THE UNIVERSITY of EDINBURGH

Regenerative sustainability:

our pathway beyond net zero

The University is on a path to regenerative sustainability. We're addressing the environmental polycrisis by going beyond net zero, and committing to regeneration.

So what do we mean by polycrisis, sustainability and regenerative sustainability?

Polycrisis

Polycrisis refers to multiple crises that are interconnected, interacting, and reinforcing one another.

In this strategy we focus on the environmental polycrisis; where climate change is a key driver of biodiversity loss, and biodiversity loss, in turn, worsens climate change and destabilises other natural systems. Chemical pollution also contributes to both climate change and biodiversity loss, often degrading water quality and exacerbating environmental impacts.

Sustainability

Meeting the needs of the present generation without compromising the ability of future generations to meet their own needs[1].

Sustainability is an essential concept, but in practice too often focuses only on limiting current environmental damage, rather than addressing the importance of restoration and regeneration.

[1] World Commission on Environment and Development (1987). Our Common Future. Oxford: Oxford University Press.

Regenerative sustainability

Seeking to minimise negative environmental impacts while actively restoring natural, biophysical systems, to ensure a net positive environmental and social impact.

A glossary of terms is provided on page 23 ➤

Foreword

This document outlines the University's vision to become a truly regenerative university.

This is our most ambitious environmental strategy ever, reflecting the fact that as a global society we are in a race to avoid environmental catastrophe. As a university, we see an opportunity to leverage our teaching, research, and influence to accelerate system-wide change in the world's production and use of energy and resources and the restoration of nature.

The environmental polycrisis is a global justice issue. In 2023, the poorest 66 per cent of humanity (5 billion people) were responsible for just 16 per cent of global carbon emissions – the same quantity of emissions as the richest 1 per cent[1].

Yet more than 91 per cent of deaths caused by climate-related disasters of the past 50 years occurred in developing countries, meaning that those least responsible for carbon emissions bear the brunt of climate-related impacts[2].

With that in mind, our guiding question is this:

If every individual and organisation took action as we plan to, would it be sufficient to achieve the future we seek for all?

If the answer is no, then we must think again.

Beyond damage limitation...

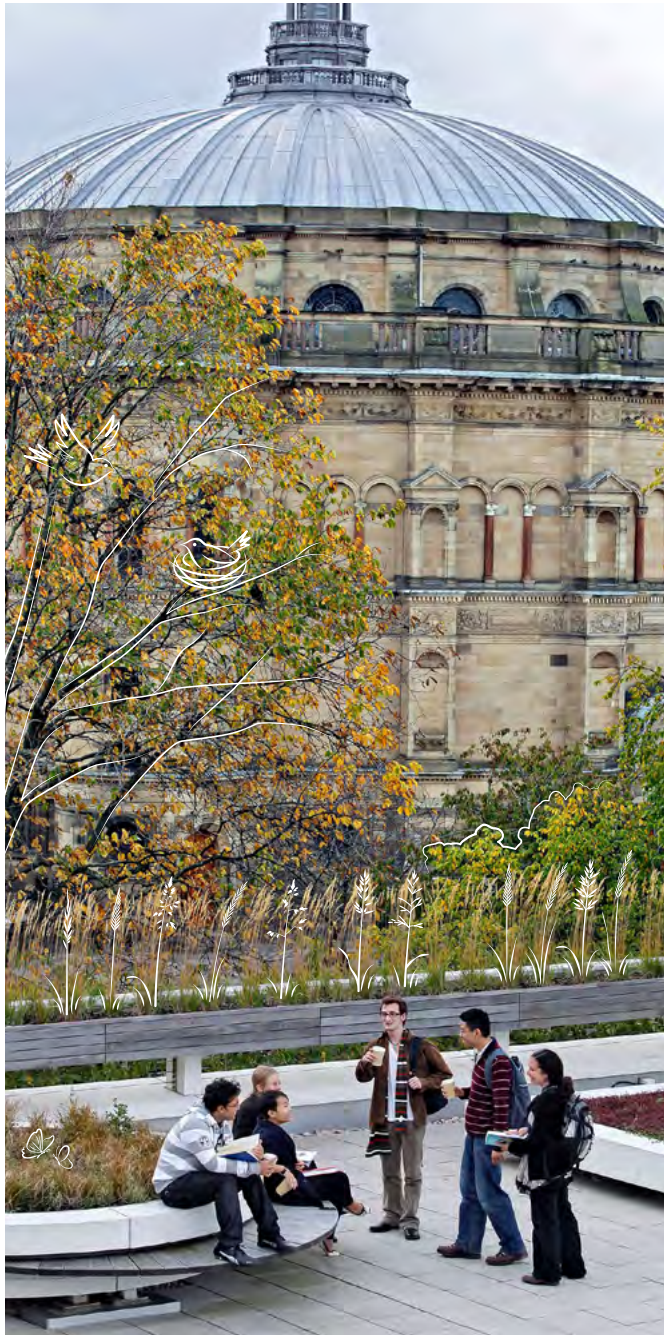
Targets to achieve net zero carbon emissions and to prevent ecological damage are aimed at limiting the damage that humans inflict on our world but say little about undoing damage already done.

We are proud of the significant contribution our staff and students have already made in reducing the damage we cause, in adopting climate change and environment as one of our three core research missions and in supporting the scaling and commercialisation of innovative sustainability solutions.

We have launched the Edinburgh Earth Initiative to champion globally significant transdisciplinary research, innovation and partnerships to address the environmental challenges we face. We now host more than 35 research centres, institutes, networks and groups focused on climate, nature and wider environmental issues.

We've scaled up renewable energy generation 15-fold, completed divestment from fossil fuels and reduced investment emissions from our equities by 64 per cent since 2018, and introduced a Sustainable Transport Policy with a presumption against domestic, business class and first-class flights.

We recognise that to meaningfully address environmental challenges we must urgently step up the scale of action.



[1] Oxfam International (2023). Climate Equality: A Planet for the 99%. Oxfam International.

[2] World Meteorological Organization (2021)

...to creating our regenerative future

To truly achieve our Strategy 2030 vision **to make the world a better place**, our strategy will now go beyond net zero as 'damage limitation', and instead become **regenerative**.

Our ambition is that the University adopts a regenerative sustainability outlook whereby we not only minimise damage to environmental systems but actively repair them.

This requires a significant step-change across all of our University activities and a joined-up, institution-wide approach that includes:

- supporting our staff, students and alumni to deliver this strategy, developing a **culture that visibly champions regenerative sustainability** practices and innovation;
- ensuring **all students can access meaningful study of climate and nature**, regardless of degree chosen, while training thousands of staff and students every year to address the polycrisis;
- further **deploying and leveraging our exceptional research and innovation capability** to increase our contribution to solving these crises;
- partnering with other universities, governments, the city region and industry to **drive systemic change beyond our University**;
- transforming our operations to be:
  - **carbon net negative**, sequestering more carbon emissions than we generate;
  - **nature net positive**, regenerating ecological systems beyond any damage caused;
  - **circular** in our approach to our use of resources.

This 15-year strategy 2025–2040 charts the University's pathway:

- beyond a primarily operational approach, to proactively focus on areas of highest potential impact: our research and innovation, learning and teaching, partnerships, driven by our people and culture;
- beyond net zero carbon targets, to a comprehensive and interconnected response to the environmental polycrisis of climate change, nature loss, water, chemical pollution and overuse of resources;
- beyond sustainability as damage limitation, to the forefront of regenerative sustainability leadership and best practice.

Be part of our journey

This strategy was created by – and written for – our University community, created over two years and 1,500 hours of stakeholder input from across the University.

Discover our vision to become a regenerative university, and hold us to account as we navigate this journey.

Above all, help us to achieve it.

Professor Sir Peter Mathieson
Principal and Vice-Chancellor

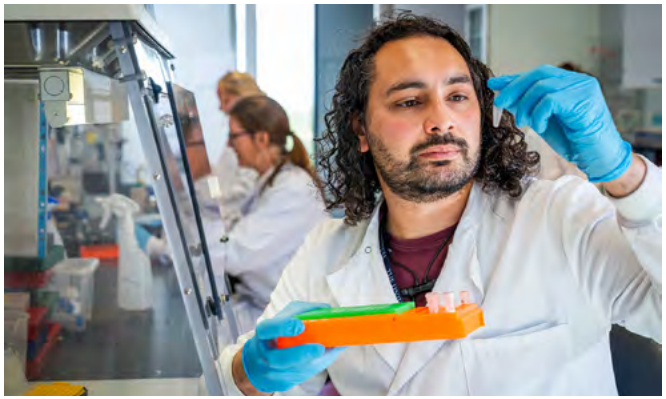
Ash Scholz, President, Edinburgh University Students' Association

Akrit Ghimire, Vice President Community, Edinburgh University Students' Association

Syjil Ramjuthan, Vice President Welfare, Edinburgh University Students' Association

John Rappa, Vice President Activities and Services, Edinburgh University Students' Association

Katya Amott, Vice President Education, Edinburgh University Students' Association



Our strategy at a glance

We are living in a time of environmental polycrisis. Interconnected and reinforcing climate, nature and wider environmental issues are interacting to create a crisis greater than the sum of its parts.

The processes that balance our planet's system and the pressures impacting its stability are highlighted in the Stockholm Resilience Centre's Planetary Boundaries Framework.

Our approach to becoming a regenerative university is informed by this framework, which focuses on climate change; nature loss and land use change; water; and chemical pollution. The overuse of resources is a major driver of all planetary boundary transgressions. Our University will address these issues through our learning and teaching, our research and innovation, and our operations. This transformation will be driven by our communities and the culture of sustainability we will foster and champion.

This strategy focuses on the environmental aspect of regenerative sustainability, but has been carefully developed to complement our social, civic and community programmes. We recognise the importance of climate justice and our role in supporting a just transition.

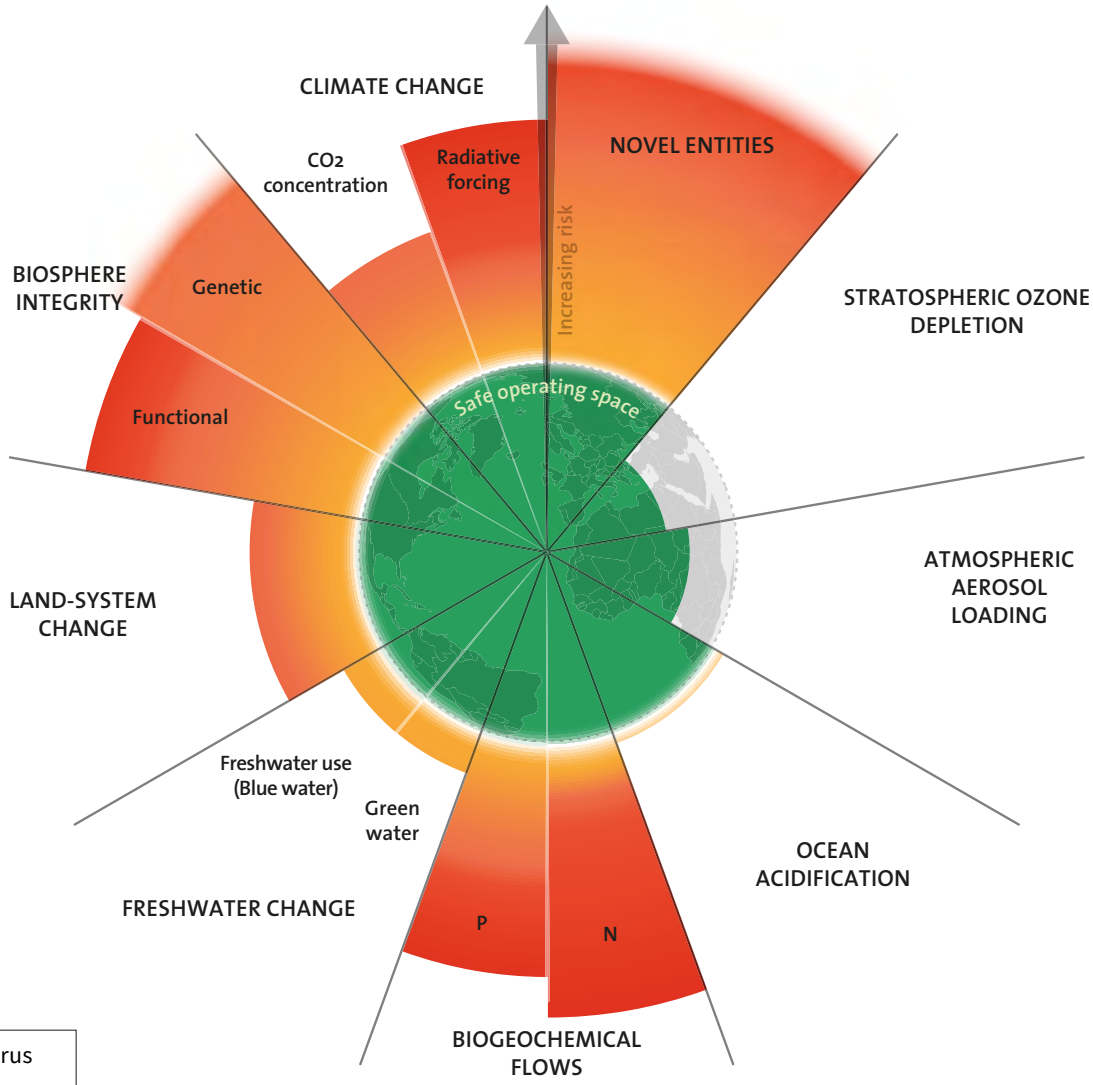
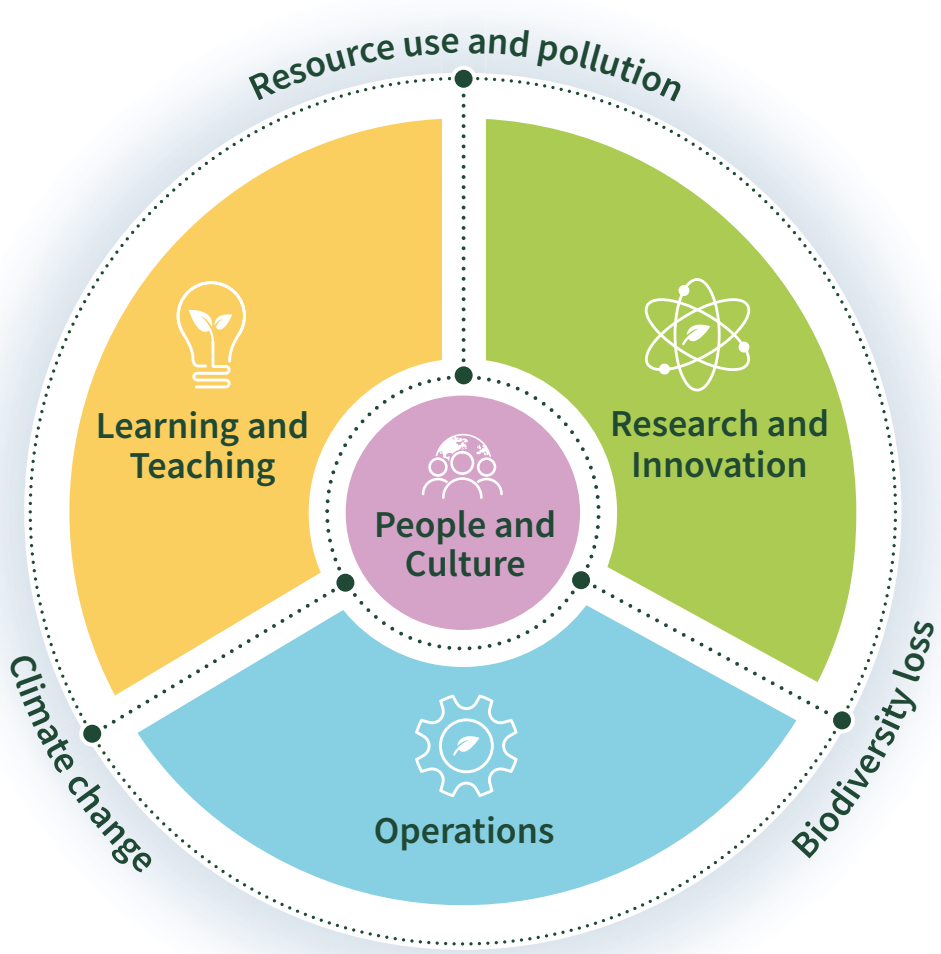


Figure 1: The 2025 update to the Planetary boundaries framework

Azote for Stockholm Resilience Centre, based on analysis in Richardson et al 2023 (CC BY-NC-ND 3.0)

Our strategy outlines three key impact areas through which we will address the environmental polycrisis of climate change, biodiversity loss and resource use and pollution. Driven by our people and the culture that supports them, we will increase climate and nature-related learning and teaching, boost environmentally focused research and innovation and embed regenerative sustainability across our operations.



Three areas where the University can have the greatest impact:

Learning and Teaching

c.49,600
Students and changemakers choose to study with us

Research and Innovation

£3.2 billion
The real-world impacts of our research and innovation activities, which contributed £3.2 billion to the UK economy in 2021/2022

Operations

c.19,000
Staff

c.£1 billion
Endowment and Treasury

£375 million
Annual non-pay expenditure

2nd largest
UK university estate and corresponding digital estate

To deliver our vision for a regenerative university, we will deliver the following commitments:

Learning and Teaching

- By 2030, all students will have access to climate and nature learning experiences that are meaningfully embedded in their curriculum.
- By 2030, we will train at least 5,000 staff, students and alumni on carbon literacy, biodiversity literacy, the circular economy and more, regardless of role or programme of study.

Operations

- A 1.5ºC aligned decarbonisation pathway will achieve net zero carbon by 2040 and net negative carbon in due course. Targets apply to Scope 1, 2 and all scope 3 emissions.
- We will regenerate ecological systems across a land footprint at least five times the size of our campuses, while ecologically regenerating our own campuses, by 2040.
- We will drive a step-change in reducing biodiversity loss, chemical pollution, water impacts and resource use[2] both within and beyond our operations by engaging our suppliers and partners.
- We will work to ensure our University is resilient and ready for the impacts of the polycrisis, from flooding to supply chain disruption.

Research and Innovation

- We will further resource our community of climate, nature and environment researchers and associated innovation ecosystem of academics, entrepreneurs and industry partners.
- We will extend our partnerships and engagement, working for example through the Scotland Beyond Net Zero partnership to drive real world solutions through transdisciplinary, cross-University work in partnership with industry and government.
- We will maximise our impact through ethically informed engagement and influence, demonstrating our national and international research leadership on climate, nature and environment in the way we collaborate and work.

Our staff and student leaders visit Drumbrae in Stirlingshire, one of our woodland creation sites

These impact areas are underpinned by:

People and Culture

At the heart of this strategy are our People and Culture. We will support our communities to champion regenerative sustainability:

- The majority of staff and students in our community will be aware of the polycrisis, with many inspired to lead or be involved in realising our regenerative sustainability vision.
- Regenerative sustainability will be embedded through the staff and student experience and visible in their behaviours.
- The majority of staff and students will feel well informed and confident when making sustainability related decisions.

Governance and reporting

On behalf of the University Executive, a new Board will hold responsibility for oversight of progress against a detailed Implementation Plan, drawing on expertise and experience from across our community.

A review of the strategy will be undertaken halfway through its delivery in 2032, and reporting will be undertaken annually.

[2] Resource use refers to the use of water, metals, plastics, chemicals, fuels and other materials in the University's day-to-day operations. We purchase a significant amount of resources every year, contributing to the environmentally harmful impacts associated with their extraction and production.

Our past, present and future

The impacts of the environmental polycrisis are already being felt. Vulnerable communities are disproportionately affected, with women, children, people with reduced income and those with reduced mobility most at risk. Future generations will face unprecedented climate impacts, with 1 billion children at extremely high risk from the impact of the climate crisis.[3]

Our past

Since 1583, the University has been a globally influential centre of scientific enquiry and technological innovation. We have helped shape the world we live in today including a crucial role in unlocking fossil fuels as a new source of energy. This helped power the industrial revolution but also contributed to the inappropriate exploitation of natural resources.

Both directly and indirectly, the wealth generated from these enterprises has supported the University's institutional growth. This history, alongside our position as a world-class university and civic institution, brings with it a responsibility to act.

Latterly, this legacy has enabled our significant contribution to climate and environmental science, and helped to unlock innovations that are already addressing global challenges and improving quality of life for people all over the world.

Our actions today can help address systemic inequalities exacerbated by a fossil fuel era from which our University both contributed to, and benefited from.

Our awareness of our own complex history motivates us to ensure our present and future activities are rooted in climate justice and environmental regeneration.

The University has set out a series of immediate reparatory actions and long-term commitments in response to its landmark Race Review, which explored our historical links to slavery and colonialism.

Find out more:

The University's Race Review

The present

We're on a journey to embed regenerative sustainability in our learning and teaching, research and innovation, and operations. We want to leverage our institutional power to meaningfully drive a just transition for the benefit of current and future generations.

The University was ranked 4th in the world in the 2026 QS World University Rankings for Sustainability, and achieved first place in the Times Higher Education Impact Rankings (2024) for Sustainable Development Goal (SDG) 9: Industry, Innovation and Infrastructure.

Rooting: Ecology, Extraction & Environmental Emergency in the University's Art Collection ran from January to November 2025

To mark Global Goals Week 2025, the University published SDGs: Stories of Impact, collating case studies from across the University that contribute toward the UN SDGs.

Our progress has been recognised with more than 20 national, international and global awards over the past 8 years.

[3] The Climate Crisis is a Child Rights Crisis: Introducing the Children's Climate Risk Index. New York: United Nations Children's Fund (UNICEF), 2021

We have:

Trained more than 5,000 students and staff on sustainability courses in 2023/24

Graduated more than 631 alums from 73 countries in our award-winning MSc Carbon Management degree

Made tackling the climate and environmental crisis one of three core missions of our Research and Innovation Strategy 2030

Launched the Edinburgh Earth Initiative to catalyse, support and champion bold, globally significant transdisciplinary research, innovation and partnerships

Established more than 35 research centres institutes, networks and groups focused on climate, nature and wider environmental issues

Installed a 1.5MW solar farm at our Easter Bush Campus

Completed divestment from fossil fuels in 2021 and reduced carbon from our equities portfolio by 64 per cent since 2018

Introduced a sustainable travel policy in 2021 with a presumption against domestic flights and first-class flights

The future

We are proud of our progress as a university community, but we know we need a step change in action to meaningfully address the polycrisis with the urgency and scale required.

When we reflect on our progress as a university since 2016, we acknowledge that there are three key lessons to inform our new approach:

1. We need to widen the scope of the strategy to cover other environmental crises, and to embed those even more strongly into our core business of learning and teaching, research and innovation for impact.
2. We need to move our ambitions from doing less harm to regenerating our natural world.
3. Driven by the urgency of the climate crisis, we need to greatly accelerate the speed of our decarbonisation journey.

As part of our mission to make the world a better place, these changes will help us to become a regenerative university. This means ensuring access to meaningful climate and nature education for all staff and students; maximising the impact of our research and innovation to solving the polycrisis; and becoming carbon net negative, nature net positive, and circular in our operations.

The scale of our challenge is immense, but we are already making progress.

Building on our University's whole institution approach we now embark on a new phase of our journey, from sustainability as damage limitation to sustainability as regenerative.

Case study

The Forest and Peatlands Programme

The University will deliver a £50 million programme to sequester 1 million tonnes of CO_2e, both on our land and in partnership with other landowners across Scotland. This project will involve planting more than 2 million trees, restoring peatlands and ecologically regenerating approximately 5,600 hectares of land across various sites in Scotland, more than 4,500 of which is owned by partners. This is a combined area more than 240 times the size of the Meadows, or more than 8,000 football pitches.

This programme will ecologically regenerate more than five times our campuses' physical footprint, and by 2040 sequester all emissions from unavoidable business and international student travel. The University and our partners are working closely with local communities at each site to make sure they are involved in the process. We will also create opportunities for research, teaching and learning for our students on these sites.

Find out more:

The Forest and Peatland programme

By 2040 the University's Forest and Peatlands Programme will sequester all emissions from unavoidable business and international student travel

Case study

The Edinburgh Earth Initiative

The Edinburgh Earth Initiative (EEI) supports the delivery of this Strategy's research and innovation priorities, alongside the climate and environment mission set out in the University's Research and Innovation Strategy 2030.

EEI builds transdisciplinary capability through the Earth Insights and Intelligence Programme, Earth Fellowships, and strategic partnerships in the UK and internationally. EEI hosts the Scotland Beyond Net Zero partnership – a collaboration of thirteen Scottish universities working to accelerate research that supports Scotland's net zero ambitions. It also leads the University's engagement with UN climate and environment processes through the Conference of the Parties (COP) Advisory Group. EEI Earth Champions provide senior academic leadership in priority challenge areas such as clean energy systems, sustainable cities, and the circular economy.

Find out more:

The Edinburgh Earth Initiative

More than 87 Earth Fellowships have been created across 19 Schools, representing at least 29 countries

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Changes to our climate present some of the most significant challenges to communities and organisations across the world. Our holistic regenerative sustainability strategy allows us to create innovative and socially just solutions working with businesses, policymakers and research organisations, while simultaneously educating and empowering future generations to deliver much-needed positive and equitable outcomes globally.

Universities are well placed to provide solutions to the environmental polycrisis, with the ability and agility to respond with urgency and impact, and through our regional and international partnerships to exchange best practice, build resilience, promote adaptation and deliver beneficial change to people, communities and society.

Professor Kim Graham
Provost

Our people and culture

The University's vision

Our staff and students believe that a regenerative approach is critical to the University delivering world-leading research, learning and teaching. The University Executive and Court have made a bold and public commitment to a regenerative approach and these values are embedded in our culture and actions.

Regenerative initiatives will be visible across campus and their positive impacts will be clearly signposted and understood. The University will have embedded a regenerative ethos across our staff and student lifecycles and experience. Staff will understand that regeneration is part of everyone's role and make decisions aligned to regenerative sustainability. Regenerative sustainability will be mainstreamed across the student experience and our graduates will have the knowledge and skills to thrive in a sustainable future.

Student and staff sustainability leaders are celebrated at the 2025 Changemakers Awards

Our goals

- By 2030, the majority of staff and students of our community will be aware of our regenerative sustainability goals, with many inspired to lead or be involved in realising the University's vision.
- By 2030, regenerative sustainability will be embedded through the staff and student experience and be visible in our behaviours.
- By 2030, the majority of staff and students will feel well informed and confident when making sustainability related decisions.

> "Strategies provide the direction, but it is the staff and students that make the University what it is. A dedicated focus to shifting the culture of the University is what will make this strategy the most effective and lead to the greatest positive change for the University and the global community.

Akrit Ghimire
VP Community 2025-26
Edinburgh University Students Assocation

Julie Wilson, Community Ranger for the Forest and Peatland Programme

Our next steps

Biennial staff and student survey

The University will undertake a comprehensive, strongly incentivised all staff and student biennial survey, to measure progress against our key people and culture targets. This will help the University understand what is and is not working in our people and culture mission and will underpin decision-making to keep us on track.

Boost communications on climate and nature

The University will trial a wide range of communication methods and channels to increase awareness and engagement with the University's action on climate and nature through communications designed to cut through a noisy communications environment.

Expand our training

The University is introducing a step change in its sustainability training. We will move from training hundreds of staff per year in introductory courses or climate change, to training around 5,000 staff and students every year across a wide range of climate, nature and environmental polycrisis training.

Embed regenerative sustainability thinking throughout the staff and student experience

Regenerative sustainability will be embedded through the staff experience through recruitment, appraisal criteria, training opportunities and changes to working environments. For students, regenerative sustainability principles will be visible on campus and accessible through education and training offerings, and extracurricular opportunities.

Launch our Sustainability Framework

The University has launched a Sustainability Framework to support consideration and prioritisation of the full range of regenerative sustainability actions that could be taken across people and culture; learning, teaching and training; research and innovation; and operations.

Launch our behaviour change platform

The University has launched a behaviour change platform to encourage and incentivise sustainable actions for our thousands of staff and students. It aims to inform and empower regenerative sustainability thinking and action, while informing staff and students of everything we're doing to realise our regenerative vision.

Funding to support our people in delivering our regenerative vision

We recognise we are making a significant ask of ourselves in delivering a step change in ambition levels on top of already busy workloads. As well as seeking to embed delivery of this mission within, rather than in addition to our roles, we will also make funding available to support our people in delivery of our regenerative vision. This can be used to drive for example ecological regeneration on campus, cut through communications, and to support positive behaviour change.

Attending the Edinburgh Climate Festival


Student volunteers visit Drumbrae in Stirlingshire

Impact area: learning and teaching

The University's vision

Every career path interacts with climate, nature and sustainability issues. Our students, having had access to world-leading education in climate and nature as part of whichever degree they choose, will graduate with the required understanding, competencies and values they need to build a successful future career. They will go on to drive regenerative sustainability approaches through their communities and the organisations they found, join and lead.

Our goals

- By 2030, all students will have access to climate and nature learning experiences that are meaningfully embedded in their curriculum.
- By 2030, we will train at least 5,000 staff, students and alumni on Carbon Literacy, Biodiversity Literacy, the Circular Economy and more, regardless of role or programme of study.

Showcasing native tree species at Doors Open Day

Our progress

- Our Introduction to Sustainability course is recommended learning for all students and staff.
- More than 5,000 staff and students undertook sustainability training in 2023/24. We are the first University to offer Biodiversity and Carbon Literacty Training, and Circular Economy Training to all staff and students.
- The University offers dozens of dedicated courses on sustainability for our students. We continue to introduce innovative new courses, including the MA Interdisciplinary Futures to empower students to address complex challenges.
- We have graduated more than 631 alums from 73 countries in our award-winning MSc Carbon Management degree.

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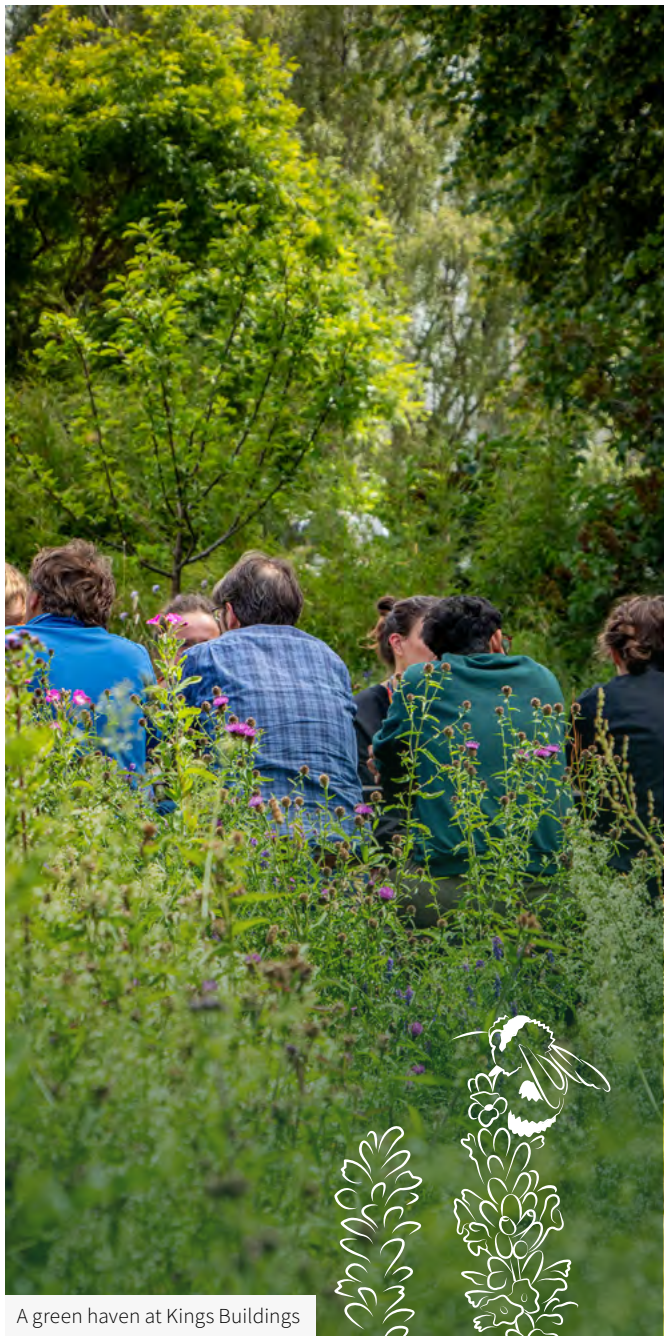
The student and staff experience is incredibly important to us at the University. In listening to staff and students, it is clear that climate and biodiversity is of primary concern. It's vital therefore that our staff and students are able to have a university experience where this concern is responded to by being rooted in our core values. I look forward to seeing regenerative thinking embedded across our experiences and throughout our campus, and to enjoying the culture and environment that these changes make.

Lucy Evans
Associate Principal and Deputy Secretary, Students



A green haven at Kings Buildings

Our next steps

Embedding climate and nature in the curriculum

We will ensure all students have opportunities to access meaningful and credit-bearing learning of climate and nature. Informed by the Learning and Teaching Strategy 2030, the Skills for Success Framework and the Edinburgh Student Vision, we will embed these topics in learning outcomes and assessment. Additionally we will explore opportunities to provide meaningful learning experiences through both co-curricular and extra-curricular activities, harnessing experiential learning and creative learning pedagogies.

Measuring climate and nature in the curriculum

We will develop our approach and indicators for monitoring and evaluating how meaningfully embedded climate and nature across the University's curriculum. We will explore programme and course-level assessment, learning outcomes, programme design and engagement with Board of Studies.

Scaling the reach and range of our training courses

We will train 5,000 staff and students per year across our Introduction to Sustainability, Carbon Literacy, Biodiversity Literacy, Circular Economy Literacy courses and more. We will continue to train global audiences through our extensive range of short online courses.

Experiential learning for sustainable development

We will maximise opportunities for experiential learning and teaching through further developing our Earth Fellows and Mastercard Foundation Scholars programmes. We will explore the potential experiential learning opportunities arising as part of our Forest and Peatland programme.

Supporting teaching for sustainability and regeneration

We will proactively support staff who wish to increase their understanding of climate and nature in order to support deeper integration within their disciplines, pedagogies, programme and course level design. This will be supported by an internal Teaching Climate and Sustainability Community of Practice.

The Dirty Weekenders Society work with communities on nature restoration projects

Case study

Engaging those most impacted by climate change

Our Widening Participation Programme, Earth Fellowship Programme and participation in the global Mastercard Foundation Scholars Program brings opportunities to talented students from across the UK and around the world. These programmes facilitate the exchange of knowledge, ideas and experience from different geographies – enriching our University community.

We offer 111 short online courses on a range of subjects, with 20+ sustainability-related courses in English, Arabic and Hindi. Our courses have reached five million students so far. We will continue to promote these to ensure we reach into the global community most likely to be impacted by the environmental polycrisis.

The Mastercard Foundation Scholars

Impact area: research and innovation

The University's vision

The University will create an environment in which our research community can flourish and innovate. Working alongside our partners in industry, the public sector and local communities, we will produce extraordinary insights and discoveries that tackle the major problems facing our world.

We will achieve this vision by marshalling our research and innovation to understand the causes and effects of the environmental polycrisis, and to help communities adapt and mitigate its effects.

The Edinburgh Futures Institute facilitates interdisciplinary collaboration

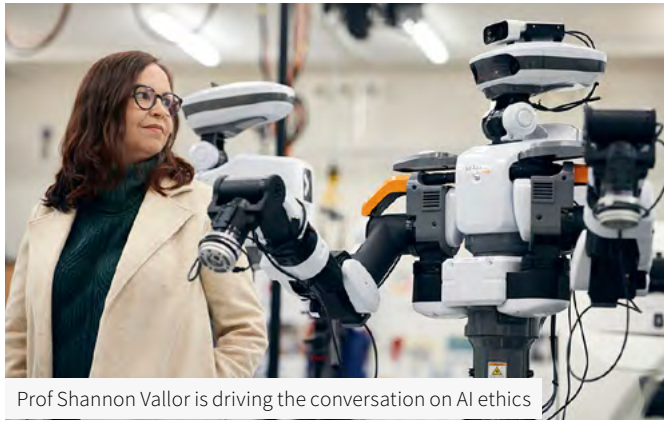
Our goals

- We will further resource our community of climate, nature and environment researchers and associated innovation ecosystem of academics, entrepreneurs and industry partners.
- We will extend our partnerships and engagement through the Scotland Beyond Net Zero partnership to drive real-world solutions alongside Scottish universities, and partnerships with industry and government.
- We will maximise our impact through ethically informed engagement and influence, demonstrating our national and international research leadership on climate, nature and environment in the way we collaborate and work.

> "Our research has tangible, positive impacts on society and the environment. We address the world's most pressing challenges, including through the development and deployment of solutions to the climate, nature and environmental crises. This involves working closely with industry, policy makers and communities, together pursuing a regenerative future.
>
> **Prof Liz Baggs**
> **Vice Principal for Research and Innovation**

Our progress

- Climate and environmental research has been prioritised as one of our three core research missions in our Research and Innovation Strategy.
- In 2023/24, £19.3 million of industrial and translational research awards and 15 per cent of student startups supported by Edinburgh Innovations were sustainability focussed.
- We have developed our transdisciplinary research communities and partnerships via the Edinburgh Earth Initiative, and more than 35 research centres, institutes and groups.
- The University co-delivers the 15-year Data Driven Innovation initiative, delving into some of the world's most pressing challenges from food production to climate change, through the Edinburgh Futures Institute, Agritech Hub, Usher Institute, Edinburgh International Data Facility, Bayes Centre and the National Robotarium.



Prof Shannon Vallor is driving the conversation on AI ethics

Case study

MiAlgae

MiAlgae was founded by Douglas Martin while studying for an MSc in Synthetic Biology and Biotechnology in 2016 with the help of Edinburgh Innovations. The startup, which grows eco-friendly, fish-free omega-3, was nominated for the prestigious EarthShot Prize in 2024.

"At the heart of MiAlgae is an innovative circular economy model. Our innovative bioprocessing technology offers a cheaper and greener alternative service to Scottish distilleries for disposal of whisky coproducts, by recycling to clean water and upcycling to a value-added microalgal omega-3 product targeted at the animal nutrition sector. Our products are designed to strongly contribute to the sustainability of the animal nutrition sector and are more financially accessible than existing products."

Douglas Martin, founder and CEO, Mialgae

Find out more:

MiAlgae: Fish-free Omega-3

Case study

Protecting vulnerable communities from environmental risks in Latin America

Researchers from University of Edinburgh and Heriot-Watt University (through the Edinburgh Strategic Alliance) have carried out action research into community and local government responses to environmental risks, aiming to empower communities in Latin America to participate in managing these climate-related risks.

In Medellín and São Paulo, our GCRF-funded projects trained and co-ordinated community volunteers who monitored and analysed potential landslides hotspots, identified low-cost mitigation measures, and liaised with local government to co-ordinate these with municipal efforts. More than 1,393 households have directly benefited through neighbourhood mitigation plans and measures, and many more have benefited indirectly through municipal policies and regulations.

Find out more:

Medellín Urban Innovation

Case study

Climate change and the future of tropical forests and savannas

This project works with hundreds of institutions across the tropics (central and south America, central and southern Africa and south east Asia) to make systematic measurements of how the tropical vegetation is changing. The data is used to understand how the carbon cycle responds to climate events like cyclones and El Niño and to predict what will happen as the climate crisis intensifies.

The project has shown that savannas and dry forests are important carbon sinks, absorbing signficant CO_2 emissions. These environments are very sensitive to climate conditions and ecological processes such as wildflires. At the same time, hundreds of millions of people use savannas for their livelihood – 80 per cent of Africa's energy use comes from trees. The outputs from the project will inform the global carbon budget and global vegetation modeling, which are crucial to better understanding climate change.

Find out more:

SECO: Resolving the current and future carbon dynamics of the dry tropics

Case study

Calling time on 'green-washing': Fixing international greenhouse gas accounting practices to promote genuine climate change mitigation

More than 500 companies globally spend approximately USD150 million per year on renewable energy certificates in order to claim to have reduced emissions. We have shown that greenhouse gas (GHG) accounts based on certificates misinform managers, consumers and investors, as buying certificates does not increase renewable energy generation or reduce actual GHG emissions.

These findings have informed the development of new international GHG accounting standards (International Organisation for Standardisation (ISO) 14064-1, and UK government guidance); and influenced business practice through direct and indirect engagement with companies.

Find out more:

Calling Time on Green-washing

Case study

BLOOM (Co-Benefits of Largescale Organic Farming On HuMan Health)

We are generating the most rigorous evidence to date on the impact of agroecology on the health of farmers and their families, through a community-based programme in Southern India.

The Government of Andhra Pradesh aims to empower the state's six million farmers to transition away from the use of monocropping, synthetic fertiliser and pesticides, to natural farming methods.

Our research will provide quantitative estimates of the health co-benefits of natural farming and contribute to the transition to sustainable agri-food systems around the world.

Find out more:

BLOOM

Case study

SeaWarm renewable heating

University of Edinburgh spinout SeaWarm has developed low-cost, heat exchanger technology to harness natural warmth from rivers, lochs, seawater, and minewater, delivering affordable, sustainable heating and cooling. By replacing oil and gas systems, it can cut CO_2 emissions by up to 90 per cent, while also saving households and businesses hundreds of pounds on energy bills.

"Our mission is to bring affordable, renewable heating to communities most exposed to rising costs and carbon-intensive systems. Scotland's coastal communities are our immediate focus, where we aim to establish a strong track record before expanding across the UK, Europe, and internationally."

Prof Chris McDermott, School of Geosciences at The University of Edinburgh and co-founder, SeaWarm

Find out more:

SeaWarm: Renewable heating system for Scotland's communities

Our next steps

Supporting our community of researchers and innovators

Aligned with our Research and Innovation Strategy, we will support our staff, students and external partners to drive impact through research and innovation in response to climate, nature and wider environmental challenges.

We are boosting specialised support for innovation in sustainability, securing grant research funding and philanthropic income generation, within Edinburgh Earth Initiative, Edinburgh Innovations, and the Edinburgh Research Office. The upcoming Edinburgh Innovations Sustainability Plan will accelerate action and positive outcomes from sustainability-focussed innovation, in collaboration with the Edinburgh Earth Initiative and in alignment with the Research and Innovation Strategy.

We will facilitate transdisciplinarity, cross-University coordination and bid effectiveness, with the Edinburgh Earth Initiative developing a community of practice among staff, students, alumni and partners in accordance with its Strategy 2025–30.

We will cultivate a thriving innovation ecosystem that supports translation of research into real-world solutions and the creation of new commercial opportunities for the University and its partners.

We will expand the pool of researchers engaged in research on climate and environment, with Earth Champions and Earth Fellows hosted by the Edinburgh Earth Initiative working across schools to catalyse new ideas. Improving synergies and resourcing of climate and sustainability research community in accordance with Edinburgh Earth Initiative strategy.

Sustainability research practice

We will introduce an ambitious sustainability research commitment and support, aligned with the UK Research and Innovation Sector Environmental Sustainability Concordat, providing guidance on how we implement the Concordat alongside guidance for integrating sustainability considerations into our substantive research and innovation.

Extending our impact through partnerships

We will build strategic partnerships with other higher-education institutions, policymakers, businesses, the third sector and local communities, with the goal of leveraging the resources and influence of our external partners to extend the impact we can have in effecting broader system change.

Communicating our impact

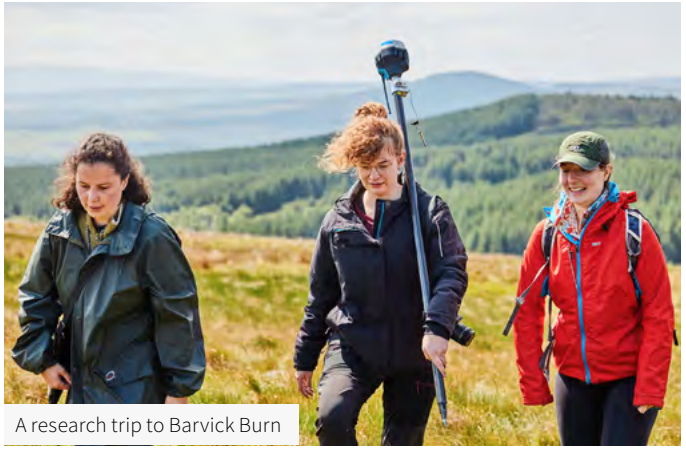
We will baseline, monitor and better communicate our climate, nature and environment research and innovation impacts in sustainability.

Accelerating impact from innovation

We are piloting a new Proof of Concept Fund, which is designed to develop and de-risk promising new research-based technologies, products, and services that are designed to address climate and environment challenges. The pilot will build understanding of the support needed to develop impact from environmental innovation in the longer-term.

Maximising ethical engagement and influence

We will consider expanding our current Income Due Diligence Framework to include engagement beyond financial engagement, for example consultancies and research collaborations.



A research trip to Barvick Burn

The Fastblade testing facility

Impact area: operations

The University's vision

As a regenerative university, we will move beyond damage limitation, to playing our part in actively reversing the environmental polycrisis. This means that in due course the University will not just reduce carbon, but remove more carbon than it emits, ecologically regenerate more land than it degrades, and minimise chemical pollution, water and resource use beyond our direct impacts driving wider change through our supply chains and investments.

Some impacts of the environmental polycrisis are already here, and their effects will worsen. We will adapt our University and communities to be resilient and ready for the impacts to come.

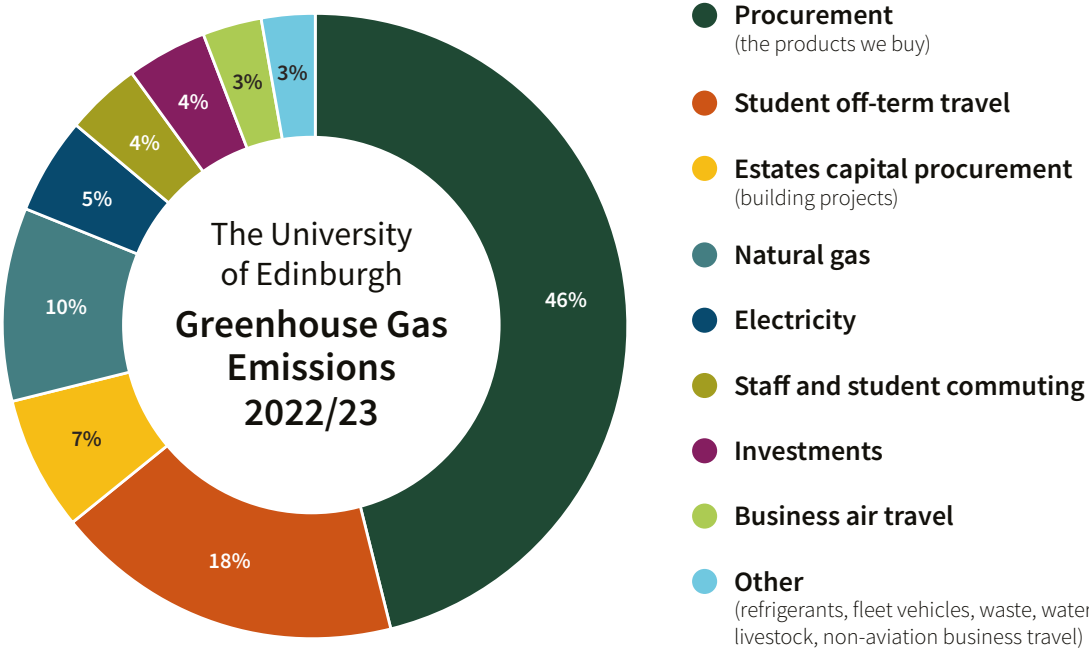
What do we mean by operations?

Our carbon, biodiversity, chemical pollution, water and resource targets apply to all aspects of the University's day-to-day activity.

This includes impacts from everything we buy (our supply chain), student and staff travel (including international students travelling to study here), the powering and heating of our estate, the buildings we manage, and our use of resources including the waste we create.

Where do our emissions come from?

Figure 2: The University of Edinburgh's Greenhouse Gas emissions 2022/23, all scopes



Our primary greenhouse gas emissions sources:

50%
Things we buy
Embodied[4] carbon in our supply chain

25%
Our travel
Commuting, business travel and student off-term travel

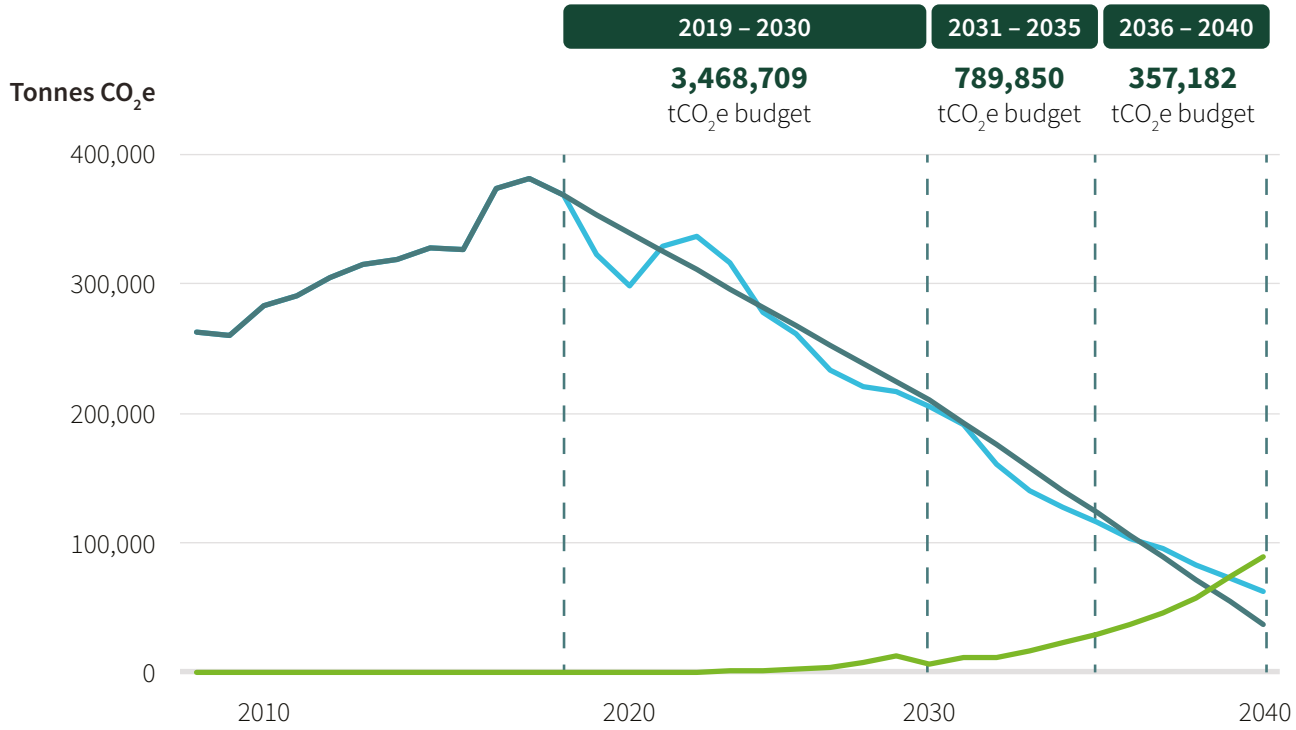
25%
Our estate
Gas, electricity, waste, water and embodied carbon in our buildings

[4] Embodied emissions are emissions resulting from the production of a good or service e.g. emissions from the energy used to manufacture lab equipment.

Our goals

1. We will follow a 1.5°C aligned decarbonisation pathway for all three scope emissions, achieving net zero carbon by 2040 en route to net negative carbon.
   See Fig. 3 (simplified decarbonisation pathway graph) for an illustration. This pathway mandates:
   - **a.** a 43 per cent reduction by 2030 in scopes 1, 2 and all scope 3 emissions, working within five-year carbon budgets.
   - **b.** a 60 per cent reduction by 2035 in scopes 1, 2 and all scope 3 emissions, working within five-year carbon budgets.
2. We will regenerate ecological systems across a land footprint at least five times the size of our campuses, while ecologically regenerating our own campuses, by 2040.
3. We will drive a step-change in reducing biodiversity loss, chemical pollution, water and resource use both within and beyond our university operations by engaging with our suppliers, investment managers and partners across our wider operations.
4. We will work to ensure our University is resilient and ready for the impacts of the polycrisis, from flooding to supply chain disruption.

Figure 3: The University of Edinburgh Emissions Pathway to 2040 (illustrative)



The University is committed to reducing its carbon emissions to close to absolute zero across scope 1, 2 and 3 by 2040.

We have chosen to include aviation emissions from international student travel. By 2040, unavoidable emissions from international student travel and business travel will be offset by the University's Forest and Peatlands Programme.

Our progress

We have:

- Installed a solar farm at our Easter Bush campus, providing 1.7 million kWh per annum of low cost clean electricity and meeting 15% of site electricity demand.
- Installed five heat pumps across our estate, achieving a 15-fold increase in on-site renewable electricity generation between 2021 and 2025.
- Completed divestment from fossil fuels (2021) and further decarbonised our equities investments by 64 per cent since 2018.
- Implemented a Sustainable Travel Policy which promotes low-carbon travel options and contains a presumption against domestic, business class or first-class flights.
- Launched our Wild Campus programme and completed the first ecological mapping survey of the University's campuses.
- Established six partnerships and began managing land in Scotland to ecologically regenerate 5,600 hectares of forests and peatland, aiming to sequester 1 million tonnes of CO_2e.

Our annual sustainability reports

Case study

A net zero estate

We are working towards our estate's direct emissions being absolute zero or very close to zero by 2040. No offsetting is currently planned in regard to the estate, which spans 550 buildings.

To begin our step change in action, an initial multi-year £32 million decarbonisation programme is underway. Recent highlights include capturing waste heat from data centres to heat buildings, exploring the ability to use waste heat from our supercomputer to heat a campus and even local homes, and ensuring new buildings such as the Usher Institute are heated by low carbon technology.

Our Energy Masterplan requires the replacement of our gas-fired energy systems with low carbon heat sources, and building fabric upgrades. Achieving our estates decarbonisation goals presents a significant challenge given the urgent need to move away from use of fossil fuels, set against the reality of technical practicalities and a tight financial climate. Resolving this tension will require sustained commitment and significant technical innovation and partnership working.

The University is assisting the city of Edinburgh's decarbonisation journey, with the aim of accelerating wider progress towards net zero. Collaboration with our community of researchers has highlighted opportunities to use the campuses as a living lab, to test innovative ideas and develop knowledge which can then be shared with others to aid their transition, recognising the University's research capability, technical expertise and civic responsibilities.

Find out more:

How the University estate is net zero

Our next steps

Ecological regeneration on an area five times our campus footprint

Our Wild Campus programme will ecologically regenerate all of our campuses for the benefit of wildlife and our communities, while improving the resilience of our estate including our farms.

Beyond our campus, engaging closely with neighbouring communities and project partners, we will deliver a £50 million Forest and Peatland programme of ecological regeneration over 5,600 hectares of land in Scotland, creating education, employment and research opportunities.

Minimising supply chain impacts

We will embed a circular economy approach to significantly reduce our climate change, biodiversity, chemical pollution, water and resource related impacts in our supply chain and investments. We will work closely with our buying community to develop a net zero supplier pathway aligning to a 1.5°C emissions scenario.

Rapidly accelerate the decarbonisation of our estate

We will decarbonise our estate aligned to a 1.5°C aligned decarbonisation pathway, representing a significant acceleration in emissions reduction to date.

This means replacing our five combined heat and power plants and gas boilers with low carbon heating sources, exploring a significant increase in renewable energy generation, reducing embodied carbon significantly in new builds, exploring opportunities to refurbish rather than build new and delivery of a significant energy efficiency programme.

Developing our Sustainability Framework

Our newly launched Sustainability Framework supports the embedding of regenerative sustainability practices across Schools and Departments. We will continue to support teams to adopt the framework and guide them as they implement their bespoke sustainability action plan.

Tracking climate and nature impacts of investments

We will continue to demonstrate leadership in the field of responsible and socially positive investment by decarbonising our investment portfolio to align with a 1.5°C emissions scenario, and seek to measure and minimise our investment impacts on nature.

Funding to deliver our regenerative vision

We recognise we are making a significant ask of ourselves in delivering a step change in ambition levels on top of already busy workloads. As well as seeking to embed delivery of this mission within, rather than in addition to our roles, we will also launch a regenerative sustainability delivery fund to support our people in delivery of our regenerative vision. This can be used for example to drive nature-based changes to campus, cut-through communications, behaviour change and more.

Students and staff planting at Drumbrae

A campus nature walk

Glossary

We understand there can be nuances in terminology relating to climate change. Here's what some of the most common terms we refer to in this strategy mean to us and links to our sources.

1.5°C aligned decarbonisation pathway: this describes the speed and scale at which we will reduce our carbon emissions, so that if all actors undertook this, the world would remain under 1.5°C of global warming. We will ensure we meet this pathway through the adherence to five-year carbon budgets.

Carbon neutral: balancing greenhouse gas (GHG) emissions with equivalent amounts of sequestered carbon. Note, the difference between carbon neutral and net zero is that for carbon neutral there is no requirement to reduce your emissions before you balance them with sequestration (offsetting). This is considered a substantially less robust approach than net zero is, due to multiple factors including the limited volumes of sequestration which could be achieved globally which would fail to compensate for emissions if dramatic reductions are not undertaken first.

Carbon sequestration: the removal of carbon from the atmosphere and permanent or semi-permanent storage of the carbon in for example geological formations or biomass for example trees, soil and sediment.

Circular economy: a system where products and materials are not wasted, but instead kept in circulation through processes like maintenance, reuse, refurbishment, remanufacture, recycling and composting.

Climate justice: means avoiding inequitable outcomes for different people and places associated with vulnerability to climate impacts.

CO_2e: carbon dioxide equivalent is a way of standardising the impacts of different GHGs for example 1kg of methane has 28 times the impact of 1kg of carbon dioxide and so 1kg of methane would be reported as 28kg CO_2e.

Greenhouse gas emissions (GHGs): numerous gases drive climate change (or the greenhouse effect), and collectively these are known as greenhouse gases (or GHGs). Carbon dioxide is the most impactful overall, due to the high volumes emitted, but other GHGs are more powerful (but emitted in smaller volumes), such as methane, nitrous oxide, and fluorinated gases.

Just transition: ensuring that the transition to low-carbon and environmentally sustainable economies and societies is undertaken equitably, and does not disadvantage particular individuals or groups.

Net negative carbon: commonly used interchangeably with net positive carbon and climate positive. It effectively means sequestering or removing more carbon from the atmosphere than we emit.

Nature net positive: effectively restoring and regenerating more nature than an organisations operations damages or degrades.

Net zero carbon: defined as reducing greenhouse gas emissions by at least 90 per cent and offsetting any residual emissions via a credible, robust offset mechanism.

Polycrisis: interrelated, interacting and mutually reinforcing crises. For example, climate change is one of the primary drivers of biodiversity loss, while biodiversity loss can exacerbate climate change. Chemical pollution contributes to both climate change and biodiversity loss, often degrading water quality.

Regenerative sustainability: minimises any negative environmental impact, while ensuring sufficient positive impact in actively regenerating natural, biophysical systems, so that the net effect is positive.

Scope 1 emissions: describes when greenhouse gases are emitted directly from on our own sites, or from assets we own for example from burning gas to heat and power our buildings, fugitive emissions of GHGs from refrigeration units, and emissions from burning diesel and petrol in our fleet vehicles or back-up generators.

Scope 2 emissions: describes when greenhouse gases are emitted elsewhere (for example a gas power station) in the production of electricity which we use to power our buildings.

Scope 3 emissions: are all other indirect emissions:

- Purchased goods and services (embodied carbon in consumables we purchase)
- Capital goods (embodied carbon in buildings and other long term fixed assets)
- Fuel and energy related activities (embodied carbon from refining fossil fuels)
- Upstream transportation and distribution (delivering goods and energy to us)
- Staff and student commuting
- Student off-term travel
- Business travel
- Upstream leased assets (emissions from buildings where we are a tenant)
- Downstream transportation and distribution (delivery of goods from us to others)
- Downstream leased assets (emissions from buildings/assets where we are landlord but not occupant).

Sustainability: the ability to meet the needs of the present without compromising the ability of future generations to meet their own needs. In the context of this strategy the term refers to limiting or halting damage to the environment.

Follow our progress, be part of our journey

This strategy has been co-created with hundreds of staff and students across the University in 2023/24 and 2024/25. It seeks to address the environmental polycrisis at the urgency and scale required, while remaining feasible to implement and achieve.

Implementation plans including key performance indicators and detailing how we will achieve this strategy will be published later in 2026.

The strategy spans 2025–2040, with a mid-point review. Progress will be reported annually:

Sustainability targets and performance

Share your thoughts, ideas and questions about this strategy by emailing:

srs.department@ed.ac.uk

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If you require this document in an alternative format, such as large print, please contact: **srs.department@ed.ac.uk**

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