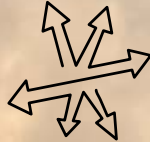




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Sustainability Report

2022–2023





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Introduction

Safeguarding our planet's future requires urgent action. With rising temperatures and more frequent extreme weather events, we must reduce emissions, conserve resources, and build resilience to mitigate environmental impacts and ensure long-term viability.

As a world-leading University it is our duty to place sustainability at the heart of all we do and play a pivotal role in tackling the most pressing global challenges.

In 2021, the University unveiled its updated Environmental Sustainability Strategy, outlining three key goals to be reached by 2035: **achieving net zero greenhouse gas emissions, fostering sustainability positivity to address the environmental crisis, and adapting to climate change impacts on campus.**

The Sustainability Report is a showcase of the impressive work being undertaken across the University, demonstrating where we have embedded sustainability in every aspect of our activity, from teaching to research, and in how we operate. We have selected examples of work taking place across our institution that demonstrate the breadth and scope of our commitment. We have also elected to align this work with the United Nation's 17 Sustainable Development Goals (UN SDGs).

The UN SDGs offer an inclusive roadmap for sustainability, addressing a wide range of interconnected challenges, from poverty and inequality to climate change and environmental degradation. This collaborative approach fosters inclusive decision-making, promotes knowledge-sharing, and leverages diverse perspectives and expertise to drive meaningful change.

We are expanding opportunities for students to dive deep into sustainability through enriched programme content and flexible digital learning



options. By embedding sustainability into our curriculum and research, we are nurturing future leaders equipped to tackle global challenges head on.

We are actively advocating for the transition to a net-zero emissions society. Through impactful research and advocacy efforts, exemplified by the **Centre for Energy Ethics** highlighted in this report, we are reshaping societal norms and behaviours to reduce our collective environmental footprint. We are fostering a culture of sustainability by promoting informed decision-making and transparent reporting of emissions, cultivating an environmentally conscious campus community by empowering individuals to make sustainable choices.

We are transforming our campus into a vibrant living laboratory for sustainability. **The Eden Campus** epitomises our dedication to pioneering both innovative technologies and operational practices.



In addressing unavoidable emissions, we are spearheading initiatives including the **Coastal Restoration Project**, to sequester carbon and create new habitats for wildlife, enriching our campus environment for generations to come.

We take pride in celebrating achievements in sustainability through initiatives such as the **St Andrews Prize for the Environment** and, through the work of our Education for Sustainable Development network, the **Golden Dandelion Awards** which recognise excellence in education for sustainable development.

This report highlights our drive to achieve sustainability across all activity at the University, based on science-driven goals. It also presents areas for improvement. We know we are not always going to have the right answers, but what we hope this report will achieve is a demonstration of our genuine commitment to a sustainable future for all.

Professor Dame Sally Mapstone DBE, FRSE
Principal and Vice-Chancellor

United Nations Sustainable Development Goals

Established in 2015, the United Nations Sustainable Development Goals (SDGs) constitute a comprehensive and ambitious framework designed to tackle global challenges and promote sustainable development. Comprising 17 interconnected goals with 169 targets, they address pressing issues such as poverty, inequality, climate change, environmental degradation, peace, and justice.

Building upon the earlier Millennium Development Goals (MDGs), the SDGs embrace a more holistic and inclusive approach, spanning economic, social, and environmental dimensions. Guided by the principles of universality, leaving no one behind, and partnership, they underscore the importance of collaborative efforts among governments, the private sector, civil society, and the international community.

The successful implementation of the SDGs demands collective commitment, transformative action, and a dedication to leaving a positive legacy for future generations. By aligning the University Annual Sustainability Report with the SDGs, the University aims to exemplify its commitment to addressing global challenges

by contributing to the wellbeing of local and global communities through strategic operations and research outputs.

As the international community approaches the end of the initial 15-year SDG timeframe, the renewal process offers an opportunity for reflection, assessment, and recalibration of strategies. The renewal is expected to involve a comprehensive review of progress made towards achieving the 17 interconnected goals and 169 targets, identifying areas of success and acknowledging persistent challenges. A renewed commitment to the principles of the 2030 Agenda holds the promise of fostering a more equitable, sustainable, and resilient world.

SUSTAINABLE DEVELOPMENT GOALS



Carbon reporting

The University remains responsive to increased external carbon reporting requirements, fulfilling obligations to the Public Bodies Climate Change Duty Report and Higher Education Statistics Agency, amongst other statutory bodies. Our reporting has consistently covered **Scopes 1, 2 and 3**, as detailed below, providing a more holistic evaluation of our environmental impact.

Scope 1 emissions include direct greenhouse gases (GHG) from sources owned or controlled by the University, such as on-site fossil fuel burning. **Scope 2** involves indirect GHG emissions from purchased electricity, heat, or steam.

Scope 3 encompasses all other indirect GHG emissions throughout the value chain, both upstream and downstream. Examples include employee commuting, transportation of goods, and product lifecycle activities.

As reporting requirements have expanded, so too have the methodology and measurement tools, affording us the opportunity to scrutinise our emissions more thoroughly.

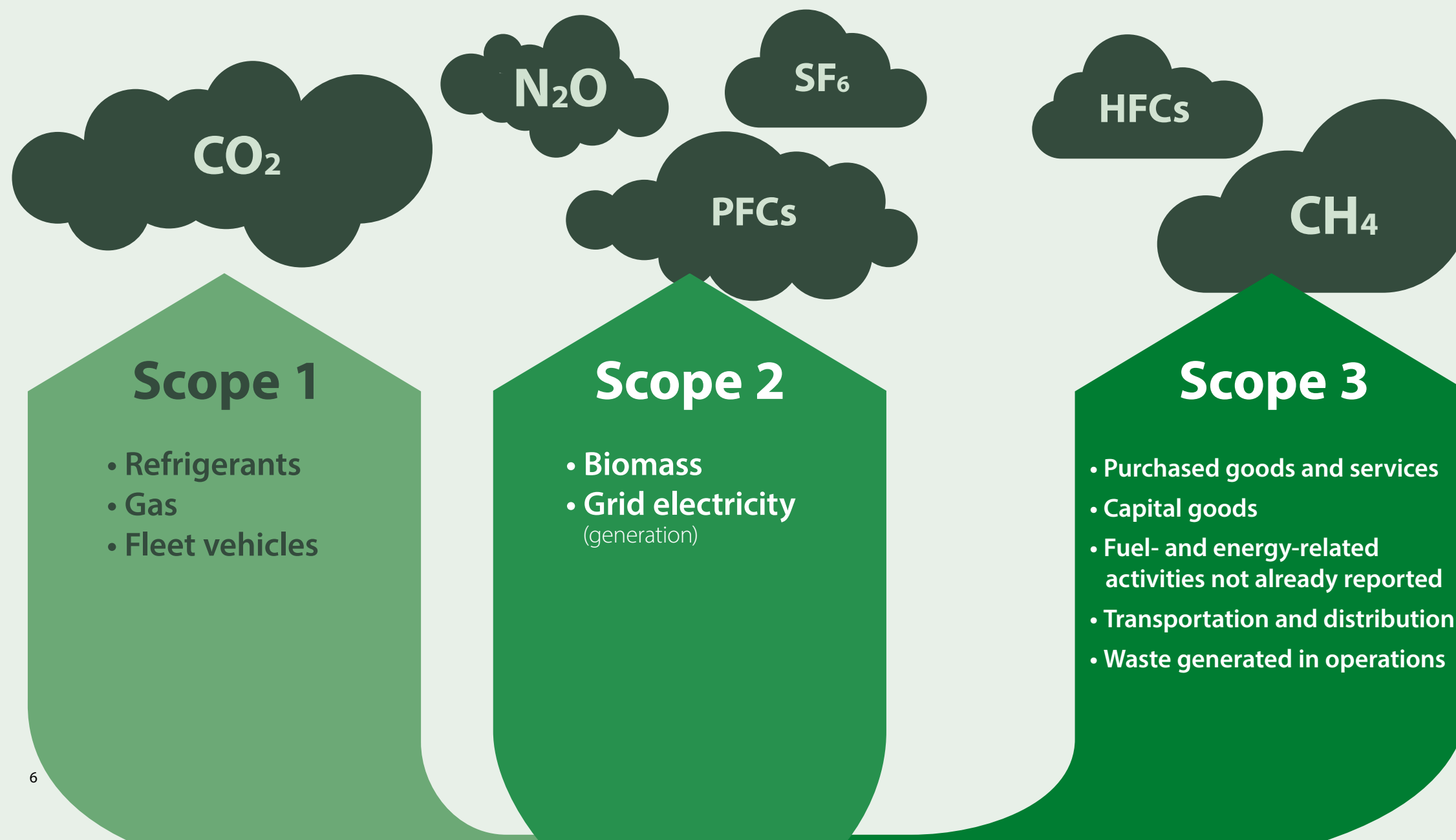
The **Scope 1** figure of 6,680 tonnes of carbon dioxide emissions (tCO₂e) shows a decline from the previous year reflecting a decline in gas usage,

while the **Scope 2** figure of 6,058 tCO₂e indicates a rise in electricity consumption in residences post-Covid. This increase is influenced by both a higher emissions factor for electricity due to more fossil fuels coming online on the grid and an uptick in biomass usage.

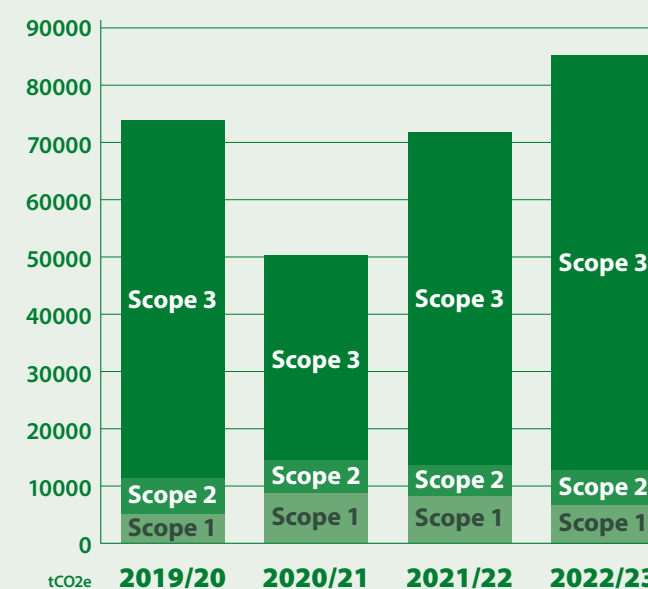
Scope 3 figures for 2022/23 demonstrate the impact of the return to full in-person instruction as Covid restrictions fell away and an increase in student travel. We have also introduced carbon accounting of credit card expenses, including travel expenses.

Although these figures signify a more accurate representation of our carbon accounting, they concurrently present an opportunity for us to pinpoint areas for operational improvements. In 2023 we hired a procurement officer and communications manager with specific remits for sustainability.

This analysis serves as a foundation for reaffirming our dedication to achieving Net Zero by 2035 by making data-informed changes to our operations to uphold our commitment to environmental responsibility.



Measured Carbon Performance at St Andrews:





Bus subsidy provides helping hand in challenging times



A pilot scheme between the University and Stagecoach to give staff and students a 75% discount on bus travel saved more than £700,000 in its first 12 months and reduced the carbon footprint of travellers by 614 tonnes of CO₂e.

The University invested in the substantial subsidy to help students and staff travel to and from work and study, ease pressure on household budgets, cut congestion in St Andrews, and help meet its ambitious target to be Net Zero by 2035.

Described as “life-changing” and “the best thing ever”, the discount is used, on average, by 2000 staff and students (those not already entitled to the Scottish Government’s free bus travel for the under-22’s scheme) per month. Tickets can also be used in evenings and at weekends, providing a welcome helping hand in challenging times.

The initiative has reduced the University’s carbon footprint by 614 tonnes of CO₂e – the equivalent of 1616 return flights from Edinburgh to London – in its first year.* Taking the bus instead of travelling by

car has resulted in staff and students cutting their own footprint for each journey by 37%.

Chief Operating Officer Derek Watson said: “The bus subsidy was just one in a series of initiatives launched by the University to support our students and staff through the cost-of-living crisis. Since then, we’ve seen upwards of 2000 people, mostly staff, using the bus discount every month, and the feedback is that it’s significantly helped cut costs in these challenging times.

“As well as financial benefits, we’ve also seen a welcome reduction in the carbon footprint of those travelling to work, usually by car, that exceeds all our expectations.”

Stagecoach East Scotland’s Head of Commercial, Scott Hall, added: “It’s been amazing to see this trial scheme develop into the success it is today with such a huge carbon reduction because of people leaving their cars at home and using our services to get to work or study. This positive partnership approach has clearly demonstrated



strong results and massive savings for those signed up and we’re pleased to be able to support another operator, Moffat & Williamson, in providing discounted tickets too.”

*Calculate flight emissions – flight CO₂ calculator | myclimate



St AndReuse

St AndReuse is a town-wide project that aims to tackle waste, save carbon, keep money in our pockets and build community, by passing on what we no longer need. Everything is free, except adult clothing and shoes, which are 5 for £5. Thanks to the support and engagement of the community, we have rehomed over 40 tonnes of perfectly reusable household items, avoided 200 tonnes of CO₂e emissions and helped people save in excess of £500k since 2009. Additionally, British Heart Foundation collections have taken place this year with 20.4 tonnes of clothing donations valued at making £35,702 for the charity. Since our partnership from 2019 a total of £234,273 has been raised from our donations.



Putting down roots to grow strong food network



In 2023, local sustainability group Transition University of St Andrews set up a gleaning network to redistribute unharvested vegetables from farmers' fields to community cafés and fridges in North East Fife, including the newly established Students' Association Campus Larder.

Gleaning is the historic practice of people coming together to ensure that crops left behind in the field do not go to waste. They are collected,

with farmers' permission, and can help alleviate food poverty.

The UK is in a cost-of-living crisis which has resulted in a significant increase in people across the country visiting foodbanks and fridges. Transition University of St Andrews is currently working with two local farmers, and plans to work with many more, to focus on post-harvest waste in food processing units.

In 2023 Transition redistributed 340kg of potatoes and 50kg of broccoli with the help of 60 gleaning volunteers. They also helped promote the redistribution of plums and apples from private gardens and community orchards to schools, community fridges and cafés.

Since February 2023, Transition has run an online after school cooking club every week during term time. The focus is on low-cost, healthy and sustainable vegetarian meals, snacks and desserts, using as much local and seasonal produce as possible. With parents leading busy lives, the club helps families plan a dedicated day each week to commit to cooking together.

Transition volunteer Susan Hill, from the University Development Office, also runs weekly cooking classes for a small group of home-schooled children. There are also in-person vegan and vegetarian cooking classes available for small groups.



The Tree

The Tree is a student-led cooperative food hub selling affordable local, organic food, cleaning supplies and other goods. Offering an alternative to supermarket shopping, it connects consumers to local producers and wholefood suppliers, and forms part of a resilient food network serving the St Andrews community.



Edible Campus

The University's Edible Campus has 12 dedicated spaces across St Andrews where students, staff and local residents can grow and harvest vegetables and fruit. More than 100 garden sessions take place each year, led by Transition staff or volunteers, while experienced growers can access the gardens freely or lead their own sessions.

Planting schedules are planned via an online programme that coordinates seed buying and preparation at halls of residence so that, come springtime, over 40 trays of vegetable seedlings are ready to plant out.

The garden volunteers also tend and harvest three community orchards, including the Olym-Pick orchard, a run of 23 trees that spans 1.5km from the David Russell Apartments halls of residence to the School of Physics and Astronomy.





Arclight: Empowering healthcare workers in Rwanda and beyond



Eye care is a dimension of health that is often overlooked. This is a particular issue in low-resource communities where other social or health challenges prevent patients from seeking care until it is too late. In these communities, there is an urgent need for effective medical training and practice that provides quality eye care.

Gatera Fiston Kitema, an ophthalmic clinical officer from Rwanda in the St Andrews' School of Medicine, combines his expertise in eye care with economical and effective diagnostic and training tools developed by the Arclight Project social enterprise, based at the University.

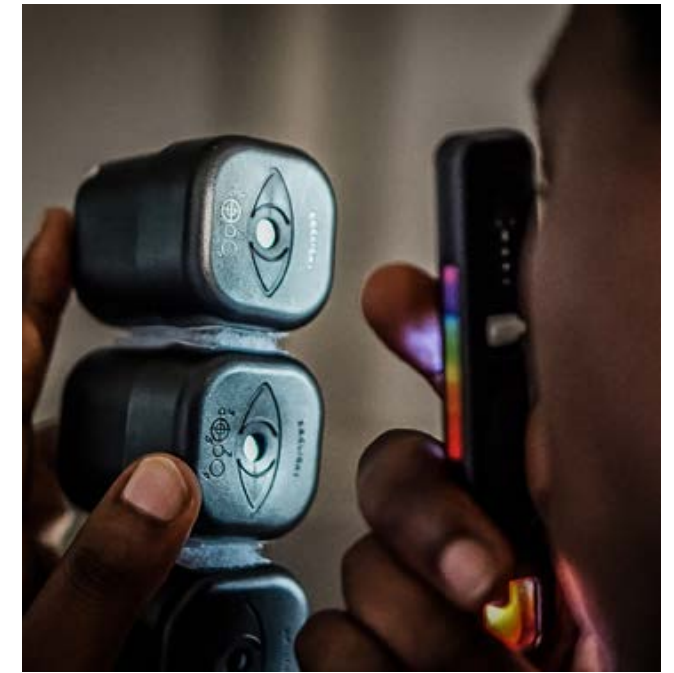
The Arclight Project enables those working in low- and middle-income countries to equip, train and empower health workers of all grades to confidently diagnose and manage eye and ear disease.

Fiston, who is also an Assistant Lecturer at the University of Rwanda, met Dr Andrew Blaikie, Senior Lecturer in Ophthalmology at the University of St Andrews, at an eye care conference in Uganda in 2018, where he first learned about the Arclight device, a low-cost diagnostic tool developed here in St Andrews.

Having trained as an Ophthalmic Clinical Officer, Fiston's work has extended from treating individual patients to developing healthcare within wider communities throughout Africa, understanding where diseases come from, and how they can be detected while treatment is still possible. Eye examinations can often help detect other major health issues, such as hypertension or diabetes, so collaborative practice between eye and other general medical health care workers is vital.

With support from influential bodies such as the Rwandan Ministry of Health and Biomedical Centre, Fiston is well-placed to ensure that the results of his GCRF-funded PhD reach as far as possible, by expanding the provision of quality eye care for low-resource communities and improving training for future generations of health professionals.

Findings from this important research can help inform future policy and practice in health facilities and training institutions across Rwanda and beyond, and in 2023 Dr Andrew Blaikie, Arclight Project lead and consultant ophthalmologist with NHS Fife, was awarded the NHS Global Citizenship Award in recognition of this work.



School of Medicine

The Medical School has developed an inter-varsity group of Scottish medical schools to form a network of sustainable medicine practice, working to develop the network of students and practitioners in the field through a sustainability lens. They held a meeting with the Royal Society of Physicians to address sustainability practices in surgery and a curriculum team has been formed to identify a sustainability lens internally. This group is being developed to include members who are sitting on local health boards, thus linking out from the Schools to the broader field. The Medical School is also working on completing a Planetary Report Card – a tool for learning which will include an assessment of the curriculum and activities around sustainability with a view to sharing best practices.



Engaging education for a sustainable future

The United Nations Sustainable Development Goals (UN SDGs) represent a systemic approach for understanding local, national and global challenges relating to education. A student internship through the Proctors Office facilitated the analysis of School module alignment with the goals. Anya Polatajko supported by Gosia Mitka and Rehema White as part of the Sustainability Committee, collated data and developed the project Visualising the SDGs in the Curriculum.



The image demonstrates how Schools across the University are engaging with each of the SDGs. The size of each circle represents the degree of engagement with each SDG – the larger the circle, the higher the degree of engagement.

The project aims to spark cross-disciplinary ideas and engagement with the SDGs.



Golden Dandelion Awards

Now in their fourth year, the Golden Dandelion Awards are coordinated by the University's Sustainability in the Curriculum Committee (SiTC). The awards invite submissions that demonstrate considerable contribution to Education for Sustainable Development (ESD). The Prize is presented each year by Principal and Vice-Chancellor of the University, Professor Dame Sally Mapstone.

The 2023 Golden Dandelion Prize was awarded to Dr Charlotte Lee from the School of Geography and Sustainable Development for the module *GG4253 Cultural geographies of climate activism*, which creates connections between the personal and the political by encouraging student engagement with the climate crisis in the context of their day-to-day activities.

Dr Gosia Mitka, Chair of SiTC and Associate Dean (Education) Arts & Divinity said: "The winning module was selected for its innovative and uplifting approach to teaching a topic that is often associated with fear and despair. It is a brilliant example of how education for sustainable development can leave students more empowered and motivated to tackle the challenges of our time."

Dr Lee said: "I found the Award really encouraging. I'm an early career researcher and this is the first module I've designed myself – to receive this kind of positive recognition so early on was a real boost to my confidence."

The module was developed through Dr Lee's research interests as a cultural geographer and climate activist and was inspired by a chapter she contributed to the *Critical Geographies of Resistance*, edited by Sarah Hughes and published in 2023.

In addition to the main prize, modules in development can also receive Dandelion Awards in acknowledgment of their potential. This year, nine modules received Awards for reaching a quality standard for ESD.

The Award ceremony was combined with a Sustainability in the Curriculum workshop for staff and students, facilitated by SiTC.

The University's commitment to ESD also includes a series of Virtually Integrated Projects (VIPs) which give students from any discipline the opportunity to engage in sustainability research, as well as Masters and Bachelor degrees in Sustainable Development. Postgraduate research opportunities and taught degrees are also available in sustainable development.

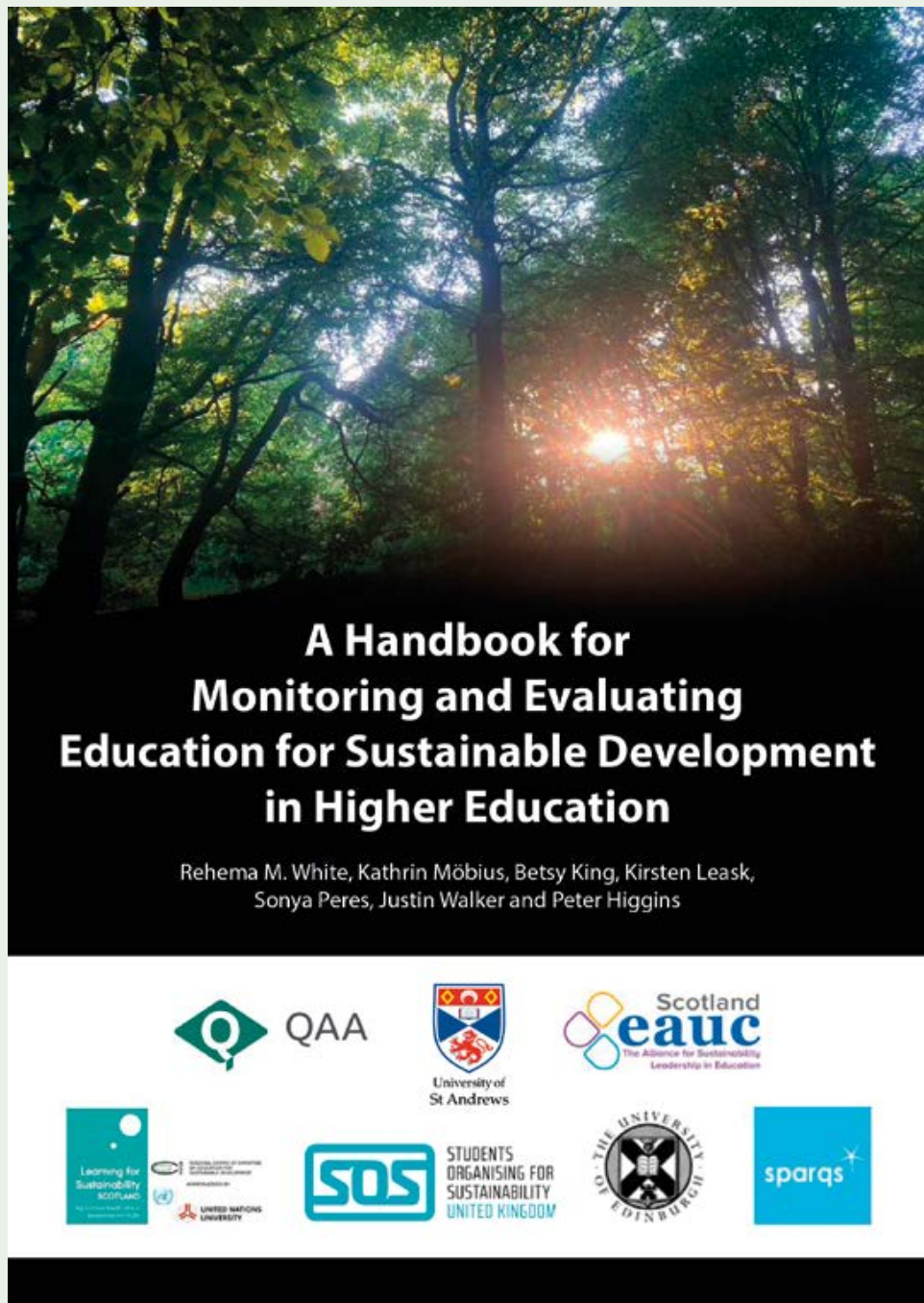
Project scoops UN award

A project led by Senior Lecturer Dr Rehema White from the School of Geography and Sustainable Development, and funded by The Quality Assurance Agency for Higher Education, received a Regional Centre of Expertise (RCE) United Nations University Recognition Award for an Outstanding Flagship Project, through RCE Scotland.

The project centred on Monitoring and Evaluating Education for Sustainable Development (ESD) in Higher Education.

Dr White said: "We hope that our framework for monitoring and evaluating ESD will help to ensure every graduate is a potential change agent, equipped with the abilities to know, do and be the transformation to sustainability."

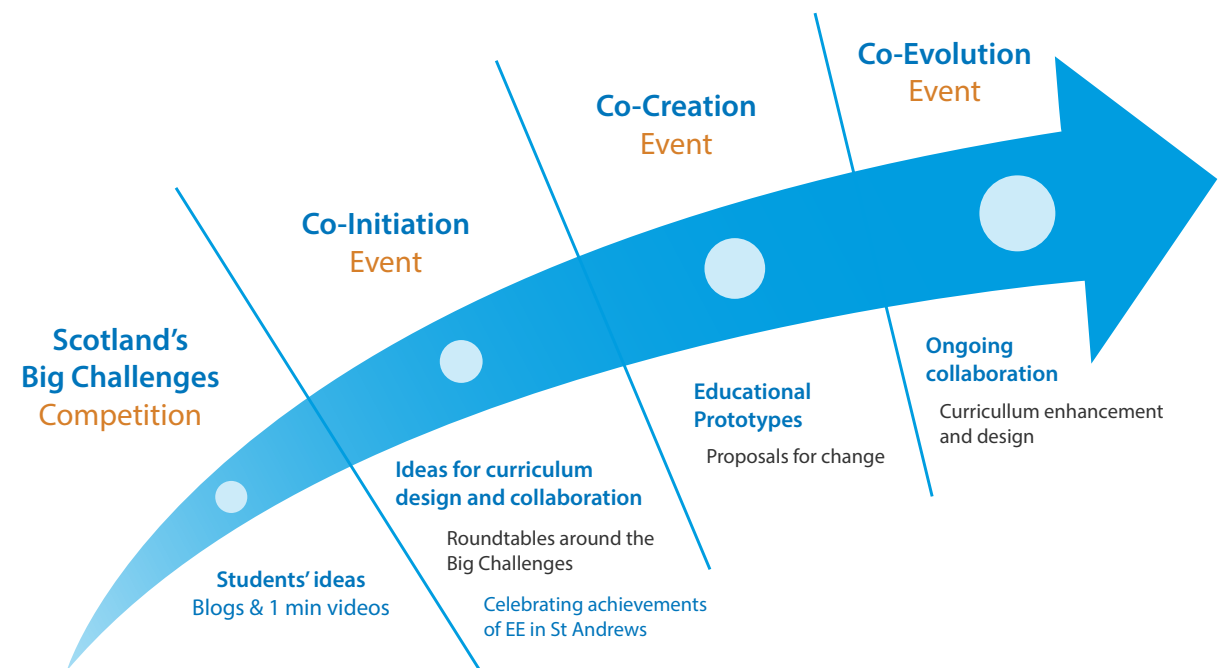
Dr White and other members of RCE Scotland were also part of an international team that won an Honourable Mention through RCE Czechia for the Frontiers in Sustainability Special Issue on RCEs and ESD. RCE Scotland also won an Outstanding Flagship Project award for supporting teachers in ESD.



Creating Impact through Enterprise Education

Associate Dean (Education) Arts & Divinity Dr Gosia Mitka, with Kenneth Boyd and Dr Kirsty Ross in the School of Computer Science, launched a project helping students to identify issues they believed were important to address in Scotland and provided them the opportunity to develop skills, networks and ideas that could be used to address these challenges.

Accepted proposals for 2023 included a project to position the University at the vanguard of reducing carbon emissions in higher education, development of scientifically informed comic books to bring issues such as climate change and forced migration to a broad range of stakeholders, and an app that will show users the locations of nearby epi-pens.



Creating impact through Enterprise Education (CI EE); Boyd, Doherty, Mitka

Funded by Scotland's Future Series and the Director of Eden Campus



A safe and inclusive campus



The EmilyTest Gender-Based Violence (GBV) Charter Award was set up in memory of Emily Drouet, an undergraduate student who took her own life after being subjected to a campaign of gender-based violence by a fellow student at her institution. EmilyTest seeks to improve GBV prevention, intervention, and support in further and higher education, and the Charter sets out over 40 standards across five key areas that aim to answer the question 'Would your institution have saved Emily's life?'.

In 2021, the University participated in the pilot of the EmilyTest GBV Charter before going on to apply for full charter status in 2022. In preparation of the Charter application, the University worked closely with Equally Safe, a group of student representatives and staff who are passionate in their work to address GBV in all its forms, to map and evidence how their work meets the standards of the Charter.

The Charter, the first of its kind in the world, is entirely evidence-based and aims to ensure institutions are as safe as possible in preventing and addressing GBV on their campuses, helping students to live, work and study free from the harms and threats of GBV.

The EmilyTest charity focuses on tackling gender-based violence in education and, alongside the Charter, has developed training programmes and a risk assessment, helping to ensure universities and colleges have the skills, training and resources needed to keep students safe. Ultimately, the Charter aims to ensure that no other student suffers the same fate as Emily.

The EmilyTest GBV programme is supported and funded by the Scottish Government and the National Lottery Community Fund. It is in the process of expanding into England, where institutions have been impressed by the inspiring work of EmilyTest in Scotland.

Women In Gaming (WIG)

Business School Professor Shiona Chillas and PhD student Melinda Grewar are analysing results from an international survey of people working in the video games industry, focusing on diversity management activity in their studios.

While video games and interactive media have grown to become the most economically valuable of the world's creative industries which are making strides to improve their equality and diversity, they also consist of a predominantly white and male workforce and are known for role segregation. Most female employees work in 'soft' roles such as HR and design rather than tech or senior management which, as revealed through public media attention such as Gamergate and #MeToo, have a reputation for misogynistic workplace culture.

Data from the questionnaire were also used to update WIG's first edition of its guide for videogames industry businesses, *Building a Fair Playing Field*.

Melinda Grewar and Professor Chillas, Director of the Business School's Institute for Capitalising on Creativity, collaborated with Abertay University researchers and advocacy body Women in Games. The questionnaire was issued as part of InGAME, the Arts and Humanities Research Cluster (AHRC)-grant funded research and development programme based in Dundee's videogames industry cluster.



Athena Swan Awards

The University has achieved a total of 20 Athena Swan awards, with 14 Schools receiving Bronze level recognition, 4 Schools receiving recognition at the Silver level, and the School of Biology achieving Gold level recognition.

In 2023 the Schools of Medicine and Computer Science both received Silver awards for their commitment to advancing the careers of women in science employment, addressing barriers to progression that disproportionately affect women.

The Athena Swan Charter is a framework which is used across the globe to support and transform gender equality within higher education (HE) and research. The charter evolved from the Athena Project and the Scientific Women's Academic Network (SWAN).



From landmines to Lightwater



Water quality problems currently affect nearly a billion people, and by 2050, water shortages are expected to affect more than 50% of the global population. Maintaining the integrity of both water quality and delivery networks is crucial in addressing these issues.

The Lightwater Sensors detector, created by Dr Ross Gillanders in the School of Physics and Astronomy, is a low-cost real-time diagnostic system for water samples.

Dr Gillanders' research began with the development of an optical sensor platform for detecting landmines and other explosive remnants of war. While developing his work on Counter-Improvised Explosive Device (IED) detection, Dr Gillanders exploited the wide-ranging uses of the underpinning technology to address water quality, increasingly one of the world's most pressing issues.

Lightwater Sensor's photonic-based technology uses optical chemical sensor materials, developed in St Andrews, that are designed to integrate with low-cost portable instrumentation platforms. These selective materials can detect target molecules by exhibiting a loss of light emission when in contact with the analyte. Specifically, the technology employs light-emitting polymers that are highly effective in a variety of applications.

Cleaner water and improved pollution detection both influence food production quality control, giving Dr Gillanders' technology an indirect positive impact on the UN's Goals for zero hunger and the promotion of wellbeing across all ages.

The company established to provide Lightwater Sensors will provide national opportunities in green tech, health and wellbeing, and data-driven business.

The intention is for Lightwater Sensors to scale internationally and become a household name for water quality instrumentation. Lightwater could profoundly and positively impact various parts of the water quality market, including groundwater, drinking water, wastewater, aquaculture, coastal, and environmental laboratories for regulatory bodies and academia.





An innovative approach to energy flexibility



The University's Eden Campus demonstrates a proactive approach to energy flexibility.

The Biomass Energy Centre, which started producing fuel in 2017, burns 12,000 tonnes of sustainably sourced woodchip per year from accredited biomass fuel suppliers. From this, the biomass plant produces 20,000 MWh of heat energy per year - this energy is pumped to St Andrews in the form of hot water, providing heating and hot water for 44 University buildings, with a plan to expand.

Meanwhile, a one-megawatt ground solar photovoltaic development at the edge of the site provides electricity for Walter Bower House, the main building on Eden Campus, and for several electric vehicle charging points.

In what has been hailed a smart energy first for a non-industry consumer, the University has been able to harness energy generated by offshore wind farms and store it in on-site batteries. The energy is then discharged to offset the University early morning peak demand without taxing the National Grid, and the batteries are free to capture and store energy from the solar development.

This process, known as demand flexibility, is part of the National Grid Local Constraint Management Program, an energy flexibility service which allows consumers to minimize their impact on the grid and maintain renewable energy flows through energy storage.

Green Hydrogen

Green Hydrogen provides a scalable solution that allows renewables to address the 70% of our future energy needs that go beyond conventional electrical power.

Since its launch in late July 2020, the University's Hydrogen Accelerator has acted as an enabler of hydrogen technologies in Scotland's growing green economy. Through a partnership between the Universities of St Andrews and Strathclyde, the Hydrogen Accelerator's focus is on the transport ecosystem and to catalyse capabilities across Scotland to ensure that the economic opportunities arising from the transition to Net Zero or ultralow emission mobility solutions can be fully exploited.

The primary objective of the Hydrogen Accelerator is to connect public bodies, industry, research organisations and higher and further education institutions to bring this ambition to fruition. The Hydrogen Accelerator plays a pivotal role providing technical and project management support to accelerate the deployment of projects at scale.

This facility will provide new research and development capabilities to deliver on the ground-breaking technological advancements needed to establish a UK Hydrogen infrastructure. The Hydrogen Accelerator will enable pioneering research into decarbonising the production of energy, fuels and chemicals using only water, waste streams and components of air (nitrogen and carbon dioxide).

Green hydrogen and Power to X

This innovative project has inspired the development of a new facility – Power to X (P2X) – where we intend to create the affordable production and storage of green hydrogen. P2X technologies offer cost-efficient solutions for the storage of energy produced by renewable power sources. Based on a process that produces hydrogen through electrolysis, the Hydrogen Accelerator consists of fuel cells, batteries and an electrolyser which are powered by electricity generated by renewable energy.



Angel Trains

Angel Trains, the UK's largest rolling stock company, has partnered with the University to support its hydrogen train project. The project entailed the conversion of a three-car Class 314 train to a hydrogen fuel cell electric powertrain.

In 2023, the University accepted a donation of a hydrogen electrolyser from Angel Trains which will form an integral piece of green hydrogen research. This will form a part of ongoing, green hydrogen research based at the Eden Campus.

The electrolyser was key to enabling the trial to successfully demonstrate how a green-energy fuel cycle would work, which is a major step in getting hydrogen-powered trains up and running.

The donation of the hydrogen electrolyser follows the support that Angel Trains provided to the University and other industry partners in delivering Scotland's first zero-emission hydrogen-powered train.



Leading the way in growing responsible businesses and institutions



The Department of Management in St Andrews Business School is a signatory member to the Principles of Responsible Management Education (PRME), a United Nations-supported initiative that aims to raise the profile of sustainability in classrooms through seven principles focused on safeguarding our planet and serving society.

Responsible Management Education is seen as a critical factor in advancing the Sustainable Development Goals (SDGs).

The Department of Management submits annual reports on their activities across the Principles, which include aligning curricula and research to the SDGs, engaging with students to commit to and act in support of the SDGs, and developing applied research to create sustainable and effective business solutions around the SDGs.



“The Department of Management’s mission is to explore, envision and encourage responsible, accountable and sustainable Management. To this end, we have a critically reflective approach to Management principles, policies and practices at individual, communal, organisational and societal level, on a national and international scale.

As a community of academic and professional colleagues, we work collaboratively and collegiately to conduct world-leading research, educate a diverse and inclusive cohort of outstanding students, and actively engage with a variety of stakeholders to address existing and emerging challenges in the global environment, foster talent, and provide demonstrable benefits to society and organisations.”

Research is organised in four thematic groups – Accounting, Governance and Organisations, Financial Institutions and Markets, Knowledge and Practice, and Organisations and Society. The work of the groups is supported by several research centres and institutes. These centres also form a focus for taught postgraduate work and doctoral research. Much of the work of the groups is directed through these centres and their increased orientation towards a much more diverse and pluralistic notion of responsible management.

In November 2023, the Department of Finance at the University of St Andrews Business School, in cooperation with the Department of Finance, University of Vienna, and the Center for Ethics in Society, Saint Anselm College, hosted the Sixth Transatlantic Conference on the Ethics of Business, Trade and Global Governance: *Ethics and Sustainability in Banking and Finance*. The goal of this interdisciplinary conference is to bring together ethicists, economists, political scientists, international relations scholars, policy experts, and business leaders to examine how banking, international trade and investments can be conducted more ethically in a post-pandemic and conflict context.

The Centre for Responsible Banking & Finance (CRBF), established in December 2011, conducts banking and finance research by focusing on responsibility issues and bringing together an experienced team of researchers across disciplines within the University and beyond.



The CRBF aims to better understand current issues and challenges facing corporates, financial institutions and financial markets. A particular feature of the Centre is its orientation toward empirical research which increases an understanding of corporate governance, social, environmental, ethical and trust issues for financial and non-financial firms. Membership comprises faculty, PhD candidates and an extensive network of academic fellows.

The Centre runs a regular seminar series and organises the biennial Contemporary Issues in Banking Conference, which was held in December 2023 and attended by leading researchers from UK, Europe and North America.



Eden Campus lies at the heart of the University's ambitious strategy to become Net Zero by 2035.

This hub of innovation and entrepreneurship will provide solutions to current energy problems; solutions which are essential to achieving a sustainable, low-carbon future, as well as to enabling the wider economic transformation of Scotland and the UK.

In 2020 the University was awarded £26.8million by the UK and Scottish governments as part of the Tay Cities Region Deal (TCRD) plus £3 million from Fife Council. The TCRD funding was allocated to four specific projects:

- Local and regional power upgrade
- Creation of GENeration Storage Innovation and Sustainability (Genesis) Centre
- Eden Enterprise Ecosystem
- The Installation of a demonstrator simulation facility, now called the D'Arcy Thompson Simulator Centre

Direct leverage from the Cities Deal and other funding sources, investments and industry partners is currently at around £60 million.

Various funding sources enabled the early development of Eden Campus, repurposing many of the former paper mill buildings on the site and creating Walter Bower House, home to our new Entrepreneurship Centre, St Andrews Innovation, over 450 of the University's professional staff, and also a library and community café.

Indirect benefits include the regeneration of Guardbridge village with over 300 new homes being built, improved public transport links, the doubling of the local primary school roll, the creation of a community garden, planting of 9000 trees and salt marsh restoration works – all helping to create a more sustainable and accessible community in an area that had been adversely affected by the closure of the paper mill in 2008.

In the last 12 months, the Eden Campus site has developed further, most recently with the opening of the new Rapid Prototyping Centre (RPC). The aim of the RPC is to foster academic and industrial collaborations in and around Fife and beyond and to provide a solid place to build a highly skilled workforce enabling individuals to develop the latest technical skills in sustainable design and manufacturing.



In October, the Principal and Vice-Chancellor unveiled the Colin Vincent Centre for Battery Technology – the first of its kind in Scotland.

Facilities include an ultra-low humidity environment – or dry lab – enabling scientists to develop power for the next generation of batteries and energy storage.

Work is also underway by Scottish Power Energy Networks to upgrade and enhance the power supply in North East Fife which will create a new primary sub-station located at Eden Campus, supporting the wider area. Benefits will bring energy security and a 30% increase in power capacity to the area removing constraints on future projects relying on sustainable sources of energy.

2023 also saw the University hand over the building which will become the home of the new Eden Mill distillery and visitor centre. The distillery, located on the edge of the Eden Campus site overlooking the estuary, aims to be carbon-neutral and may present further opportunities for research and innovation.

The sustainable focus of Eden Campus has also attracted businesses from other sectors including aquaculture and life sciences to locate to the site with potential for growth.

IT Operations

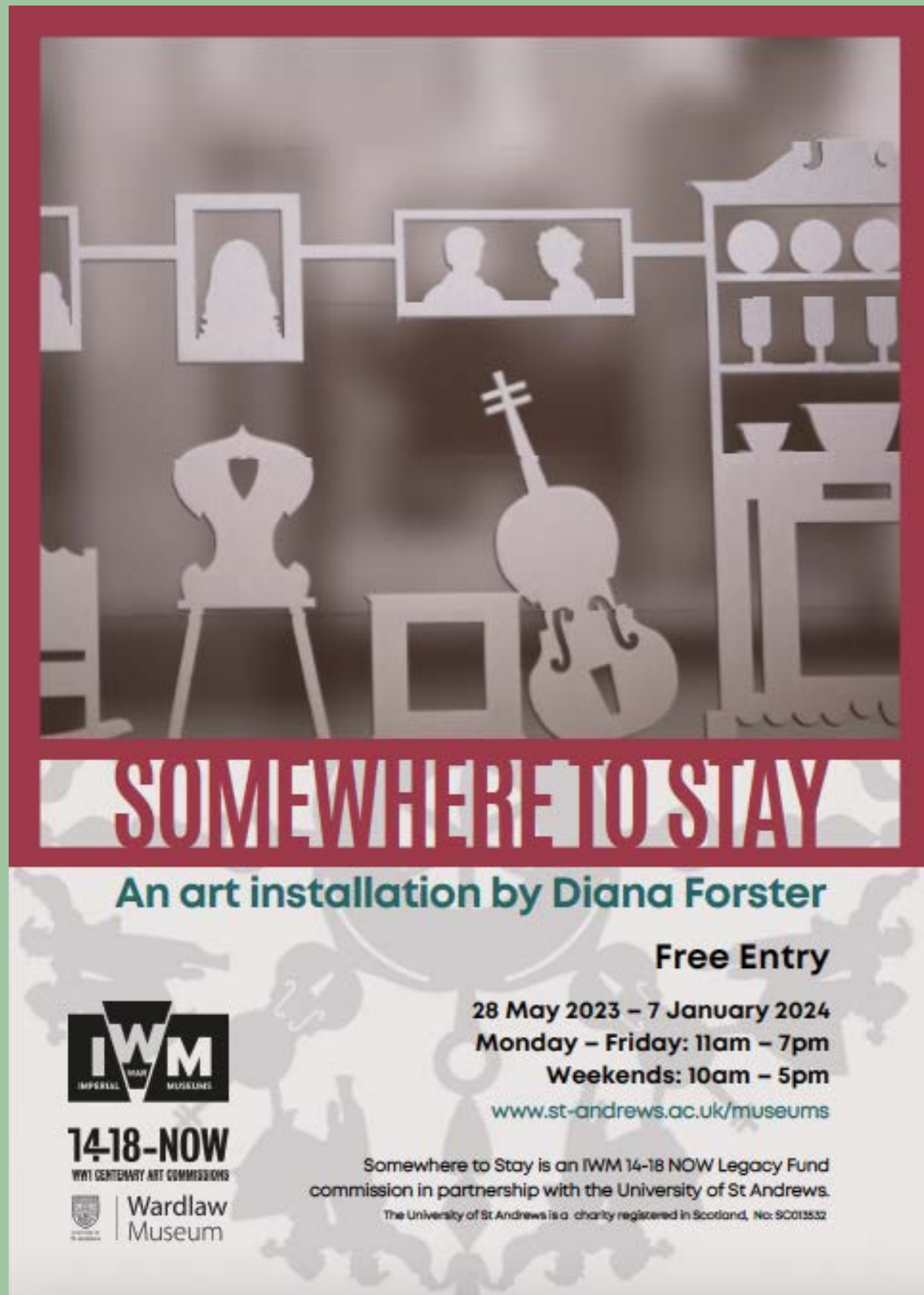
The University's commitment to sustainability extends to our technological operations, exemplified by the Butts Wynd Data Centre's accreditation to the Gold CEEDA (Certified Energy Efficient Data Centre) standard.

To ensure continued sustainability, the Data Centre Operations Group conducts quarterly reviews covering performance, energy management, improvements, and overall facility health and maintenance.

The University has consolidated its servers and storage, transitioning from School-based facilities to a central data centre. Over the past decade, hardware has been systematically removed from several schools, reducing the number of locations from over 45 to around five. This streamlining process not only optimises resource use, but also aligns with the University's sustainability objectives.

The University has also moved from traditional telephones to Microsoft Teams Phone, enhancing communication capabilities and contributing to a significant reduction in overall energy consumption.





The Somewhere to Stay project is an IWM 14-18 NOW Legacy Fund commission in partnership with the University of St Andrews

Developed by Dr Alice König, it makes an important contribution to the Visualising War and Peace project by exploring how we understand and narrate one of the many legacies of conflict: forced migration.



Providing a safe place to live, work and study



Universities of Sanctuary is an initiative to recognise the good practice of universities in welcoming people seeking a place of safety into their communities, fostering a culture of awareness and inclusivity.

In 2019 St Andrews was awarded University of Sanctuary status, thanks to efforts led by the St Andrews Refugee and Forced Migration Network, which brings together representatives from across academic Schools and the University's leadership team.

The group set out to support the development of a strategy and policy for academics at risk and provide a resource hub for current support, projects, research and teaching relating to refugees and forced mobility.

City of Sanctuary has partnered with Article 26, Student Action for Refugees, and others to develop a network to inspire and support universities to develop a culture and practice of welcome within their institutions, in their wider communities, and across the Higher Education sector in the UK.

Initiatives to maintain the Sanctuary status include the Sanctuary Operations Group, which brings together key colleagues from across the University to liaise with staff, students, the local community and external stakeholders to coordinate information sessions and training on what it means to be a University of Sanctuary.

The Group also maintains an oversight of legislation and policy to assess the implications for St Andrews and its communities and make recommendations to the Principal's Office as appropriate. It also works closely with the University of St Andrews Refugee and Forced Mobility Network and Refugee Action St Andrews (RASA) to share information.

Since 2019, the University has offered Sanctuary Scholarships to support undergraduate and postgraduate applicants seeking sanctuary in the UK, providing them with refugee status, humanitarian protection, discretionary leave, tuition waivers and living cost grants.

It is under the Sanctuary umbrella, and specifically the University's work with the Council for At-Risk Academics (CARA), that the University has been able to provide support to academic colleagues and research collaborators in Ukraine. CARA specialises in getting academics safely out of conflict zones.

Forced migration research and teaching

A broad range of research and teaching related to forced migration and/or (forced) migrants is taking place at the University, including at the Centre for Minorities Research (CMR).

The CMR brings together interdisciplinary expertise from across seven Schools. Centre members are committed to exploring intersectionality in the everyday lives of minorities, both in Scotland and internationally. Promoting equality, diversity and inclusion in the University and wider community is central to their activities.

The CMR arranges public talks, holds networking events, organises outreach activities, collaborates on funding applications and policy-oriented research, and coordinates the Borderworlds series of webinar consultations and reciprocal in-person events with postgraduate students and young researchers in collaboration with Charles University in Prague. In June 2023, Charles University hosted the Borderworlds Conference, and presentations were made by St Andrews researchers Dr Stavroula Pipyrrou and PhD candidates Camila Ferreira Marinelli, Rory Cassie, and Christina Chalache.

Widening Access and increasing opportunities

The University is committed to improving equality of access for students from across diverse backgrounds, and to reducing and eliminating barriers for students. No applicant with the potential to do well should be disadvantaged by their social or economic background.

Contextual admissions processes, along with supported pathways into undergraduate study, part-time study, and several Access to HE projects, are now firmly established in St Andrews. These have contributed to a significant increase in applications and acceptances from students with disadvantaged backgrounds.

The University collates contextual information for all applicants with a Home Funded or Rest of the UK (RUK) fee status. This information, together with applicant data, allows admissions officers to put the achievements of each applicant into context when selecting the most appropriate candidates for places at the University.

Outreach

The University offers a range of pre-applicant activities and outreach programmes, including:

- **National Schools Programme (NSP): Access to High Demand Professions – Reach**
Established through the Scottish Funding Council, NSP aims to widen participation in high-demand professions. At St Andrews the programme works with senior pupils who aspire to study in the Schools of Medicine, Psychology and Neuroscience, and the Departments of Economics and Management in the Business School.
- **Sutton Trust Summer Schools**
The University has been in partnership with The Sutton Trust for over 20 years. In collaboration with the Trust, the University hosts a free week-long summer school each year for state school pupils currently in S5 (Scotland), Year 12 (England/Wales), and Year 13 (Northern Ireland).

- **First Chances Fife (FCF)**

The University works with all secondary schools and several primary schools in Fife through the FCF project. The Senior Phase element aims to support S4-S6 pupils with their aspirations towards higher education. The programme focuses on giving an insight into higher education, along with support for applying to college or university.

- **Experience Medicine**

Delivered in partnership with NHS Fife, the programme offers prospective medicine applicants moving from S5 to S6 the opportunity for hands-on work experience in a medical setting.

- **Access to Rural Communities (ARC)**

ARC supports and enables young learners from rural communities in Scotland on their journey into university.

Supported Pathways and alternative pathways

The University offers degree routes that give applicants with alternative qualifications, or those who may have narrowly missed our standard entry requirements, the opportunity to study at St Andrews. These pathways not only provide entry routes, but also come with pre-arrival and

transitional support to ensure the students have the best possible start at St Andrews and go on to achieve their full potential.

- **Gateway programmes**

Gateway programmes for each of our four faculties promote the uptake of higher education among groups that are traditionally under-represented at university. They have been designed to help those who have experienced some disadvantage in their schooling gain entry to the University.

- **Further Education to Higher Education (FE-HE) Pathway programmes**

The FE-HE Pathway to Arts and FE-HE Pathway to Science programmes offer supported entry to applicants studying towards alternative entry qualifications at further education colleges.

- **Lifelong Learning**

The University offers a part-time MA Combined Studies programme and upskilling opportunities designed specifically for those returning to education after a break. Delivered on a part-time basis in the evening, these are ideal for those who may have other commitments which prevent them from undertaking full-time study.



The Centre for Art and Politics

Founded in 2018, the Centre for Art and Politics is an interdisciplinary research unit housed in the School of International Relations.

By focusing on community-led and community-informed research and education, the Centre aims to create opportunities for learning that amplify voices in a way that is collaborative and committed to addressing the human impacts of climate change.

The Centre explores social and political expressions in its many forms as objects of study, vehicles of memory and identity, and as research outputs. While much of the focus will be on contemporary art, current conflicts, and immediate social issues, the Centre also invites historical explorations and analyses.

To encourage interdisciplinary collaboration and transdisciplinary perspectives, the Centre invites participation from across many different areas in the Arts, Humanities, Social Sciences, and beyond.



Scotland at the heart of global challenges



Clean air is vital to a safe lifestyle. Even short-term exposure to air pollution can have negative impacts on wellbeing, while continuous exposure can damage every organ in the human body. The United Nation's Sustainable Development Goals (SDGs) recognise that 99% of the world's urban population breathes polluted air, and places an improvement in air quality at the centre of SDG 11: Sustainable Cities and Communities.

In February 2023, the Scottish Parliament hosted *Scotland at the Heart of Meeting Global Challenges*, an event that celebrated the role of Scottish research in tackling the SDGs. This event was organised by the Physiological Society and the Royal Society of Edinburgh (RSE), two of the primary institutions engaging with scientific research in Scotland. The event was an opportunity to connect policymakers and other stakeholders to research that addresses our most pressing problems. In attendance was Dr Mary Abed Al Ahad from the School of Geography and Sustainable Development who presented her research on the impact of air pollution on mortality and hospital admissions in Scotland.

Dr Abed Al Ahad's work focuses on the effect of air pollution on self-reported health, wellbeing, mortality, and hospital admissions by ethnicity in the UK. Using data from the Scottish Longitudinal Study (SLS), which covers factors including migration, births, deaths, marriages and education to represent broad demographic changes, and data from the UK Household Longitudinal Study (UKHLS), which covers socio-demographic characteristics and lifestyle factors, Dr Abed Al Ahad demonstrated an association between increased exposure to higher levels of air pollution and increased hospital admission and mortality rates in Scotland. Similarly, Dr Abed Al Ahad found an association between higher exposure to air pollution and higher rates of hospital admissions,

GP visits, and poor self-reported general health in the UK by linking detailed air pollution data to the UKHLS data.

The greatest impact on respiratory, infectious, cardiovascular, and cancer diseases was shown for pollution comprised of relatively small particles, with diameters of less than 2.5 µm. These fine particles derive from many sources, including car exhaust emissions, and certain types of industries such as mining and construction. For every 1 µg/m³ increase in cumulative exposure to these particles, respiratory hospital admissions increased by 12% and the mortality hazard increased by 11%.

Dr Abed Al Ahad showed that the effects of air pollution go beyond physical wellbeing, with significant demonstrable effects to mental and behavioural health. She also demonstrated the importance of her work to Scottish public health policy, using a map of Scotland to show that nitrogen dioxide emissions in 2017 exceeded the 2021 WHO recommended maximums in some areas of Scotland's Central Belt.

These findings make a compelling argument for the introduction of measures to lower air pollution levels, which would lead to a more sustainable future and improved public health. Dr Abed Al Ahad suggests that introducing stricter measures on industries, and encouraging the usage of renewable energy in transportation and energy production, would make huge strides towards a safer environment in which to raise future generations.



Cycle-friendly Campus

The University is certified as a Cycle-friendly Campus, with a rating of 'excellent.' The St Andrews Bike User Group was initially set up to address issues around bike safety and cycle light use. This has expanded to become the main partnership and coordination forum for cycling in the University with strong links to the local police and community cycle campaign group – St Andrews Space for Cycling. The group meets quarterly with local councillors, police officers, local residents, as well as University staff involved in security, student welfare, training and environment. The group work to the Campus Cycling Strategy and plan funding and development around cycling, including the Cycle-friendly Campus Award.

Transition University of St Andrews coordinated a cycle maintenance program in which they collected over 140 abandoned bikes around campus, repairing 30 of them to be used in the bike pool. A total of 157 recycled bikes were rented out, and 276 bikes were repaired. To incentivise cycling for commuting, Bike to Work Breakfasts are held regularly as are trainings in cycle maintenance skills workshops. Cycle training skills workshops have been held in several local schools, and the university supported the Fife-wide Cycle Skills day which saw over 500 children attend.

Additionally, Transition is working with community groups on several initiatives including the Crail to St Andrews shared use path and the St Andrews Path Network to provide the public, staff and students safe options for active travel to work.



Addressing supply and demand of antibiotics in Tanzania



Many strains of bacteria have developed resistance to antibiotics due to their overuse around the world. Compounded by access to antibiotic drugs without prescription, and failure to complete recommended minimum courses, this has reduced the effectiveness of antibiotics in treating serious medical conditions and has led to the emergence of more 'superbugs'.

Consequently, infections that should be treatable via a course of antimicrobials become prolonged illnesses that can even prove fatal. Antimicrobial Resistance (AMR) is a widespread healthcare crisis and poses a significant risk to global public health and economic development.

While pharmacological research continues in the search for drugs effective against the more resistant strains, there is a global challenge of antibiotic supply and demand.

The University is addressing the microbiological and social sciences challenges of AMR through the interdisciplinary project, 'Holistic Approach to unravel Antibacterial Resistance (HATUA) in East Africa'. Led by Professor Matthew Holden in the School of Medicine, the project combines insights in microbiology social science from the School of Geography and Sustainable Development (SGSD). Building on HATUA's previous work, Dr Mike Kesby and Dr Kathryn Fredricks (SGSD) have piloted an intervention that seeks to address the supply and demand of unregulated over-the-counter antibiotics sales using participatory citizen science.

They are partnering with the Catholic University of the Health and Allied Sciences; the Tanzanian Ministry of Health; the Tanzanian Pharmacy Council; and the award-winning grassroots NGO Roll Back Antimicrobial resistance Initiative in this impact-oriented project.

(more →)

Procurement

The University asks suppliers tendering for contracts to commit to its Supply Chain Code of Conduct and to ensure its own suppliers do likewise in order to promote sound social, ethical and environmental policies. Sustainability considerations are built into the University's tender processes and documents, and form part of the quality evaluation process.

Other developments include:

- Purchased goods and services
- Capital goods
- Fuel- and energy-related activities not already reported
- Transportation and distribution
- Waste generated in operations

The University is also working with other higher education institutions and organisations in the local area to share knowledge and best practice on sustainable procurement.

Procurement staff were involved in the development of the Scottish Government's Public Procurement Strategy – a landmark publication indicative of the group's ambition to embed collaboration and support Scotland as a world leader in delivering sustainable procurement outcomes.

Dr Kesby, Dr Fredricks and their team set out to open dialogue with policy makers, practice groups, drug sellers and communities to create cost-effective ways to intervene in the supply and demand sides of the drug sales market. Their strategy will tackle the issue of bringing public



health education together with a certification programme that identifies which pharmacies are responsible prescribers.

The team used a three-pronged approach. Firstly, they worked in collaboration with stakeholders in Tanzania to distribute public health information on antibiotics and AMR throughout local communities. Secondly, pharmacies were given easy-to-use stickers that could be applied to antibiotics to help spread awareness of which drugs fall into this category. Thirdly, 'mystery shoppers' were asked to assess the pharmacies' antimicrobial stewardship, including providing customers with appropriate advice on their use.

Certificates of good performance are awarded to consistently well-performing pharmacies.

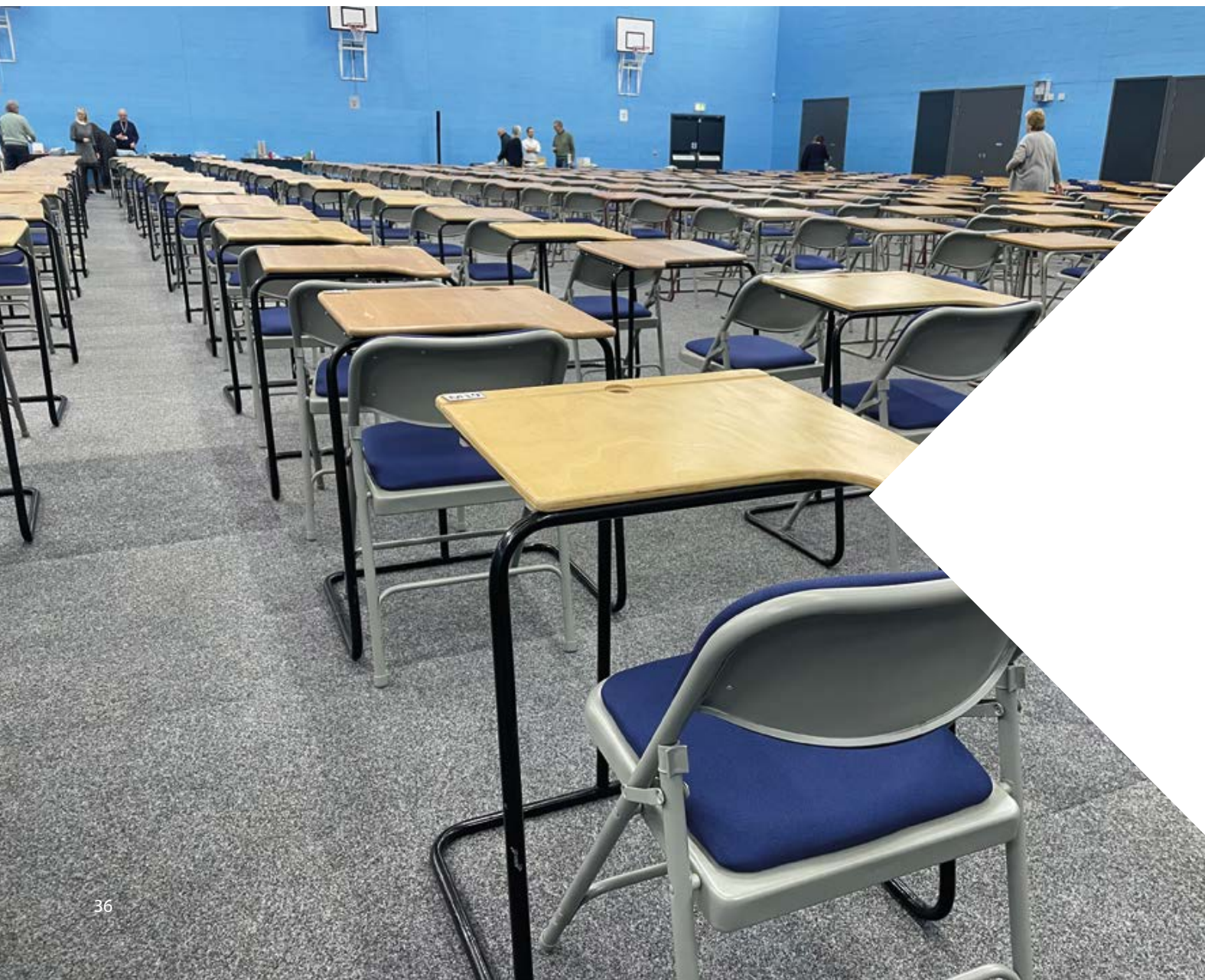
Accredited by the Tanzanian Pharmacy Council, these certificates give sellers a commercial incentive to pursue improved practice. The team has also been exploring the potential development of an app that would allow citizens to access a list of trusted pharmaceutical traders generated from the ongoing monitoring data and good advice on antibiotic use.

Working in collaboration with the School of Computer Science, the team has co-supervised a project by MSc students which modelled prototypes for an app design. The project is also supporting a PhD Sustainable Development student, with the longer-term goal of undertaking a project based on similar themes in Nigeria.



Fairtrade

In 2023, the University Shop and Environment Team collaborated with the clothing company KoolSkools to introduce a line of Fairtrade merchandise. Items include tote bags, sweatshirts and hoodies, all made from Fairtrade cotton. This has encouraged responsible consumption by providing students with ethically and sustainably sourced merchandise options in the University Shop on campus.



Circular economy

Environment Manager Andrew Stahly is spearheading a legacy furniture project, which includes refurbishing exam desks.

Since the 1970s, 500 of these desks have been in storage at Teases Mill outside Cupar. Fifty years of use means they are beginning to show their age but, knowing the carbon cost of throwing them out and buying replacements, Andrew established a new partnership between the University and Recycle Scotland.

Andrew said: "The University is moving from a linear to circular waste management system, which means we are reducing what we buy, reusing what we have and recycling what we no longer use. Working with Recycle Scotland is allowing us to put this into practice by remanufacturing products that would otherwise be disposed."

In 2022, Recycle Scotland worked with businesses across Scotland to save 255 tonnes of furniture from landfill, reusing or recycling over 97% of furniture into component parts.

The Universities of St Andrews and Dundee are leading the way, but other institutions are taking note after Andrew presented the work at a recent conference organised by the Environment Association for Universities and Colleges (EAUC).



Small actions lead to big results

The Students' Association's Environmental Subcommittee (ES) has been active in a number of ways, including leading on production of a guide on environmentally sustainable practices for student-run events. The Sustainable Events Guide and Assessment includes a commitment for societies and student groups to reduce consumption and waste at their events.

The ES also produces UnEarth Magazine, with a creative and artistic focus on sustainability and environmentalism. As well as publishing pieces on a wide range of sustainability issues, they also host events to increase student engagement on issues relating to sustainability, climate action, and the nature crisis.

In 2023, the ES organized a trip to Kinkell, just outside St Andrews, to provide an opportunity for students to learn about small-scale conservation efforts and engage in local rewilding initiatives.

The ES team has also been instrumental in coordination of the annual Green Week, which features events and activities to engage the student community in opportunities for climate action, including panel discussions for green careers, signposting pathways into sustainability-related careers, and insight into how businesses and organisations are tackling sustainability in their areas.



March to the Meadows

Since the 1930s, the UK has lost more than 41% of its native wildlife and since the 1970s, over 97% of its flower-rich grasslands. This ecological crisis requires us to take a stand now more than ever to counteract biodiversity loss and make refuge for our valuable local wildlife.

Fife is a mosaic of landscapes and communities which requires a collective effort to protect and increase our local biodiversity. Fife Council's grassland management strategy is a step in the right direction. It aims for 10% of Council-managed

grasslands to be maintained in a new way, encouraging wildflower meadows.

In collaboration with Transition, students coordinated a community event, March to the Meadows, purposed to highlight the loss of biodiversity in the UK. School children, students and local residents gathered in St Salvator's Quad and marched through the town to the North Haugh meadows which the University manages to highlight biodiversity.

Infrastructure Highlights

- The University's sustainability plans, including carbon management, resources, and biodiversity, all reflect the Scottish Government and Fife Council declared Climate Emergency and the University Strategy.
- Estates and Residential and Business Services units have participated in Climate Impact workshops and produced Climate Impact Assessments, and an internship project was created to review wider policy and capture historical impacts on the University, leading to more detailed workshops planned to capture and baseline detailed risks by estate area.
- A sustainable design guide is issued to design teams which includes requirement to optimise the passive design of the building in terms of orientation, shading, heating, and green roofs.
- The University offers regular training courses on sustainability and climate change for administrators and, in 2023, launched a mandatory module to raise awareness for all students as part of matriculation. Training in Environmental Sustainability Action (TESA) provides students with tips on how to make everyday life choices more sustainable, covering energy, water, travel, biodiversity, food and waste minimisation.
- Training in Environmental Culture is delivered to all administrative staff and researchers.
- Work has begun on evaluating the impact of climate change on the organisation, and the University has participated in the Adaptation Learning Exchange, and Adaptation Capability Framework Benchmarking working group. The University uses the framework's benchmarking tool to highlight governance and adaptation issues.
- Climate risks are monitored through a continuous review process of the University Risk Register, and risk holders are held accountable for mitigation activities by the University Audit and Risk Committee and University Court. Major service units have prepared Climate Impact Assessments which will be reviewed annually, and the University is also developing a Climate Adaptation Plan, with detailed workshops planned next period.
- In addition to a Senior Procurement Officer with specific responsibility for Sustainability, the University's Business Transformation Team now has a Project Officer focusing on building Sustainability into the University's major projects, and the Corporate Communications team now includes a Senior Communications Manager for Sustainability.





Bridging the gap between marine research and green energy planning



SMRU Consulting is the commercial arm of the University's Sea Mammal Research Unit (SMRU). It was established in 2006 as a wholly owned subsidiary of the University.

Since 2012, SMRU Consulting has supported offshore wind farm (OWF) developers to secure permission to build power plants, and ensured these and other marine industries develop in a sustainable and environmentally responsible manner.

Although separate entities, SMRU Consulting works closely with the researchers at the Sea Mammal Research Unit, whose interdisciplinary work leads the UK in the field of marine mammal biology.

This work enables SMRU Consulting to bridge the gap between policy and research, advising on OWF planning, policy and construction, both in the UK and around the world.

Approximately one third of their work is collaborating with OWF developers to ensure biodiversity preservation in the planning process and, ultimately, to ensure that final operations are sustainable for the protection of sea mammals. Through these projects they have supported the development of twelve OWFs in the UK, including a project off the coast of Fife, which amounts to 54% of all offshore wind renewable energy capacity in the UK.

In addition to achieving a 100% success rate in obtaining planning permission for OFW

developers, SMRU Consulting also collaborates with international partners, including the US Navy and the Port of Vancouver, to develop sustainable use of sonar devices. This demonstrates the incorporation of research-driven practices into implementation to protect marine life.

Through SMRU Consulting-designed and built coastal acoustic buoys, ships are notified through their automatic identification systems when they are approaching southern resident killer whale critical habitats and encouraging them to slow their engines. The ECHO program has reduced ocean noise interference from approximately 6,000

ships in the Burrard inlet, Canada, by 50% and reduced the number of whale collisions by 30% in the past year.

This project is also being expanded to Washington State through this CABOW (Coastal Acoustic Buoy for Offshore Wind) project.

In the short term, the offset of carbon emissions over the past twelve months through projects SMRU Consulting has contributed an estimated 7% to the University's goal of reducing its carbon footprint.



Salt delivery from the Indian Ocean helped end the ice ages

Scientists from the Universities of St Andrews and Cardiff, along with international colleagues, have discovered the source of warm super salty water that rushed up the Atlantic 15,000 years ago, ushering in the end of the last ice age.

The study, which was published in *Nature*, comes as ocean temperatures are reaching record highs and waters in the Atlantic and Southern Oceans become fresher due to ice sheet melt, which could further impact ocean circulation and global climate.

The team measured the chemical fingerprints locked in microscopic fossil shells to reconstruct the temperature and salinity of the seawater in which the shells grew. By taking samples of these fossils going down a 40-metre-long core of deep-sea mud, they were able to fathom the history of ocean temperature and salinity during each ice age cycle of the last 1.5 million years.

The results show that during the peak of each ice age, waters in the Indian Ocean became super charged with salt. The scientists show this was driven by a restriction of the fresh-water

currents that usually enter the Indian Ocean from the Pacific, allowing the Indian Ocean to become saltier, like a giant salt pan.

The salty waters remained trapped in the Indian Ocean until the end of the last ice age, when a shift in winds and currents allowed them to burst into the Atlantic. This in turn helped re-establish the Atlantic current system that warms the UK and Northwest Europe from its weakened glacial state.

Warm salty currents continue to flow through the Atlantic today yet are starting to weaken due to input of freshwater from melting ice sheets, which could trigger a series of knock-on climatic impacts.

Dr James Rae, from the School of Earth and Environmental Sciences, said: "Our work shows how different parts of the climate system are surprisingly inter-connected. Changes in circulation and salinity in one part of the ocean can have huge impacts on the other side of the planet, so we need to stop global warming to prevent further disruption to these critical circulation systems."

St Andrews Marine Society – engaging students with our blue planet

Since its foundation in 2020, St Andrews Marine Society (Marine Soc) has led Saturday beach cleans almost every week. Each year, the rubbish collected is estimated to be just under 300kg.

One beach, Aquarium Sands, is a particular favourite for these cleans, as the local tides and narrow shape of the beach make it prone to collecting rubbish. Marine Soc works closely with the Marine Conservation Society UK, which supplies them with their beach clean equipment for free, in return for quarterly beach

clean reports, which involve Marine Soc recording the types of rubbish found in one of their cleans. The types of rubbish found most often on Aquarium Sands are wet wipes (at least 50 each week) and fishing gear. Other Marine Soc activities include rock-pooling, sea glass foraging, documentary screenings, pub quizzes, and Marine Biology career talks from guest speakers such as Love the Oceans, a non-profit marine conservation organisation supporting work in Jangamo Bay, Mozambique.





Biodiversity in focus, locally and beyond



The University is collaborating with a range of partners including Fife Council, Kinkell Byre, Abbeyford Leisure, Forest & Land Scotland, Fairmont Hotel, St Andrews Botanic Garden, local farmers and estate managers, to support biodiversity at 30 sites along the Fife coast.

Activities include planting trees and hedgerows, creating wetlands and meadows, restoring dunes and introducing conservation grazing to manage coastal grassland on part of the coastal path at Craig Hurtle, south of East Sands beach in St Andrews.

Managed by NatureScot, the Helping Nature fund is an element of the Scottish Government's flagship £65 million Nature Restoration Fund. The fund supports practical nature restoration projects with grants of £25,000 to £250,000. In this latest round of awards, the University was one of 27 projects to have been offered grants totalling £4.1 million.

Experts from St Andrews Botanic Garden are undertaking design work to ensure the new habitats will support biodiversity whilst also improving the appearance of the area. Students, staff and local residents will be encouraged to support the project and the St Andrews Forest project through regular practical volunteering opportunities that include tree planting and meadow management.



For Peatlands Sake

In 2023 the Wardlaw Museum, in partnership with Dr Katy Roucoux from the School of Geography and Sustainable Development, curated an exhibition showcasing the important role peatlands play in climate change mitigation.

The biggest store of the world's carbon is not above ground in trees – it is below the ground in peatlands. Peatlands hold almost 30% of terrestrial carbon – twice as much as the world's forests – and their care is critical for climate change mitigation.

Dr Roucoux's work focuses on the important role peatlands play in shaping the culture of communities that live near them. She is leading a Leverhulme Trust-funded research project entitled Valuing Intact Tropical Peatlands: An Interdisciplinary Challenge which is investigating how mestizo and indigenous communities in the Pastaza-Maranon Foreland Basin in Peruvian Amazonia use and value their peatlands.

The perception of peatlands as wastelands has led to the mismanagement of areas which, instead, are key in supporting people and the environment. The exhibition at the Museum offered an opportunity for visitors to learn about the research into peatland communities in Scotland and Peru, and how they could play a part in their conservation.



Research highlight

Also in the School of Geography and Sustainability, Dr Ian Lawson's work concerns peatlands in Amazonia and the Congo. These peatlands are a vital source of carbon storage but these stores are potentially vulnerable to human interference and climate change – peatlands can easily become huge sources of carbon to the atmosphere, exacerbating climate change.

Dr Lawson's PhD student, George Biddulph, undertook an internship with the United Nations Environment Program World Conservation Monitoring Center (UNEP-WCMC) to write a policy brief about their work in the Congo Basin. Noting the importance of inclusive decision making in effective conservation of peatlands in the Congo, the brief drew from findings from the 2022 Global Peatlands Assessment (UNEP) to identify several key areas of importance for peatland protection and management.

George's thesis is part of a much larger NERC-funded project, CongoPeat, which aims to investigate the past, present, and future of these newly discovered peat swamp forests found in the Congo Basin.

The work is part of broader research which aims to understand the genesis, development and maintenance of peatland complex, and focuses on the spatial palaeoecology of the peat swamp forests that reside within the central Congo Basin.

Dr Lawson has published and presented on the core science underpinning our understanding of the sensitivity of peatland carbon stores to change, and on the potential impacts of oil exploration both on the peatlands themselves and on the communities that depend upon them for their livelihoods.



The Third Generation Project



Third Generation Project (TGP) is an innovative think-tank, based in the School of International Relations. TGP collaboratively advocates and promotes the collective rights of communities, in particular those who are on the frontlines of climate change.

Human rights function on three levels. Primary and secondary rights form the main focus of the Universal Declaration of Human Rights (UDHR). These generations of rights cover individual civil, social and economic rights - such as freedom of speech, equality before the law, and the right to food, housing, and employment in just and favourable conditions. Tertiary - also known as third generation - human rights go beyond these individual rights to cover the collective, and include the right to a healthy environment, the right to participate in cultural heritage, and the right to self-determination.

Collective rights are not explicitly denoted in the UDHR and, while initial steps have been taken to recognise them, the UN Declaration on the Rights of Indigenous Peoples and the African Charter on Human and Peoples' Rights remain the only two statutes which enshrine the need to protect communities in international law.

The TGP believes that collective rights are as important as individual ones, and that the former - in particular regarding communities' social and environmental collective rights, which are often impacted by climate change - are neglected.

They work to redress this neglect by building bridges, through action and research, between affected communities, policy-makers, scholars and activists. They seek to work with and for affected communities to promote specifically their knowledge and concerns among the upper echelons of political decision-making.



The Politics of Nature and Place

The Politics of Nature and Place, taught by Dr Roxani Krystalli, is an undergraduate module which invites students to engage with nature and place as crucial forces that shape our understanding and experience of world politics. How have scholars considered the natural world in their analyses of violence, peace, and politics? How are nature and place represented and how do those representations inform our understanding of relationships, communities, and hierarchies? Ultimately, what do we talk about when we talk about 'nature' and place and what kind of politics is the politics of nature and place? Drawing from interdisciplinary texts that address both scholarly audiences and readers outside the academy, the reading list, activities, and assessments associated with this module invite students to not only *think* about politics and nature, but also feel and experience these questions in their lives.

The module reorients where it asks students to seek and find the political. We look for the political in botanical gardens and allotments, on the beach behind the university, in fairy tales we read as children about 'exotic' places and jungles, in land rights campaigns, and in framings of 'the sea' as being responsible for the deaths of migrants, among other places. To enact the commitment of learning beyond and outside the formal classroom, students take guided field trips to the St Andrews Botanic Gardens and the local natural history museum to see the themes of the module in action, ranging from reflections on botanical colonialism to considerations of how university museums tell stories about items in their collections and about their relationship to place and community. During field trips, students are encouraged to pause and engage with all senses, from listening to birdsong to feeling dry soil between their hands, and to reflect on how that deepens their understanding of what counts as knowledge and of the processes by which knowledge comes into being.

Second, the module encourages reflexive thinking and writing, and encourages students to consider how their education not only takes place in Scotland, but also is rooted in that place. This is important for ensuring that the gaze of international relations is not always directed 'elsewhere.' Guided by blog posts, podcasts, and nature writing that we read together in addition to work written for academic audiences, students write 500-word reflexive responses each week, connecting one dimension of the readings to one experience in their own lives. They also write place biographies over the course of several weeks, whereby they tell the story of their life as connected to place(s). They engage with feminist, Indigenous, and decolonial scholarship on relationality and kinship to reflect on their relational introductions: Who are they in relation to nature and place, and what sustains (or harms) those relations?

Finally, the module takes joy and care seriously - as practices for relating to nature and place at a time of climate catastrophe and ongoing displacements, as practices of knowledge generation, and as vectors for living.



Scottish Research Alliance for Energy, Homes and Livelihood

In 2023, St Andrews was awarded a grant of £600K to enable cross-sector networking and collaboration across academia, industry, and society in Scotland to advance key national missions. Led by Dr Mette High from the School of Philosophical, Anthropological, and Film Studies, the Scottish Research Alliance for Energy, Homes and Livelihoods brings diverse stakeholders together to support Scotland's NetZero strategy without exacerbating socio-economic inequalities. The grant is part of the Alliance for Research Challenges (ARC), funded by the Scottish

Funding Council. Representing the ARCs, Dr High was invited to Westminster to speak on the opportunities and challenges faced by researchers in Scotland, noting that the Alliances are new and dynamic engines of impactful interdisciplinary cross-sector collaborations offering opportunities for diverse stakeholders to engage with a collaborative community.

Community Fund

Our University Community Fund enables the University to listen to ideas, adapt to local needs, and provide financial support to deliver real benefits for the wider community.

The Community Fund accepts applications for grants between £250 and £3000, including those which:

- benefit communities in the local area
- increase engagement between the University and the community
- promote knowledge exchange and widening participation
- promote environmental sustainability
- promote diversity and inclusion
- celebrate the local area's heritage, whether physical or cultural

The University contributes £30,000 per year, but donations from private donors have substantially extended the reach of the Fund. This demonstrates the connection that alumni and supporters feel not only with the University, but also with the town and its wider community. Since its launch in 2020, the Community Fund has supported more than 120 Fife-based groups, covering a wide range of local projects. To date, the fund has supported projects to the cumulative total of £230,000.

Environmental projects supported over the year have included £800 to the Dairsie Repair Cafe, £1500 to The Sunshine Kitchen for gardening equipment, and £2179 to Footprint East Neuk for their Bringing Back Woodland initiative. In total, the fund has supported approximately 15 environmentally sustainable projects from across Fife over the last year, to the accumulative total of circa £22,000.

COP 28

Several delegates from the University attended COP 28 in Dubai, including Dr Mette High from the School of Philosophy, Anthropology, and Film Studies and Director of the Centre for Energy Ethics, Dr Gosia Mitka from the School of Business and Associate Dean of Education (Arts and Divinity), Dr Paul Webb and Dr John Irvine from the School of Chemistry. Engagement included the opportunity to present a summary of the University's lead on the global blue carbon program (GO-BC), and to participate in an ocean leadership panel discussion.



The St Andrews Prize for the Environment

Now in its 25th year, the St Andrews Prize for the Environment is a major international competition led by the University to recognise innovative responses to the most pressing environmental issues. Since its inception, the Prize has awarded more than US\$2.5million in funding to organisations addressing the climate crisis, protecting the environment, and encouraging a more sustainable society.

In 2023, the Prize was awarded to Alianza Ceibo, a nonprofit alliance of indigenous nationalities of the Upper Amazon of Ecuador, Colombia and Peru – Ai' Kofán, Siekopai, Siona, and Waorani – who empower their communities to conserve their rainforest territories, keep their cultures alive, and make their own decisions over their lands and lives.



Net Zero
by 2035



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