

Sustainability at The Open University

Environmental and social justice

If we aren't regenerating the planet, then we are destroying it.

An uncomfortable statement, but The Open University (OU) is no stranger to disruptive innovation. In 1969, Prime Minister Harold Wilson's vision for a *university of the air*, with an open access policy to students from any background or location, was met with scepticism. More than fifty years later, the OU has helped more than 2.3m people achieve their learning goals – and our mission has evolved into one of environmental and social justice: adopting sustainability as one of our five institutional goals.

Sustainability is—and must be—for everyone. This starts with green skills and extends into a robust set of 21st century competencies with which we, as educators, must strive to equip each person in our local and global learning communities. The world has fallen short of its target to limit global temperature increase to 1.5 degrees above pre-industrial levels, and we now face the consequences: climate volatility, rising sea levels, coastal erosion, and highly pressurised ecosystems. We must act. Confronted with this shocking reality, we are called to disrupt and innovate radically different ways of living: educating and empowering people to be positive forces for regeneration, and to prioritise regenerative practices in our homes, businesses, and nations must be our focus.

Sustainability means more than just reducing greenhouse gas emissions. At the OU, we believe there can be no environmental justice without social justice – that responding to the climate and nature crisis through applying our learning also means protecting people's rights, disrupting the corruption of Governments, safeguarding food supply chains, and improving living conditions now and for future generations worldwide. Change is too incremental – transformation is what is needed. Ensuring a sustainable planet is one of our most significant existential challenges, with many interconnected problems and opportunities. We believe this requires thinking beyond academic silos and disciplines, bringing together experts from anthropologists to astrobiologists and political scientists to physicists to address diverse challenges, from acting to robustly support indigenous communities in environmental protection to retrofitting our cities to make them more comfortable and low carbon for all.

Our teaching, research and knowledge exchange supports environmental and social justice by creating a shared understanding, identifying opportunities, and bringing people together. Underpinned by our scale and reach through our student body of 208,000, our alumni community of 2 million, our free online learning community of 10 million+, and our public education programming that reaches across the globe, the OU is committed to aligning our heritage of disruptive innovation with opportunities to create a regenerative future.



Read on to discover flagship projects from The Open University's environmental science and sustainability experts, and opportunities to join us as a partner for environmental justice.



A foreword from the Vice-Chancellor

Sustainable development is of critical importance and requires innovation, which can only be achieved by involving all stakeholders, including you. Every aspect of society is evolving to meet major challenges in sustainable energy and environmental protection, with political debates now dominated by sustainability issues and increasingly (and not quickly enough) pivoting to regenerative alternatives. Technology, policy, and governance innovations are at the heart of hastening this change.

Technology innovations are critical for sustainable development. Research breakthroughs and deep behavioural insights are essential in navigating society into a climate-safe future. This requires the passion, intelligence, and dedication of talented individuals and coordinated teams, with true interdisciplinarity and transdisciplinarity skills to design sustainable systems. Sustainability challenges will not be solved by siloed scientists, but by a diverse range of creative people with different specialities, experience, and ideas collaborating meaningfully and learning together.



I am very proud that The Open University has established a supportive framework for interdisciplinarity to thrive. Our Open Societal Challenges research has the ultimate aim to connect talented academics from across disciplines to focus on impactful research that supports our planet by protecting what we have left and regenerating what we have lost. I hope you enjoy reading more about the work we are doing.

Tim Blackman

Tim Blackman
Vice-Chancellor

 **Visit the OU website**
www.open.ac.uk

Skills for Net Zero

Organisations across the UK have committed to reach Net Zero emissions by 2050. Educators play a key role in the just transition to a sustainable economy. We are uniquely positioned through our graduates, alumni, funders, and partners to build and embed skills across our curriculum and in the workplace. We also champion climate research and action in our wider learning and partnership alliances. Together we can become good ancestors to future generations and deliver sustainability and nature protection.

Carbon Literacy is a good first step to address Net Zero. It raises awareness and understanding of carbon costs and impacts, equipping individuals and organisations with the tools to reduce their carbon footprint. The OU approach is that 'sustainability is everyone's job'. We have committed to upskill and reskill all our staff on decarbonisation, improving the sustainability of our processes and products – this is lifelong learning in action. The OU, as a unique four-nation organisation, is committed to learning good practice from the Welsh Well-being of Future Generations Act, Scotland's public body Climate Change duties, and Ireland's deliberative democracy approach.

Qualifications, microcredentials, and modules

The OU has the largest undergraduate Environmental Science programme in the UK, accounting for around one in five of all BSc Environmental Science undergraduates. It is also one of our fastest growing, with registration numbers having more than doubled since 2018 and increasing at about 20% per year. We recently celebrated 25 years of renewable energy education and launched a new microcredential – [Climate Change: Transforming your Organisation for Sustainability](#) – intended to support those working to deliver Net Zero in the workplace.



BSc (Hons) Environmental Science (Q52)

Learn to assess environmental problems, propose solutions, and gain a comprehensive understanding of the natural environment. You'll study topics including conservation, ecology, ecosystems, environmental management, and renewable energy. **Level: Undergraduate**



BSc (Hons) Environmental Science (Environmental Management) (Q52)

Develop the scientific and technical knowledge and key skills needed to investigate ecosystems, understand environmental situations, and work with stakeholders to address environmental issues. **Level: Undergraduate**



BSc (Honours) Combined STEM (R28)

This flexible degree combines science, technology, engineering, and mathematics (STEM) subjects. Build your degree from a variety of STEM modules, or follow our environmental sustainability route.

Level: Undergraduate



BA/BSc (Honours) Open degree (QD)

Our Open degree allows you to bring together different areas of study in a completely flexible way to develop knowledge and skills. There are several predefined routes you can follow. **Level: Undergraduate**



Master of Environmental Science (M05)

Gain a deeper understanding of the natural environment, and learn to assess environmental challenges and propose solutions. You'll study subjects including conservation, ecology, ecosystems, environmental management, and renewable energy. **Level: Undergraduate**



MSc in Environmental Management (F65)

Expand your knowledge and skills needed for effective, informed, and creative environmental management. You'll examine current local and global concerns in areas such as environmental protection, legislation and policy, and natural resource management. **Level: Postgraduate**

Free courses and programming

As the largest UK academic institution, The Open University produces accessible and impactful public education through [short courses and free content on OpenLearn](#), which includes hundreds of interactive learning resources focused on nature and the environment, including:



Our Sustainability Hub

Collating resources from diverse perspectives around the world, ranging from ecology, energy, and food choices to economics and design solutions – our sustainability hub offers the opportunity to explore issues and gain the knowledge and tools to understand how and in what ways you can make a difference.



How can we all tackle our digital carbon footprints?

It might seem daunting but there are lots of steps we can take as individuals to reduce our digital carbon footprint. We can help you make a start.



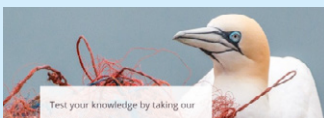
The environmental impact of teaching and learning

This free course discusses the impact on the environment of carbon-based teaching and learning in HE institutions, and introduces a suite of innovative tools and resources to help reduce these impacts.



Climate Change

This course explores the basic science that underpins climate change and global warming, including understanding the physical basis of the greenhouse effect and how human activities are increasing greenhouse gas emissions.



Plastics in our ocean

Test your knowledge about plastics in our oceans, and learn about how they impact the environment with this interactive activity.



Energy in buildings

This course looks at the importance of energy in buildings in the UK, investigates heat loss and how to prevent it, ways of increasing building efficiency, decreasing CO₂ emissions of different fuels, and the use of efficient appliances.



Climate change transitions to sustainability

This course will help you to understand the dimensions of globalisation in relation to climate change, including exploring the whole path of our development and decision making to make our societies both environmentally adaptable and sustainable.



Introduction to sustainable energy

The search for sustainable energy will dominate the twenty-first century. This free course provides an introductory overview of the present energy systems and takes a brief look at where the world may find energy in the future – cleaner use of fossil fuels or renewable energy sources?

The Open University/BBC Public Engagement Work

The OU collaborates with the BBC on landmark public education programmes such as Planet Earth III, The Green Planet, and Wild Isles. The University's unique relationship with the BBC began in 1971, and by the early 2000s our partnership transitioned from late night lectures to peak time programmes that directly link to OU teaching and learning. Today, the OU co-produces more than 30 projects each year with the BBC, across its TV, radio, Sounds, digital, and social channels, including some of the most viewed and listened-to content across broadcast channels and platforms.

Wild Isles

This five-part series was created by Silverback Films and the OU for the BBC in partnership with the RSPB and WWF (UK) and was filmed over three years using the latest technology to capture the beauty and wonders of the British Isles. To show the passing seasons, motion controlled time-lapse sequences were used and aerial photography captured the British and Irish countryside in a whole new perspective.

Hosted by Sir David Attenborough, the series focused on four key habitats – woodland, grassland, freshwater, and ocean – and brought to the public's attention the urgent need to protect our landscape. Dr Miranda Dyson and Dr Philip Wheeler, OU consultants for the series, provided their expert insight in biology and ecology to bring the latest research to life.

You can find out more by visiting:



<https://connect.open.ac.uk/wildisles>



OU Connect is the home of The Open University and BBC partnership, providing more information on the subject matter and expertise behind our co-productions.

Planet Earth II

Produced by BBC Studios in partnership with the OU, Planet Earth III invited us to join Sir David Attenborough on an incredible journey through the ever-changing habitats of our world.

Nearly two decades since the original series of Planet Earth aired, this eight-part series took us on a journey to the far reaches of our planet and followed some of the world's most amazing species, revealing the deep interconnectivity of all life on Earth. Each episode showcased new behaviour, pristine environments, and the remarkable strategies that animals have developed to survive.

Filmed over the course of almost five years, the series used pioneering filmmaking technology; from lightweight drones, high-speed cameras, and remotely operated deep-sea submersibles to transport viewers to spectacular unseen landscapes.

More than ever, the series highlighted how we've reached a critical point in our planet's history and how the natural world has changed more over the past few decades than ever previously observed in our human history.

The series was supported by leading OU academic expertise from the School of Environment, Earth & Ecosystem Sciences.

You can find out more by visiting:



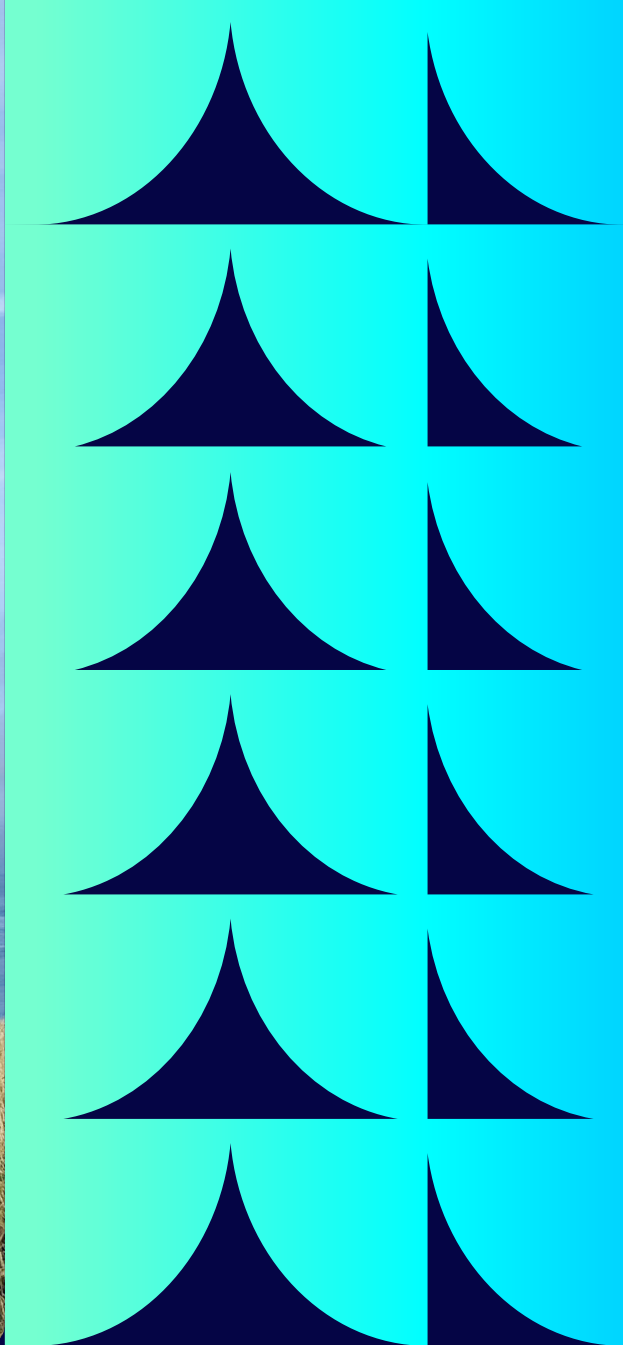
<https://connect.open.ac.uk/planetearth3>



The destruction of habitats is currently the biggest threat to the survival of animal species. But there is an even greater disaster on the horizon. Our climate is changing.



Sir David Attenborough



Research and outreach

The Open University has been using its research to transform lives throughout the UK and worldwide for over 50 years.

In 2022 we embarked on a new research mission to address three crucial societal challenges: sustainability, tackling inequalities and living well. The projects featured in the following pages are leading examples of how the OU's pioneering sustainability research is actively protecting and regenerating our planet.

Improving our Understanding of Intermittent Chalk Streams

The OU has an international reputation in pioneering innovative co-creative approaches to water governance, working with stakeholders in many different contexts in the UK and internationally.


Chalk streams provide an important and globally rare habitat, with the majority being found in England. Often referred to as England's rainforests, their clear cool waters provide a unique habitat for iconic species such as the otter, kingfisher, and salmon, and with drying also a characteristic of their behaviour, they are home to some rare specialist invertebrates. But the habitat is at real risk due to intense management, increasing domestic and agricultural demands for water, and the pressures of climate change.

This project, led by Dr Kevin Collins, OU Senior Lecturer in Environment & Systems, will work closely with existing stakeholder groups to

improve the collective understanding of chalk streams by key stakeholders within academia and policy fora. Innovative techniques for capturing the hydrological and structural behaviour of intermittent chalk streams will be used.

A new collaboration between the UK Centre for Ecology and Hydrology and the OU, the project will combine local knowledge with cutting-edge drone-based sensing techniques and morphology studies, helping to deliver key insights that will be shared to advocate and raise awareness for intermittent chalk streams. The results will help shape future policies and practices for managing chalk streams in South East England in the long term.

The project is funded by Affinity Water, and supported by Cambridge Water and Anglian Water, through the Water Industry National Environment Programme.



Improving our Understanding of Intermittent Chalk Streams will test innovative monitoring techniques within the wider context of ongoing threats to chalk rivers, informing important policy in this area.

Weston Open Living Lab

The OU is in a unique position to mobilise and deploy its innovative environmental and ecosystems research through the Weston Open Living Lab, which will offer a new space for people to engage with nature recovery. Capitalising on the OU's ability to educate at scale and our pioneering OpenSTEM Labs technology, it will also be a digital laboratory offering learning and teaching experiences at distance.

The climate emergency and the rapid loss of biodiversity are two profound and closely-linked challenges that will shape the lives of future generations. Nature-based solutions are essential in reversing both of these challenges, but a critical factor in people's willingness to engage with nature recovery is connection; we don't protect what we don't understand.

Led by Dr Kadmiel Maseyk, OU Senior Lecturer in Environmental Sciences, the Weston Open Living Lab will enable people to engage with climate

change and nature recovery. The site – on the OU's campus in Milton Keynes – will house a dynamic living science laboratory as well as a Learning Walk and Visitor Centre, whilst the digital laboratory will offer free resources on the internet.

Bringing together expertise from across the OU, from teaching and research in the School of Environment, Earth and Ecosystem Sciences, and embracing other Schools in the Faculty of Science, Technology, Engineering and Mathematics and the Faculty of Arts and Social Sciences, to the OU's free public learning platform OpenLearn, the Living Lab aims to be truly multidisciplinary.

Established in 2022 through a lead grant from the Garfield Weston Foundation, the Weston Living Lab is now entering an exciting second phase. Funding is required to create the Learning Walk and Visitor Centre, providing the space to implement our schools and community outreach activity.



The **Weston Open Living Lab** will encourage people to understand the value of the natural habitats around them, and to learn how they can take important actions for local nature recovery.

Floodplain Meadows Partnership

In 2006 the Floodplain Meadows Partnership was established with a mission to address the urgent need to conserve Britain's floodplain meadows. Led by Professor David Gowing, OU Professor of Botany, the Partnership has since established itself among conservation organisations and landowners as the go-to source for advice on floodplain meadow management and restoration.

Britain lost 97% of its floodplain meadows during the twentieth century and they remain at risk from climate change and a lack of appropriate management. Alongside carbon sequestration and helping to reduce flood peaks, the meadows improve water quality and support over 200 species of flora and fauna, benefitting wildlife conservation, flood management, and food production.

An OU-led consortium, the Partnership is made up of ten highly-experienced organisations in the environmental and wildlife field: the OU, Natural England, Environment Agency, Centre for

Ecology and Hydrology, RSPB, The Wildlife Trusts, Field Studies Council, National Trust, People Need Nature, and Natural Resources Wales.

The Partnership is undertaking an ambitious programme, successfully advocating that floodplain meadows be recognised as a specific land type under new land-management schemes and securing an enhanced restoration target in England of 72,000 ha. In order to deliver this target, the Partnership is starting to work with farmers using a new support scheme with a significant payment rate, as well as increase public and policymaker engagement.

£9m of funding would enable the Partnership to restore and protect 72,000 hectares of landscape across the UK, increase public engagement, and advocate for floodplain meadow restoration as a tool for tackling climate emergencies, becoming an exemplar for the rest of the world as it looks to build adaptive capacity to climate-related hazards and natural disasters.



The Floodplain Meadows Partnership aims to restore and protect 72,000 ha of habitat across the UK.

Sustainable Silvopasture Cattle Farming in the Peruvian Amazon

With over 16 years' experience of designing and implementing agroforestry projects with communities in the Amazon, Dr Lucy Dablin – OU Lecturer in Environment and Sustainability – is a leading figure in the fight against deforestation and pasture degradation in the Peruvian Amazon.

Intensive cattle ranching has led to deforestation and the subsequent degradation of over 30 million hectares of pasture in the Amazon. Climate change is increasing the incidence of drought and flood, hastening degradation further. Farming families are struggling, owning increasingly unproductive and unprofitable land.

Our project will train Peruvian cattle farmers in silvopasture practices, which combine grazing livestock, forestry, and pasture management – a productive system that removes the need to clear land for cattle whilst mitigating climate change through its reduction in greenhouse gas emissions

and ability to sequester carbon. Women will also be supported to establish tree nurseries, supplying the resultant demand for tree seedlings.

The OU-led consortium has six core partners – the OU, the World Wildlife Fund Peru (WWF), the Tropical Forest Alliance (TFA), Climate Group, and two academic research partners. Its longstanding presence in Peru provides deep local knowledge and established community partnerships, ensuring the engagement of critical stakeholders from the onset of the activity.

Requiring ongoing funding, the initiative most urgently requires support to plant and establish silvopasture demonstration plots. The resulting widespread introduction of silvopasture enabled by this project will have a significant and lasting impact on the rural communities in the Peruvian Amazon.



Sustainable Silvopasture Cattle Farming in the Peruvian Amazon will directly benefit 680 farming families and 2,300 women in the Madre de Dios and Ucayali regions of Peru.

Democratising urban tree data

Over the past decade, the OU – led by Dr Philip Wheeler, OU Senior Lecturer in Ecology has been developing Treezilla, the largest public tree map in the UK amassing over a million records. But this is just a fraction of the more than 150 million individual street, park, and garden trees.

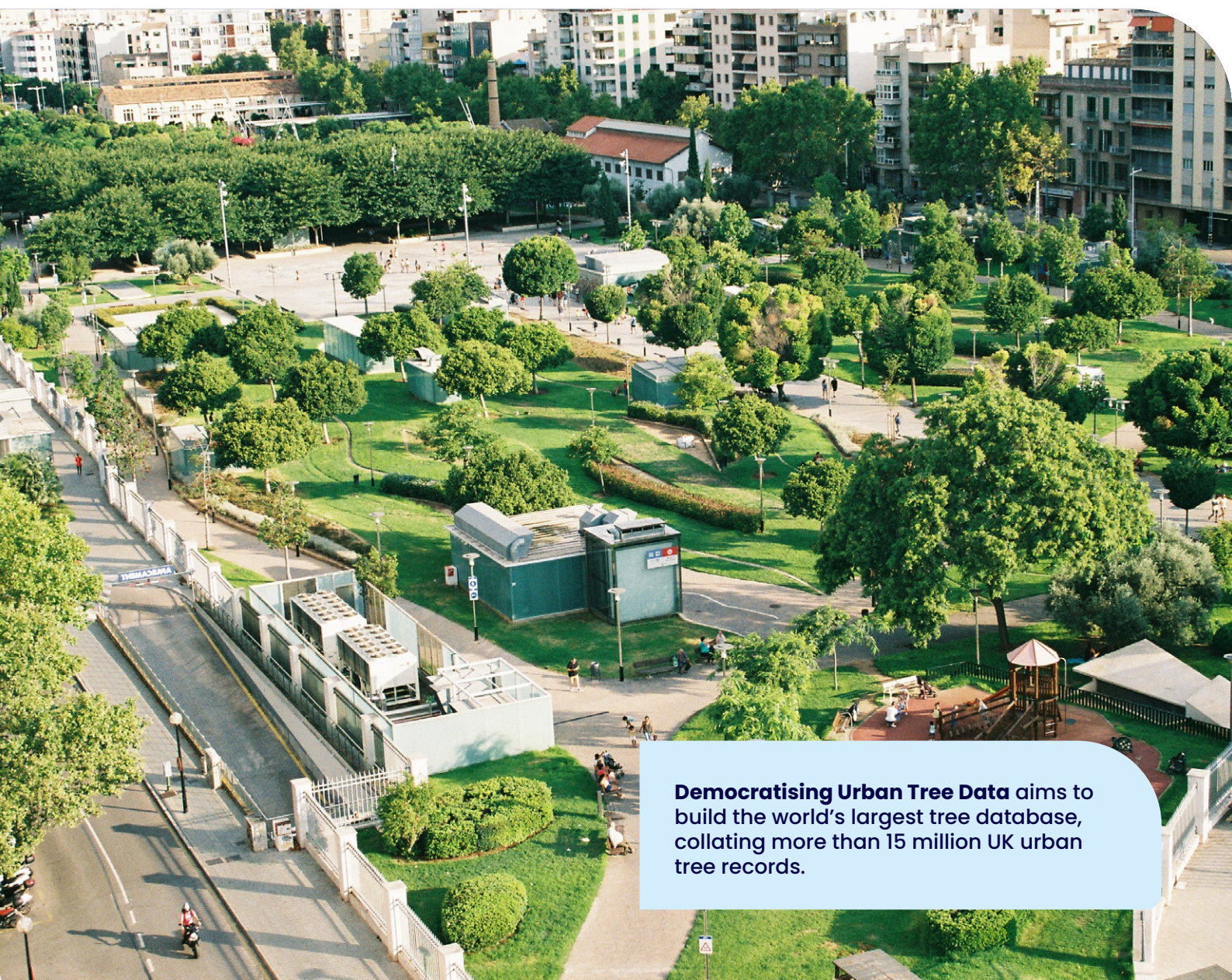
Trees play a vital role in our urban landscapes, reducing flood risk and temperatures, improving air quality, and storing carbon. But the environments in which they grow can be challenging due to poor soils, air quality, and restricted space. We need to understand urban trees so that we can best manage them for society's benefit. But the small amounts of data that do exist are held privately by local authorities.

Tens of millions of tree records are sitting in local authority tree inventories; we will combine these

datasets into one unified database, enabling the first large-scale analyses of risks to our urban trees. The data will also be made accessible through Treezilla, so the public can learn about the trees around them.

The OU will be working with Forest Research – Great Britain's principal organisation for forestry and tree-related research, bringing expertise in data management as we clean, tidy, and standardise the data before publishing it for public and research use.

Funding is required to support an open data specialist who will work with more than 400 local authorities, aiming to collate more than 15 million tree records and build the world's largest tree database.



Democratising Urban Tree Data aims to build the world's largest tree database, collating more than 15 million UK urban tree records.

Multispecies Justice in the Entangled World: Towards Sustainable Development

Bringing together expertise in ethics, public policy, animal-computer interaction, and animal-centred design, OU academics Professor Natalia Szablewska, Professor in Law and Society, and Professor Clara Mancini, Professor of Animal-Computer Interaction, have built a reputation for their innovative work in the area of multispecies justice in response to the challenges of the Anthropocene – the current geological period in which human activity has been the dominant influence on climate and the environment.

Technologies such as the Internet of Things (IoT) and Artificial Intelligence (AI) are regarded as essential tools for achieving the global Sustainable Development Goals (SDGs), and governance bodies have issued ethics guidelines for the technologies' use. Researchers have warned against prioritising human interests in such policies, arguing for a multispecies reinterpretation of the policies and laws.

By using human-rights and animal-centre frameworks to examine multispecies justice

and sustainable development, this project will inform an integrated approach to multispecies sustainable development – one which enables environmental, economic, and social goals – supported by responsible technological innovation.

Partners from scientific institutes, academic institutions, and the private sector internationally have informed the development of the project, bringing expertise in ethics, law, generative AI, animal behaviour, and conservation. This diverse partnership will enable sustainable development policies to be redefined and influence developments in the area of rights and personhood.

Funding is required to undertake this work, enabling practical implications for the development of smart sustainable cities of the future and public engagement to facilitate a shift in human behaviour and social norms that have contributed towards the climate crisis.

Multispecies Justice in the Entangled World: Towards Sustainable Development aims to redefine the ethical and legal framework surrounding the responsible use of technology in sustainable development.



Community and EV Renewable Energy Resource Hub

The OU's pioneering research related to international development in the energy sector ranges from energy and climate change policy for East Africa to the repurposing of electric vehicle (EV) batteries and the potential of off-grid supply systems.

Over 650 million people in Africa have no or limited access to affordable and clean energy. At a time when all countries around the world are being forced to amend their practices to mitigate climate change, help is needed to enable developing countries to transition to the use – and broad rollout – of EV.

The OU's Community and EV Renewable Energy Resource Hub – led by Dr Charles Mbalyohere, OU Senior Lecturer in Strategic Management will strengthen sub-Saharan Africa's EV transition strategies at a critical time in the global response

to the climate crisis. Online training materials will be piloted with a minimum of 300 people and 100 direct and indirect jobs central to initiating the new industry will be established.

A consortium of Ugandan and UK-based business, academic, institutional, and civil society partners has been established – including leading African EV firms such as Kiira Motors Corporation and Zembo – enabling this pioneering programme to be implemented, prior to a broader rollout across sub-Saharan Africa.

Funding is required to develop and undertake the pilot training programme, as well as to develop the capabilities to enable second life to be offered to thousands of batteries that will ultimately become unusable in electric vehicles but can still be used for stationary energy storage.



The **Community and EV Renewable Energy Resource Hub** will create 100 new jobs and train at least 300 Ugandans, supporting sub-Saharan Africa's strategies to improve access to affordable and clean energy.

Surface Water Integrated Monitoring

There is an urgent need for community owned and low-cost environmental monitoring solutions, particularly in the Amazon, where Indigenous communities are stewards and custodians of vast and very biodiverse areas.

Building on ground-breaking research undertaken within UK Space Agency funded projects, The Open University has developed a framework for a wetland monitoring system using ground data, satellite remote sensing, and drone surveillance for malaria vector control and surface water detection.

The new Surface Water Integrated Monitoring (SWIM) project – led by Dr Alessandra Marino, Senior Research Fellow In International

Development within Astrobiology – will enable safer, cheaper, water sampling through use of a prototype unmanned surface water vehicle, called 'FLOAT'. FLOAT development will help expand innovation in environmental data gathering and monitoring, supported by a DIY kit and in situ training.

Community involvement in creation, deployment and training will be crucial, with Indigenous researchers involved at each stage. Our ultimate goal is for integration of all data into one environmental information system, that enables full control by our partner communities, which can feed into landscape management plans.



The **Surface Water Integrated Monitoring** project will provide safe, affordable, community-controlled environmental data gathering through an unmanned surface water vehicle called 'FLOAT'.


Coastlines

In the context of a post-Brexit England struggling to define itself, along with current anxieties concerning the wellbeing and prosperity of coastal communities, *Coastlines* sets itself the challenge of reimagining England's coastline. It takes the occasion of the completion of the King Charles III England Coast Path (ECP) in 2024, to explore how the coastline has been written in the past and how it might be written for the future, mapping a coastal literary canon from medieval to contemporary and using it, along with expert research in coastal geographies and ecologies, to inspire newly commissioned writings.

Coastlines brings together a consortium of coastal universities (Lancaster, Southampton, and Hull) with specialists in place writing under the leadership of The Open University, in partnership

with English Heritage, The National Trust and coastal literary festivals. It combines archival research, creative commissions, and experimental collaborative and co-creative methodologies to develop a range of deliverables related to the ECP; from an app audio guide, digital literary map and short films of the ECP, to academic essays describing and reflecting on research findings and reflections and recommendations for policymakers.

The project will bring measurable benefits to local economies and wellbeing in increased festival/visitor revenue and the provision/uptake of new opportunities for creative expression and cultural inclusion, and to academia in the shape of a major contribution to coastal studies.



Coastlines will explore how our coastlines have been written in the past and how they might be written for the future.

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