

# CLIMATE ACTION

MADE AT UNI



HOW **UK UNIVERSITIES**  
ARE TACKLING THE  
CLIMATE EMERGENCY

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# FOREWORD FROM LILY COLE

In a recent study by the Intergovernmental Panel on Climate Change, scientists from around the world warned us that it is 'now or never' to take action that could limit the most devastating impacts of climate change. In response to the report, U.N. Secretary-General António Guterres said "we are already perilously close to tipping points that could lead to cascading and irreversible climate impacts" and "firmly on track toward an unlivable world." It is hard to over-estimate the stakes of the predicament we – the people alive at this critical moment in time – find ourselves in.

As an environmentalist for the past two decades, I've watched as climate scientists have become increasingly more desperate in their warnings – and their climate predictions have become ever more real. I have also been heart warmed to watch the rising tide of environmental activism swell up around the world's shores, as people from different generations, countries and backgrounds, have joined scientists in calling for urgent change.

As an example – and the one I know best, as I studied there – the University of Cambridge is using its research facilities to explore climate solutions, such as developing a plant-based film which mimics the properties of spider silk, and could replace single-use plastics in many consumer products. Meanwhile, a group called 'Cambridge Zero', run by Professor Emily Shuckburgh OBE, has been formed to maximise the University's multi-disciplinary capacity to drive a resilient, zero-carbon world.

**“** *Reading the MadeAtUni report, I was inspired to learn about different examples of the innovative climate work being done across the country by students* **”**

As both inheritors and creators of the future, young people occupy a particularly potent place in this crisis, and it is perhaps unsurprising that much of recent climate activism has been driven by the youth. Universities have an important and multi-faceted role to play in this response: educating the next generation; influencing policy makers; tackling their own emissions; and through their unique capability to drive critical research.



Image: © Patricia Imbarus



Cambridge University also developed guidance on how the UK Government's Treasury might better align their environmental plans with their wider economic policy. The Review argues that GDP (Gross Domestic Product) is failing to measure the true economic health of nations. Sir Partha Dasgupta, lead author of the report, argues that GDP is "based on a faulty application of economics" that does not include "depreciation of assets" such as the degradation of the biosphere. Dasgupta states, "my overarching aim is the reconstruction of economics to include Nature as an ingredient."

Like the Treasury, universities also need a coherent climate strategy that aligns their environmental and economic positions, by addressing their own emissions and investments. Whilst it is encouraging

that 60% of UK universities have committed to fully divest from fossil fuels, it is critical that the remaining 40% of universities urgently review their investments, to ensure their own economic health as well as the health of the planet.

Reading the MadeAtUni report, I was inspired to learn about different examples of the innovative climate work being done across the country by students, pioneering and researching ideas as far ranging as developing green hydrogen and community solar energy; to mushroom farming with microalgae and even producing 'climate positive' gin!

I was delighted to learn that the world-famous 'Pollution Pods' – a set of domes designed to create an immersive experience of pollution from five cities around the world – were developed by East London University students working with artist Michael Pinsky.

**“ Universities have an important and multi-faceted role to play in this response: educating the next generation; influencing policy makers; tackling their own emissions; and through their unique capability to drive critical research. ”**

Brighton University students have created Europe's first permanent public building made almost entirely from waste material. University students have created vertical farms and recycling guides; whilst monitoring everything from air pollution, marine conservation, and red squirrel populations. This report shares some of the wonderful endeavors driven by students across the UK to date, yet much of the promise no doubt lies in what is yet to come.

**Lily Cole**

**Author and podcaster on climate solutions (Who Cares Wins); model, actor, and filmmaker.**

# FOREWORD FROM UNIVERSITIES UK



## The need for climate action has never been greater than it is today.

According to the latest global study on climate change, the UK is experiencing wetter winters and drier summers. We will see more frequent flooding in the coming decades, and heatwaves are a rising threat. Increases in extreme weather will put strain on housing, agriculture, transport and supplies – things we depend upon to go about our day-to-day lives.

We need urgent and ambitious solutions to prevent further global heating, and to protect our planet from the challenges brought about by climate change. And we need to ensure that no one is left behind: by creating green jobs, boosting climate literacy skills, and inviting our wider communities to be part of the solution.

***We also need to ensure that the next generation is given the chance to build the knowledge, skills, experience and careers they need to continue this vital climate action.***

Universities are crucial to this. A university education can make all the difference in helping students build the knowledge and skills that will help them to make a positive impact on the planet, whichever discipline or career they choose.

With this in mind, we conducted UK-wide research of parents of 16-18 year olds – the age when many young people decide whether to go to university – to see how they feel about the role universities currently play in dealing with the climate emergency.

The results were mixed: just four in ten parents believe that universities in the UK are equipping students with knowledge about climate change.

What's more, although nearly every university in the country has a published sustainability strategy, less than half of parents recognise that universities are researching solutions to climate change, with only a quarter thinking they communicate to the public about their efforts.

Yet our findings show that parents are making the connection between their children attending university and developing the know-how needed to become part of the solution. The number of parents who believe it's important for their child to complete an undergraduate degree rose to 70% when considering their child pursuing a career which helps to tackle climate change.

But out of a wide range of degree subjects, our results show that parents only believe a small number of these are equipping students with the skills and knowledge to tackle climate change. It's vital that we make parents – and as a result, their children – more aware of how universities are embedding climate literacy across the curriculum and in every discipline.

This report aims to evidence the impact of universities across the UK, offering a snapshot of how they are super-charging climate action on a local, national and global scale. We hope that by reading it, you'll be inspired to support their actions and become part of the climate solution.

**Professor Steve West, President, Universities UK**

# CREATING GREEN JOBS



With the average person in the UK spending 3,507 days at work in their lifetime, it's worth trying to incorporate more environmentally-friendly practices into our everyday work. And creating new green jobs means providing opportunities for everyone to help build a more sustainable future.

Green jobs exist in traditional sectors like manufacturing and construction – helping to adapt products and processes to reduce emissions – as well as in new, emerging industries like renewable energy.

From solar panel installer to eco-fashion designer, the roles vary enormously. And the opportunities aren't just for scientists and engineers. A sustainable future will need people with skills in marketing, sales, management and more, across a range of sectors from transport to healthcare.

By partnering with local businesses and councils, universities are helping to create thousands of green jobs across the UK, and providing the skills and training employees need to develop game-changing climate solutions.

## University of Sheffield – Super-charging green hydrogen

'Green hydrogen' could be the fuel of the future. Produced using renewable energy, its only by-products are water vapour and oxygen, making it the only net-zero fuel source. This makes it a prime candidate to replace fossil fuels, which emit dangerous pollutants and contribute to global warming.

The **University of Sheffield** has partnered with world leading clean fuel company ITM Power to take green hydrogen to the next level by opening a brand new factory in Tinsley, Sheffield. The Gigafactory will be up and running by 2023, manufacturing green hydrogen to replace harmful fossil fuels in our transport, heating and industrial processes.

This partnership includes the development of a new National Hydrogen Research, Innovation and Skills Centre, which will create new jobs at all levels of the hydrogen sector and provide unique training and career development opportunities in a rapidly evolving industry.



## CREATING GREEN JOBS

### University of St Andrews – On track to greener trains

As well as needing skilled workers to manufacture hydrogen, to make it truly fit for the future we need to start using it in places where we currently rely on fossil fuels.

The University of St Andrews is propelling this work forward with the conversion of a 40-year-old class 314 train into a hydrogen fuel cell electric powertrain. In partnership with Transport Scotland, the project is a novel example of how retired trains can be brought back into use in an environmentally friendly way, and demonstrates how clean energy is a viable fuel for the future.

Like Sheffield's Gigafactory, the project will generate jobs in the hydrogen sector, as well as jobs across the rail industry and opportunities for Scottish businesses based nearby. The project is also providing a welcome boost to the tourism industry, as the conversion is being carried out at the BoNESS & Kinneil Railway, a heritage railway which suffered as a result of Covid lockdowns and restrictions, but is now seeing renewed interest.

### University of Strathclyde – Clean energy from the Clyde

The River Clyde has an impressive history, making important contributions to ship and yachtbuilding for centuries. It will now play a key role in Glasgow's sustainable future, thanks to an innovative project by the University of Strathclyde.

In partnership with Glasgow City Council, the aim of the project is to create a Climate Neutral Innovation District – a 170-hectare area within the city that is

100% powered by renewable energy. By using heat pumps to capture heat from the Clyde and deliver it to the district, emissions could be reduced by up to 93%, improving the health and wellbeing of local communities in addition to the environmental benefits.

This concept of a district which combines renewable heat, power, transport, climate adaptation and wellbeing solutions can be replicated anywhere in the UK, and even globally. Alongside the environmental benefits, the jobs the district will generate across all the above sectors will ensure that local communities stand to benefit long into the future.



#### **Focus on: green careers**

Universities across the UK are encouraging students to pursue a green career.

**Newcastle University** hosted the virtual Newcastle Student Climate Change Summit to talk about Newcastle and **Northumbria University's** commitments to climate action, and to cover the work and opportunities available for students to help tackle the climate emergency. Invest Newcastle offered an overview of potential careers in the green economy, and students heard from NE1, Newcastle Hospitals Trust, utility company Engie and global financial institution The International Finance Corporation on a wide range of ways they can become part of the solution.



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Universities have an important and multi-faceted role to play in this response: educating the next generation; influencing policy makers; tackling their own emissions; and through their unique capability to drive critical research.

Lily Cole  
Author and podcaster on climate solutions (Who Cares Wins); model, actor, and filmmaker.



# CO-CREATING SUSTAINABLE SOLUTIONS



No single person or organisation can solve the issues caused by climate change. When we talk about 'co-creating', we mean working together with local businesses, councils, charities, and members of the public – as universities are doing – to design solutions fit for a sustainable world.

From partnering with a start-up to design and produce new inventions, to working alongside communities to share local knowledge, collaborations led by universities have opened up a range of exciting breakthroughs.

## Abertay University – World's first climate positive pea gin

How often have you been told to 'eat your peas'?  
How about drinking them?

In collaboration with Arbigie Distillery, **Abertay University** is putting the humble garden pea front and centre in the first ever 'climate positive' gin. Their new gin, 'Nàdar', has a carbon footprint of -1.54 kg CO<sub>2</sub>e, meaning it removes more carbon emissions than it creates.

With an environmental performance that's significantly better than traditional wheat gin, Nàdar is also reducing waste by using every useful component of the peas from the dehulling and distilling process to produce animal feed.

The finished product is delicious, flavoured using natural botanicals, lemongrass and citrus leaf to create a 'fresh and fruity' aroma. Cheers!

“ This project has gone from the lab to a product that broke the mould on sustainable spirit production. Climate change requires international solutions and the innovation fostered through UK universities has a vital role to play. ”

PhD student Kirsty Black



## CO-CREATING SUSTAINABLE SOLUTIONS

### University of Essex – Re-powering communities across London

Going renewable with our energy is a great start – but **University of Essex** graduate Dr Afsheen Kabir Rashid is taking things a step further with her non-profit organisation, Repowering. Working with community groups, Repowering supports them to plan and build their own renewable energy projects, to ensure that energy solutions are meeting the needs of the communities they're serving.

In 2011, Afsheen launched Brixton Energy Solar, the first community energy project to be sited on social housing. Since then, she has founded Repowering and worked with communities across London to realise their vision of decentralised, decarbonised and democratised energy.

Repowering has now raised over £700,000 to deliver its projects, which are run by community benefit societies. More than low-carbon energy, Repowering is showing that by listening to and working alongside local communities, climate solutions can be tailored to work effectively for both people and planet.

### Canterbury Christ Church University – Making mushrooms more sustainable

When we think of the activities harming our planet, mushroom farming might not be top of the list. But it's a growing sector in the UK with more people turning to a plant-based lifestyle and seeing the health benefits of these edible fungi.

**Canterbury Christ Church University** spotted an opportunity to work with local start-ups to introduce more sustainable methods of mushroom production. Teaming up with local family-run mushroom producer Edible Kingdom, the university is working on ways to reduce the amount of carbon dioxide that enters our atmosphere after it is released by the mushrooms.

Algae needs carbon dioxide to grow – and that's where Kent-based business AlgaeCytes comes in, helping to identify which types of microalgae can be used with the mushrooms. It's a creative way to reduce the levels of carbon dioxide that play a big role in our current global warming – and it may even create some useful products in the process, with AlgaeCytes currently using algae to produce essential Omega 3 oils.





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### ***Focus on:*** sharing skills around the world

As well as working with local businesses and communities, universities are also collaborating further afield. For instance, **York St John University** is working with aquaculture farmers in Kenya to help them build resilience against climate change. By establishing the Climate Resilient Aquaculture in Kenya group, the university is helping to provide information on training, best practices and knowledge-sharing, and so far 60% of aquaculture farmers have indicated that the knowledge and information have helped them to better adapt to the impacts of climate change on their fish farm.

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# ENGAGING COMMUNITIES WITH CLIMATE ISSUES



While there are more conversations about climate in the media than ever before, many people still aren't engaging with the issues on a day-to-day basis. With busy lives and more immediate challenges, it's easy to switch off from the realities of our warming planet and think of it as something for others to solve. But to truly achieve a sustainable future, we need everyone on board.

Universities are bringing the challenges – and the solutions – to the doorsteps of local communities, enabling people to experience the issues of the climate crisis, as well as understanding how each of us needs to be part of the solution. By engaging our communities, universities are building a more climate-conscious society, meaning more effective and collaborative climate action.

## University of East London – Around the world in a Pollution Pod

How can we use art to change perceptions about climate change? The **University of East London** set out to test this with a tour of their Pollution Pods – a set of domes designed to recreate the pollution of five cities around the world using air quality, smell and temperature.

Artist Michael Pinsky worked with architecture, visual arts and engineering students at the university to bring the pods to life, making stops in London, Birmingham, Sheffield, Newcastle, and Glasgow, to transport visitors to London, Beijing, São Paulo, New Delhi, and Tautra (Norway). As they experienced the pollution in each pod, students explained to visitors how poor air quality contributes to illness and disease, with children especially vulnerable to the effects.

Completing their tour at the international climate summit COP26, the pods were a powerful reminder of the problems climate change is causing right now – both around the world and on our own doorsteps.

“ We must engage people in different ways. People might be unaware of air pollution levels, but the pods bring the issue to life in a physical way that really resonates.

Architecture student Orseer Gbashah



## ENGAGING COMMUNITIES WITH CLIMATE ISSUES

### Sheffield Hallam University – Fighting energy invisibility

Most of us control our heat with buttons and dials, playing no direct role in its generation. Although we are becoming increasingly conscious of how much money we're spending, we don't necessarily understand how much fuel gets used when we press or twist, and what is being burnt to generate it. That reduction in awareness is an example of 'energy invisibility'. At **Sheffield Hallam University**, Professor Aimee Ambrose has been researching the implications not just for individuals, but for society's response to climate change.

As part of the project, the researchers led groups of local people on walks along Sheffield's district heating pipeline to engage them with one of the sources of the heat and electricity they use everyday. The walk led to the Energy from Waste (EfW) plant, which burns household waste to provide heat for hundreds of buildings in the city. During the walk, Sheffield residents went from a position of apathy to holding strong views on the EfW plant – not just saying what they thought, but giving informed reasons why. Following this, similar walks were held in Swedish cities and virtual tours of power stations were run during the pandemic, attracting 14,000 people from around the world.

This project provides a model of how first-hand encounters can reconnect people with energy and promote greater environmental citizenship.

“Universities are full of people advancing knowledge and accustomed to communicating their knowledge. We're therefore uniquely positioned to help people understand climate change, what it means for our lives and our future and how we can most effectively respond.

Professor Aimee Ambrose



### University of Leeds – Planting for the planet

What better way to engage communities with climate action than to plant some trees – 50,000 of them, to be precise?

Working with volunteers from the local community, the **University of Leeds** is aiming to restore 3,000 acres of wildlife habitats on Ingleborough, a mountain in the Yorkshire Dales National Park. Through a combination of planting native trees to create woodland and allowing the vegetation to regenerate naturally, Project Wild Ingleborough will boost biodiversity, reduce flooding and help the fight against the climate change.

Over 100 volunteers have helped with the tree planting so far, and it's hoped that many more will get involved as the project continues. The team is also working with neighbouring landowners and farmers, using grazing animals like cattle to create a patchwork of different habitats. By engaging local people throughout, the project is sustaining a resilient rural community for generations to come.



## ENGAGING COMMUNITIES WITH CLIMATE ISSUES

### Buckinghamshire New University – A sustainable solution to hygiene poverty

With energy and food poverty being high priorities, we often neglect a third kind – hygiene poverty. The Covid-19 pandemic has seen more households in Wycombe enter this hidden and growing epidemic, and **Buckinghamshire New University** wanted to find a sustainable way to tackle it.

Working with national charity Beauty Banks, the university brought together local residents with retailers, businesses and politicians in a campaign to end hygiene poverty. Setting up a public donation

point, the university facilitated the collection of over 1,000 items, preventing them from being thrown away and damaging our environment while also helping families in need.

The university is also embedding a sustainable culture on campus, providing free biodegradable period products for staff and students, and donating clothing and household items to the YMCA and Wycombe Food Hub through their upcycling scheme.

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#### **Focus on: bringing climate awareness to millions**

As well as engaging communities on a local scale, universities are spreading climate awareness nationally and internationally. For many of us, when we think of life under our seas, Sir David Attenborough's 'The Blue Planet' springs to mind. Well, the BBC TV series Blue Planet II wouldn't have been possible without **The Open University**, who co-produced it and supported with research on ocean processes, marine animal behaviour and more. **Watched by over 37 million people** in the UK, the show made a splash – and got more people than ever engaged with the issues of protecting our natural world.

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# EQUIPPING STUDENTS TO INVENT THE SOLUTIONS



Staff and researchers aren't the only people at universities making climate action happen. With support from their tutors and lecturers, students at all levels are being given the knowledge, skills and opportunities to contribute first-hand to the solutions.

They're going out into their local communities, helping to build new and innovative technologies, and in many cases, totally transforming the industries they're about to enter by making them fit for a sustainable future. From construction to engineering to fashion, university students across the UK are leaving no stone unturned on their mission to achieve a greener world.

## De Montfort University – Making fashion fit for the future

The fashion industry has several big challenges to overcome on its way to achieving sustainable status. Fast fashion (the mass production of cheap, disposable clothing), synthetic materials that take decades to break down, and unethical supply chains all stand in the way of fashion becoming fit for the future.

**De Montfort University's** School of Fashion and Textiles is taking a bold and creative approach to equipping its students with the knowledge and tools to transform their industry. It's mixing up its curriculum, bringing in industry experts to share changes being made in their businesses, and setting students creative briefs focused on sustainability and the principles of recycling and reuse.

Students are now being asked to produce two outfits for their final collection instead of six, reducing the environmental impact. De Montfort has set up a £30,000 fund offering small grants to help students researching projects that focus on sustainable

fashion, and over 100 students have already been given funding towards ideas including zero-waste pattern cutting and sustainable alternatives to leather.



## EQUIPPING STUDENTS TO INVENT THE SOLUTIONS

### University of Brighton – The Waste House

Houses made of brick and concrete may soon be a thing of the past. The **University of Brighton** is revolutionising the way we build with the 'Waste House' – Europe's first permanent public building made almost entirely from material thrown away or not wanted.

The EPC 'A' rated low energy building was constructed almost entirely by young people studying construction trades, architecture and design, with nearly 300 students working on the project in total. Brighton Waste House is used every day by university staff and students, and proves that there's no such thing as 'waste' material – just stuff in the wrong place!

#### **Focus on: entrepreneurs of the future**

The **University of Sussex** is encouraging students to get their entrepreneurial hats on and come up with eco-friendly ideas – and then turn them into a reality. Their Pitch for the Planet competition invited teams to put forward proposals for sustainability projects that could be run on the university campus or within the local community. Applicants gave presentations judged by a panel of sustainability campaigners, entrepreneurs and university staff for a share of a £20,000 cash prize to realise their vision. Prizewinners include BioChar, which will transform biomass into new bio char fertiliser to be sold to local farmers to grow lower carbon food, and a sustainable fashion project upcycling second-hand clothing into future fashion essentials.

### University of Liverpool – The future food challenge

To transform our food system and make it truly sustainable, we need to think outside the box – or in this case, under the ground.

Engineering students from the **University of Liverpool** are working with social enterprise company Farm Urban who operate Liverpool's first underground vertical farm. The farm uses soilless growing systems to produce food in space-saving vertical towers without the need for harmful pesticides.

The students are working with pupils from local secondary schools to develop their ideas and bring vertical farming into local communities across Merseyside, helping them to design and build prototypes of the systems. Not only are they making local food systems more efficient and less harmful to the planet – they're also inspiring the next generation of climate champions to start dreaming up the solutions to a more sustainable world.





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## ***Focus on:* green skills**

One way that many universities are embedding climate skills is by offering a variety of courses and training modules to students and staff. From Carbon Literacy Training at both **Nottingham Trent University** and **Manchester Metropolitan University** to an MSc in Sustainability Transitions at the **University of Aberdeen**, there are opportunities for students to upskill in climate education at a range of levels, either making this their focus of study or learning alongside their degree.

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# INSPIRING THE NEXT GENERATION OF CLIMATE CHAMPIONS



Today's children and young people will be affected by climate change in their lifetimes – but they are also valuable contributors to climate action, and their ability to take on these challenges in the future depends heavily on the education and support they receive now.

Universities across the UK are working closely with their local schools to share their work on climate action with the activists, researchers, and innovators of tomorrow, inspiring the next generation to get excited about the contributions they can make now as well as in the future.

Most importantly, universities are showing young people that their voices matter, and are helping them to tell their stories of climate change creatively and with pride.

## University of Worcester – A creative approach to recycling

When we think of simple actions we can take to reduce our impact on the environment, recycling is high on the list. But how many people are putting things in the right bins?

Creative media students at the **University of Worcester** set out to tackle this with local schoolchildren, designing and producing posters to show what can and cannot be recycled for display at home. Supported by the city's largest social housing organisation, Platform Housing, the project set out to increase knowledge and commitment to recycling among local residents.

As well as improving recycling rates, involving local schools in the project has been inspiring and educating young people to think more about sustainability and how their actions can make a real difference to our planet.



# INSPIRING THE NEXT GENERATION OF CLIMATE CHAMPIONS

## University of Bristol – Waves of change

For many people working to tackle climate change, connecting with the natural world is their inspiration. The **University of Bristol** is helping young people across the country to explore their relationships with the coastal environment and share their hopes for the future through the medium of animation.

The project works in two ways: the university is supporting young people to gain the confidence to voice their views on climate change and take positive action; meanwhile, young people are improving the university's understanding of climate change by sharing their unique perspectives.



## University of Birmingham – Using the ancient past to guide our future

Tackling climate change isn't all about looking to the future – our past provides useful information to guide our approach.

A team from the **University of Birmingham** studied traces of a prehistoric volcanic eruption to understand whether greenhouse gas emissions created by volcanic activity could create massive

global warming events. By discovering how and why these events occurred in the past, and how the earth managed to return to normal temperatures, we can better understand the challenges we're currently facing.

Outreach was an important part of the project and the team created a series of videos, including one in which they answered questions sent in by children at a local primary school. By involving young people, the university helped to engage them in climate change issues, as well as making the science behind climate change solutions accessible and fun.

## Royal College of Art – A greener picture

Photography can be a powerful way to explore our connection with the natural world – and to communicate it with those around us.

In collaboration with Wandsworth Council, graduates from the **Royal College of Art** delivered workshops to 670 children from 15 primary schools across Wandsworth to help them learn how photography can help us to communicate about the issues of climate change. The pupils worked individually and collectively to create sculptures and cyanotypes – a unique printing method that produces a distinctive cyan-blue print – which they then photographed.

The work of the young artists was showcased at the Wandsworth Arts Fringe, and the Greener Picture project is part of ongoing work with schools to make sure the voices of young people are included in conversations about climate change. Each participating school and all Wandsworth libraries received a printed book of all the images, and they have been made available online to inspire climate change awareness among the residents of Wandsworth.

# PROTECTING OUR LOCAL ENVIRONMENTS



Looking after our local areas is essential if we want environments where people and wildlife can thrive.

Sadly, recent decades have seen wildlife in the UK decline at an alarming rate. Not only does this mean fewer hedgehogs, birds and hares crossing our paths, it also has serious consequences for our wider ecosystem, affecting the quality of our soil and water, increasing numbers of pests, and reducing the capacity of our forests and oceans to absorb CO<sub>2</sub>.

But there is time to turn this around. By restoring the habitats of our neighbourhood critters and protecting them from disease and destruction, we can return nature to its former glory.

Universities across the UK are doing just that, carrying out research to identify the best strategies and implementing these with the help of local authorities, charities and conservation groups. Exciting new technologies developed by universities are improving our understanding of the natural world and helping us to restore it safely and efficiently.

## University of West London – Fighting disease in our trees

Just like us, trees can get diseases. But unlike us, conventional techniques used to monitor and assess the health of trees are often invasive and can result in trees being permanently damaged and felled.

The **University of West London** is setting out to change this by using Ground Penetrating Radar, 3D Laser Scanning devices and other techniques to develop new ways to assess and monitor the health of trees without causing damage.

The University's Faringdon Centre for Non-Destructive Testing is now working with local authorities and forest management groups to

improve tree management practices across the UK. This includes assessing some of the oldest trees in London – preserving important specimen for history, as well as conservation.

**““** *Our ground-breaking work has created new non-invasive methods for managing trees that are efficient and cost effective, and that will protect trees for generations to come.*

Professor Amir Alani,  
Head of the Faringdon Centre



## PROTECTING OUR LOCAL ENVIRONMENTS

### Aberystwyth University – Cherishing our iconic coastline

Our coastline not only offers beautiful landscapes, it is also an important site for nature and biodiversity, boasting a rich cultural heritage that is under increasing threat from the impacts of climate change.

Warmer global temperatures are expected to cause increased flooding and storm surges while hotter, drier summers could mean cliff faces dry out and collapse, putting coastal heritage sites at risk. More frequent extreme weather may increase erosion at the coast edge and cause damage to coastal structures.

**Aberystwyth University**, in partnership with the Royal Commission on the Ancient and Historic Monuments of Wales, Geological Survey Ireland and Discovery Programme, Centre for Archaeology and Innovation Ireland, is investigating and monitoring these impacts through the CHERISH project (Climate, Heritage and Environments of Reefs, Islands, and Headlands). The project is raising awareness of how climate change and extreme weather events are impacting iconic coastal heritage across the UK and Ireland, using innovative techniques to monitor and record coastal change and to understand the long term context of climate change in these dynamic environments.

### Queen's University Belfast – Re-thinking red squirrel conservation

We've all seen cute photos of red squirrels. But how many of us have spotted one in real life?

Sadly, the chances of glimpsing one of these bushy-tailed rodents in the wild are growing slimmer, and our furry friends could become extinct in the next decade without our help.

The success of our conservation efforts is dependent on research, in order to learn the patterns of red squirrels and figure out the best way to coax them back into our parks and gardens.

Luckily, some of that research is being undertaken by **Queen's University Belfast**, who have had a breakthrough that could transform the way we approach red squirrel conservation. While previous research showed that introducing native predators like the pine marten helped to reduce the numbers of grey squirrels that outcompete red squirrels, Queen's has found that doing so in native broadleaf woodland is key for red squirrel survival, contradicting existing strategies that promote planting non-native conifer trees.

This could be a big win for the red squirrels, so keep your eyes peeled next time you're out and about!



## PROTECTING OUR LOCAL ENVIRONMENTS

### University of Plymouth – A new approach to marine protection

There's a lot to consider during a conservation project – especially in an area like Lyme Bay, home to over 500 marine species from fish and shellfish to dolphins and whales, and even the rare sunset cup coral. The University of Plymouth is doing crucial work monitoring the impact of the **Lyme Bay Marine Protected Area** – the UK's first ever example of a whole-site approach to marine protection.

Working with local fishers and community groups along the Dorset and Devon coastline, the university has conducted interdisciplinary research to determine how conservation measures impact the reefs, local marine life, and the communities who depend on the area for their livelihoods. The research has shown how the whole site management approach has increased functional reef habitat, built resilience and integrity against extreme climatic events, and increased the abundance and diversity of species.

The research carried out at Lyme Bay has significantly influenced reef management in the UK, with recommendations directly based on it featuring in the UK Government's 25-year Environment Plan.

# ...AND MAKING THEM CLEANER AND GREENER



We all want our local areas to be safe places to live, travel and work. But how often do we think about the environmental factors impacting our health?

The links between climate change and poor health may be far greater than we realise. In the UK, urban air pollution is the biggest environmental threat to our health, and long-term exposure has been associated with dementia, heart disease, stroke and some cancers. Water pollution, noise pollution, and hazardous chemicals also pose risks to both the environment and human health.

That's more than enough incentive for us to clean up our towns and cities and find ways to reduce the pollution that is harming us and our planet. And universities across the country are leading the way, working alongside local businesses, councils and residents to improve the quality of our air and water, and reduce the amount of damaging pollutants entering our surroundings.

## University of Bradford – Helping Bradfordians breathe better

In order to tackle poor air quality in Bradford, the council needed to know which areas had the highest levels of air pollution, so the **University of Bradford** stepped in with a system to collect real-time data on air quality across the city.

The university has placed over 40 sensors around the city, taking readings every 15 minutes over a 12-month period. The data collected by the sensors will support city planners at Bradford Council who are deciding on the most effective actions to reduce air pollution. The data is also available for local residents and schools to view live through an open platform.

The results will be used as part of the evidence for a new Clean Air Zone – a measure which could make a real difference to the quality of life for Bradford residents and visitors. Differences in pollution

levels can translate to huge health inequalities, and Bradford's 'Breathe Better' project' is a big step towards improving health outcomes for those suffering the worst impacts of air pollution.

**““** *The Council has an air quality monitoring network but our technical equipment is not as user friendly as the sensors the University has been using for this project. These sensors are a great way of involving school children and residents, providing a useful addition to the evidence we have about how air pollution is affecting communities in Bradford.*

Sally Jones,  
Bradford Council



## ...AND MAKING THEM CLEANER AND GREENER

### University of Chester – A reusable cup revolution



We Brits love treating ourselves to a takeaway coffee, but the plastic-lined cups holding our drinks are causing problems for the planet. Here in the UK, we dispose of 2.5 billion every year – that's a lot of empty cups sitting in landfill!

So how can we enjoy a caffeine kick without causing damage to the environment? The **University of Chester** has the answer. Its Centre for Research into Environmental Science and Technology supported Shrewsbury Cup with the launch of their reusable coffee cup deposit scheme, where customers pay a £1 deposit for a cup, enjoy their drink and return the cup to any participating café to get their £1 back. The cups are then washed ready to be used again, and these cups are designed to be used hundreds of times. Best of all, if they're ever damaged they can be fully recycled.

These climate-friendly cups are taking over with over 30 cafes already offering them to customers. With Chester showing us how it's done, we're sure the rest of the country will be looking to dispose of their disposable cup habit in the future.

### University of Derby – Re-imagining cities with virtual reality

How do we visualise the future of our cities? We could use our imaginations...but this is the 21st century, and the **University of Derby** has a much more exciting solution.

Derby's Urban Sustainable Transition project aims to re-imagine a sustainable future for Derby by creating an augmented reality representation of the city, including visualisations and fly-throughs of key routes and areas of the city – even its hidden waterways. By showing what is possible, Derby is demonstrating the opportunities to local planners, city stakeholders and community groups for a city designed with sustainability at its centre.

The university will work with local residents through an 'Urban Room' to capture ideas and demonstrate what their city of the future could look like – before turning it into a reality.

#### **Focus on: equal access to green spaces**

An important part of cleaning and greening our local areas is to make sure that everyone has equal access to these outdoor spaces. The **University of Bedfordshire's** Institute for Health Research is leading the 'Chalkscapes' Project funded by Chilterns AONB, looking at access to and use of green spaces among minority ethnic communities living in Luton & Dunstable. They'll use their findings to help co-create solutions to improve access to local landscapes for diverse communities.

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## **Focus on:** helping green communities overseas

Universities aren't just greening our communities at home. Social enterprise Rice Inc was set up by UCL (**University College London**) graduates Kisum Chan and Lincoln Lee, to support rice growers in South-East Asia to reduce greenhouse gas emissions and ensure more food is available for the future. By providing them with access to biomass powered drying technologies and a rice storage service, they're recovering up to 30% of rice that otherwise would have gone to waste – that's a whopping 2 million meals. The farmers are almost doubling their incomes, and their ethical rice is now being brought to UCL through a partnership with food services company Sodexo.

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# CONCLUSION

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From the groundbreaking research and new technologies they develop, to the green skills and awareness they are helping to spread, universities really are playing a vital role in tackling the climate emergency.

Most importantly, they are bringing businesses, schools, policymakers, charities and members of the public with them every step of the way. Through their outreach, universities across the UK are engaging, educating and inspiring communities to take on climate challenges together.

And their sights aren't just set on the UK. With many of the worst impacts of the climate crisis already being felt in the most vulnerable parts of the world, our universities are working with communities overseas, supporting climate adaptation and resilience efforts on a global scale. Not to mention, much of their work at home provides models that can be borrowed and adapted across the world.

MadeAtUni: Climate Action is just a snapshot of what's taking place at universities, and beyond. As this report has shown, universities are already creating bold, innovative and lasting changes to the world around us, and equipping students with the knowledge, experience and green skills needed to help tackle the climate emergency. And they're not planning to stop any time soon.

We hope you'll help us to spread the message far and wide, whether it's sharing this report on social media, or having a conversation with a friend or family member. Together we'll continue to recognise the achievements made by universities and inspire as many people as we can to get involved with climate action alongside them.

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