projects and more students every year, creating a more sustainable university isn't something you can do in a vacuum.

So first, a big thank-you from all of us on the Sustainability Team. UCL's progress depends on the hard work, energy and commitment of a large number of staff and students, many of whom put in a huge amount of effort on top of their regular work.

And it really does pay off. In 2013, UCL jumped from 89th to 61st place in the People & Planet University League of environmental and ethical

performance. We know that we've still got a way to go, but I hope you'll agree that this really does show that we're making progress towards a more sustainable UCL.

We know that creating this more sustainable university isn't just about tackling the impact of our buildings and operations. As you'll see in this report, it's also through supporting world-leading research, conducting brilliant public engagement and the thousands of hours our students spend volunteering in the local community every year.

Thank you again, and we look forward to working together in the year ahead.

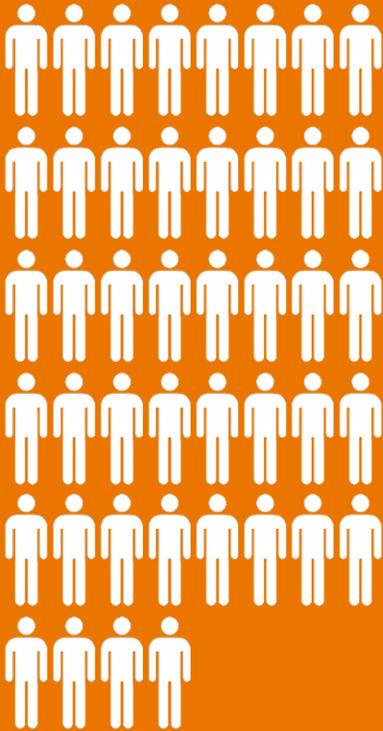
Richard Jackson
Director, Sustainability



Students about to deliver environmental audits as part of UCL's Green Impact programme

The year in numbers:

44 teams
took part in UCL
Green Impact



up from 27 in 2012-13

62% of waste
recycled



8% higher than the average
UK HE institution

[HESA EMR 2013-14]

3,000 tonnes of
CO₂ per year
saved through
maintenance
work



**Largest ever number of construction
projects shaped by sustainability criteria:**

11 BREEAM projects
13 SKA projects

up from 1 BREEAM and 4 SKA projects in 2012-13



50,000kWh
of energy
saved during
the Big Easter
Switch Off



**UCL moved
28 places up
the Green
League**



UCL moved
from 89th place
in 2012-13 to
61st in 2013-14

1,000
Green Impact
actions taken
by staff and
students

CASE STUDY Cruciform Hub

In 2013, the Cruciform Library, cluster and seminar rooms were refurbished to create new and improved spaces for teaching and study. Rigorous sustainability criteria were used to shape all aspects of the project, from the use of energy efficient lighting and sustainable timber to over 99% of all waste generated by the project diverted from landfill or recycled.

The Cruciform Hub provides a library, study space, group workspaces, computer clusters and seminar rooms within the lower ground floor of the Grade II listed Cruciform Building. Blending the iconic building's heritage with cutting-edge design, the refurbishment created a welcoming hub suited to the diverse needs of UCL staff and students.

Sustainability considerations were taken into account in all areas of the project, from the materials and furnishings used, to the services installed and the way waste from the project was disposed of. Most notably, 99.8% of all waste generated by the project was diverted from landfill, including 100% of waste wood going on to be recycled. 100% of all timber used on the project was also FSC Certified and the new carpets laid in the space can be recycled at the end of their life. There were also a range of different interventions included to reduce energy use, including LED lighting, occupancy sensors and sub-meters to provide accurate information about consumption.

"It's essential that sustainability considerations are placed at the core of building and refurbishment projects. They're not just add-ons or 'nice-to-haves'. The inclusion of these considerations at the design, handover and occupancy stages helps to create spaces that support our business, are healthier and are more efficient to run in terms of costs and resources such as energy and water."

- Stephanie Chesters, Sustainability Manager





Creating a sustainable campus

This year, our campus has continued to experience significant change as a result of institutional growth. UCL's highest ever number of building projects, shaped by rigorous sustainability criteria, have been undertaken; putting elements like FSC timber, wellbeing and energy efficiency at their core.

Energy and Carbon

During the 2013-14 period, UCL used 197,232,735 kWh of energy in heating, cooling, lighting and powering its appliances and equipment. And generating this energy produced around 63,342 tonnes of carbon dioxide; equivalent to the annual consumption of nearly 10,000 typical UK households. This year, the carbon emissions associated

with the energy used to power the campus (known as our Scope 1 and 2 carbon emissions), have increased by around 2% against the university's 2005-6 baseline of 62,030 tonnes, as defined in UCL's Carbon Management Plan¹.

One factor in this increase in carbon emissions has been institutional growth^[1].

1. This increase is partly due to institutional growth, but also due to changes in the conversion factors used to determine the carbon intensity of the grid electricity UCL is supplied with. UCL's current carbon targets assume that a higher level of grid decarbonisation would have been achieved by 2013-14, in line with what would be needed to meet the UK's legally-binding climate targets.

Since 2005-6, the university has grown from 23,578 to 35,131 full time equivalent (FTE) staff and students: an increase of 49%. From 2012-13 to 2013-14 alone, it grew by 10% in terms of staff and student FTE and 8% in terms of m² of total internal area.

Having previously installed 37.5 kW of solar panels and an integrated biodiverse roof on student residence New Hall, these panels came online during 2013-14 and have begun generating electricity.

During 2013-14 the Cruciform Hub and Bernard Katz building were refurbished, and will result in approximately 75 tonnes of carbon dioxide being saved per annum through the introduction of insulation, LED lighting, improved lighting controls and new heating and ventilation.

And as part of routine maintenance to replace broken or inefficient equipment it has been possible to save in the region of 3,000 tonnes of carbon dioxide a year. Examples of equipment replaced and re-commissioned include boilers, LED lighting, lighting controls, lifts and specialist lab equipment. Further improving this impact, savings on energy bills resulting from some of these projects will be ploughed back into new energy efficiency projects next year.

Waste and Recycling

3,530 tonnes of waste was produced during the 2013-14 period (excluding hazardous waste and waste produced at UCL residences), with 68% of these materials going on to be recycled. Residences produced 653 tonnes of waste, with approximately 33% of this going on to be recycled. For the first time, UCL can provide approximate figures for construction waste. For the 2013-14 period, UCL produced an estimated 397 tonnes of construction waste, of which approximately 75% was recycled. We know that producing a better standard of recyclable material is essential, as contamination often prevents this material from being recycled. At a rate of 62% recycling overall, this reduction from a recycling rate of 69% in 2012-13 represents a renewed push to collect higher quality, less contaminated recyclable materials from the UCL campus and student accommodation. This

decrease can also be explained in part by the gathering of better data about UCL's waste. Previous figures were based substantially on estimates from visual inspections. Now, in-vehicle weighing in waste trucks is used to give far more accurate figures about our waste.

It is estimated that over five tonnes of material was reused through UCL's 'WARPiT' equipment and resource-sharing platform (accessible at www.warp-it.co.uk/ucl), with an approximate saving of around £50,000. Almost four tonnes of items were also collected from student residences at the end of the year as part of the student-led 'Junk in the Trunk' project, with these items going on to be reused by charities across London.

Construction

This year, 11 of UCL's building projects were shaped by BREEAM, the world's most widely-used method of certifying the sustainability credentials of buildings. At the design stage, 2 of these projects achieved BREEAM 'Outstanding', 7 'Excellent' and 2 'Very Good'.^[1]

A large number of projects were also informed by the RICS SKA methodology. SKA is an environmental assessment method and benchmarking system that provides a robust and structured way determine best practice in 'fit-out' projects. It ensures elements like FSC timber, low-energy lighting, occupant wellbeing, recycled furniture and over 99% of waste diverted from landfill are at the core of how these projects were designed and built. This year 13 projects were assessed at the design stage, receiving 9 SKA Gold and 4 SKA Silver rankings. A further 7 projects were assessed at handover stage, receiving 4 SKA Gold and 3 SKA Silver rankings.

The Sustainability Team is also working on the development of a bespoke SKA rating system for the Higher Education sector. This vital work will help to create a free tool tailored to the specific needs and operations of the sector, which will help universities across the UK to drive sustainability improvements in their refurbishment and fit-out projects in a structured and rigorous way.

1. BREEAM projects have a very long design life and therefore the same projects may be listed for a number of years as the Sustainability Team continues to work with them throughout their life cycle.

CASE STUDY

Hydrogen-powered outreach from UCL students

UCL students are spreading the word about pioneering low-carbon energy sources by providing hydrogen power at festivals, UCL events and demonstrations in schools.

UCell are a team of PhD students, lecturers and industrial partners working on electricity production from hydrogen. Their aim is to demonstrate the real potential of alternative energy sources by providing fuel cell-generated electricity to events, along with public engagement and demonstrations to inform and educate about new energy technologies. Using their own hand-built mobile fuel cell to convert hydrogen gas into electricity, they attend (and provide power to) a hectic schedule of events. These include offering renewable mobile phone charging at Glastonbury Festival and providing power for a performance tent at Green Man Festival, as well as outreach in schools and working alongside the UCL Sustainability Team.

This year, they'll showcase a new, more powerful system and also offer demonstrations on solar power, electrolysers and fuel cells to build further awareness of the potential for low-carbon energy generation. Vidal Bharath, a PhD student in the Department of Chemical Engineering and member of UCell, explained the benefits of their work:

"Raising awareness of new low-carbon technologies is vital in the path to commercialisation and adoption by the public. At UCell, we have found that our outreach and engagement activities have been an essential tool in illuminating the current work of scientists and researchers in the area of green technology. By providing hands-on demonstrations and activities at events with diverse audiences we have helped the public better understand fuel cells and stimulated debate around the wider issues of sustainability."

Find out more at: www.ucl.ac.uk/ucell





Supporting the UCL community

Sustainability is for everyone. And to really make an impact, it's essential that we get everyone, staff and students, on board. This year we've made real, lasting progress in increasing engagement across the university, including nearly doubling the number of teams participating in our Green Impact programme, achieving an EcoCampus Gold standard for our Environmental Management System and saving almost 50,000 kWh of energy during our Big Easter Switch Off programme.

At the core of all sustainability activity across the university are UCL's Green Champions. UCL's Academic Manual states that all departments should have a member of staff with environmental responsibilities. Often filling this role, staff and student Green Champions drive forward environmental improvements in their own departments and divisions, often on top of already busy schedules, to massively increase the reach and influence of UCL's sustainability programmes.

And this vital network doubled from 40 to over 80 Green Champions in the 2013-14 period, bringing us closer to the full coverage UCL needs. In keeping with this increase in activity across UCL, participation in our Green Impact programme jumped from 27 to 44 departmental teams in 2013-14. Green Impact is an annual programme that focuses on staff and students working together to improve the environmental impacts of their departments and divisions.

It breaks down the challenge of making these improvements into simple, structured steps. This year, around 1,000 actions were taken to improve purchasing, energy efficiency, sustainability literacy and recycling. 30 students also received auditor training and delivered environmental audits as part of the programme.

Providing a structure for all our activity across UCL lies our Environmental Sustainability Management System (EMS). This framework allows us to track performance against the targets set out in our Sustainability Strategy. Currently used in nearly half of Russell Group universities, EcoCampus is the leading tool to assess environmental management in Higher Education, and focuses on continuous improvement to UCL's practices, procedures and compliance with environmental legislation. In 2013-14, the Sustainability Team coordinated action across the Institution to successfully achieve the EcoCampus Gold standard. This is the third stage of work towards the ISO 14001 accreditation, which we are seeking to achieve in 2016.

The Residences' energy-saving competition Student Switch Off ran across all UCL accommodation this year, with large numbers of students taking simple actions to reduce their energy use. Total electricity use was

reduced by around 2.8%, 60 students were trained as Student Switch Off Ambassadors and nearly 1,000 took the Student Switch Off Climate Change Quiz as part of the programme.

Our well-received 'Green Resolutions' video involved a diverse spectrum of the UCL community, with participants including UCL President and Provost Professor Michael Arthur, staff from UCLU, Security, UCL Estates and students from a range of subjects all sharing their green new-year's resolutions as part of a social media campaign across UCL.

The Big Easter Switch Off, our campaign to raise awareness about the possible energy savings that could be made by switching off lights, appliances and equipment over the Easter holidays, seemed to really catch the imagination of the UCL community. Nearly 500 staff and students pledged to switch off in their departments, with almost 50,000 kWh of energy saved over the holiday period.

And alongside this, a range of events, from bike maintenance and security marking, consultations sessions and lectures took place across the university to increase the visibility of the Sustainability Team and promote opportunities to participate in improving the impact of UCL.



Students taking part in Student Switch Off demonstrate different energy-saving actions

CASE STUDY

Cross-disciplinary collaboration to increase recycling

Unlocking the huge amount of knowledge and expertise within our academic community forms a vital tool to tackle UCL's own sustainability challenges. In the spirit of this approach, academics from the newly-established UCL Centre for Behaviour Change led a study to evaluate the effect of interventions to increase recycling rates, with UCL staff and students as their focus.

With the aim of setting an example both for multidisciplinary working, and academic and Professional Services partnership, the study represents a collaboration between a range of groups including the UCL Centre for Behaviour Change, UCL Sustainability team, UCL Estates and Bywaters (UCL's waste management service provider).

Funded by a small grant from the Grand Challenge of Sustainable Cities, researchers analysed the effect of introducing a two-bin recycling system, better bin placement and signage, as well as running information campaigns and incentivising the removal of under-desk bins. Two papers reporting the study findings have been submitted to environment and sustainability journals, and its next phase will see its results built upon to devise improved recycling interventions. The study's coordinator, Dr Lou Atkins, explained the motivation behind the project:

"UCL's large estate and operations provide the ideal environment to test a whole range of interventions. And we know that collaboration with partners beyond the academic community is key for research in this type of real-world setting. By working together, we can create a win-win situation that improves UCL's operations while providing high quality academic insights"



Supporting UCL's academic aims

This year, we've continued to develop our work on the UCL Living Lab; our programme to link UCL's research and its estate and operations. Collaborating with the Office for the Vice Provost for Research, we've helped to create an online environment domain to showcase UCL's environmental research activities. And UCL's Global Citizenship Programme has continued to help large numbers of students to develop leadership in the face of complex global challenges.

We're committed to expanding (and improving) our approach to our Living Lab; a programme of work that brings together academic and estates staff to use the university campus as a test bed for research. We believe that unlocking this expertise can form a vital tool to tackle our own sustainability challenges.

In the spirit of this approach, this year we worked

with academics from the UCL Centre for Behaviour Change on a study to evaluate the effect of interventions to increase recycling rates on our campus (case study left). This is just one example of this approach, but we hope it demonstrates the potential to create a win-win situation which improves the impact of university operations, while providing high quality academic insights.

We've also continued our collaboration with academics on a module of the BASc, supporting groups of students to design and create water meters which were installed and tested on UCL's own plumbing. Whether it's with a focus on energy, water, construction or biodiversity, an increasing number of academics across UCL are using the campus as a test bed for research and study.

In line with UCL's Sustainability Strategy, the Sustainability Team has worked with the Office of the Vice Provost for Research to create an online environment domain to support the promotion of UCL's environmental research activities. This has now been completed and allows easy access to all the environmental sustainability research activities being undertaken across the university. It can be accessed at:

www.ucl.ac.uk/research/domains/environment

Alongside this, UCL's Global Citizenship Programme is engaging a large number

of students with the complexities of the global sustainability agenda, helping them to develop the skills, employability and leadership to tackle interconnected global challenges.

For two weeks after summer exam period, the programme provides a range of opportunities for UCL's taught students. First and second-year undergraduate students can choose to focus on themes based around one of UCL's four Grand Challenges. This includes lectures and project work exploring the relationships between people and the sea, the challenges and potential for promoting sustainable and equitable cities in the context of urbanization and globalization, and the global health challenges facing the world's cities.

During 2013-14, 450 students took part in the programme, with numbers expected to continue to rise in future years.





CASE STUDY
Students turning animal waste into energy

Students and researchers from the Department of Civil, Environmental Geomatic Engineering (CEGE) are leading a project with Surrey Docks Farm that uses a biodigester to turn the farm's animal waste into sustainable energy and high value liquid fertiliser.

Collaboration with local organisations is at the core of many of UCL's innovative student research projects. Surrey Docks Farm is a working farm built on two acres of land in South London; a vital green space and community resource within the busy docklands area of South London.

The project, which was established in 1975, now works with local communities and groups across Southwark, providing educational opportunities and the chance to become actively involved in the life of a working farm.

CEGE has been working with the farm on a biodigester project designed to turn animal waste generated on site into sustainable energy and high value liquid fertiliser. Initially funded by a Grand Challenges for Sustainable Cities small grant, a team of six Environmental Engineering MEng students led by Dr Ilan Adler designed and installed the biodigester in the early part of 2014. The project then made it to the finals of the International CleanTech Challenge competition that year. Since then, several other students have also conducted research project building on this work.

Dr Ilan Adler explained the benefits of this practical approach to research:

"The Surrey Docks Farm biogas project is allowing students to engage in practical, applied research that can bring enormous tangible benefits to the local community and other parts of the world, particularly to developing countries. It is also a great example of South-North collaboration, where a technology developed in Mexico by a social enterprise is imported and adapted to the conditions of the UK and the EU"

Photo credit: Marc Usher



Creating a wider impact

Through our research, partnerships, and collaboration with industry and other universities, UCL has many wider positive impacts. Alongside our work with a range of organisations, we're helping to develop a sector-leading tool to improve the environmental credentials of Higher Education construction projects. And recognising efforts made across UCL, we also moved up 28 places in the People & Planet Green League of UK universities.

Compiled by student campaigning organisation People & Planet, the Green League is an independent ranking of UK universities on their environmental and ethical performance. And this year, we jumped from 89th to 61st place. There's still much work to be done, but this improvement really is testament to a huge amount of effort put in across the university.

We know that collaborative working is an essential component of generating wider positive sustainability impacts. And we've continued to work with external partners on a number of initiatives. For example, through our membership of the London Universities Environmental Group (LUEG), including chairing its Sustainable Procurement Sub-Group, we're building links and sharing best practice.

A key focus of our work has also been the development of a bespoke SKA rating system for the Higher Education sector. SKA is an environmental assessment method and benchmarking system that provides a robust and structured way determine sustainability best practice in 'fit-out' projects. It's already used across the construction industry to drive environmental improvements to offices, but the Higher Education sector has many unique features.

This vital work will create a free tool tailored to the specific needs and operations of the sector, which will help universities across the UK to make sustainability improvements in a structured and rigorous way.



CASE STUDY

Student volunteers support local green projects

Clocking up tens of thousands of hours of volunteering each year, UCL's students use their expertise and enthusiasm to support a huge range of projects both locally, nationally and internationally. Since their inception 12 years ago, UCLU's dedicated Volunteering Services Unit have worked with staff at The Calthorpe Project in King's Cross to provide large numbers of students with the opportunity to get stuck in, grow produce, and support this vital community resource.

The Calthorpe Project maintains a garden to allow hands-on contact with nature in the heart of London. It provides a green space in which to relax, along with vegetable plots, an area of woodland and a wild garden stuffed with biodiverse plant species. These are used for activities with a wide range of different groups, from small children to pensioners, to cultural associations and UCL's own student volunteers.

This year, UCL students helped continue to maintain the garden, as well as undertaking research and creating a new polytunnel, beehive and lots of wood-fired pizzas. John Braime, Manager of the UCLU Volunteering Services Unit commended their efforts:

"UCL's students produce benefit beyond just their academic work. Whether it's through outreach in schools, conservation, support work or gardening, they support a whole range of local community organisations to deliver their objectives and make a real, positive impact"

Nathan Too, a student at UCL, described his time volunteering on with the project:

"It was great to be part of the Calthorpe project, I had no idea that it was hidden away not too far from campus. I really enjoyed the chance to work in the local community and see a project that is having such a positive impact. It is a stunning little park and I would recommend you go see it!"



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