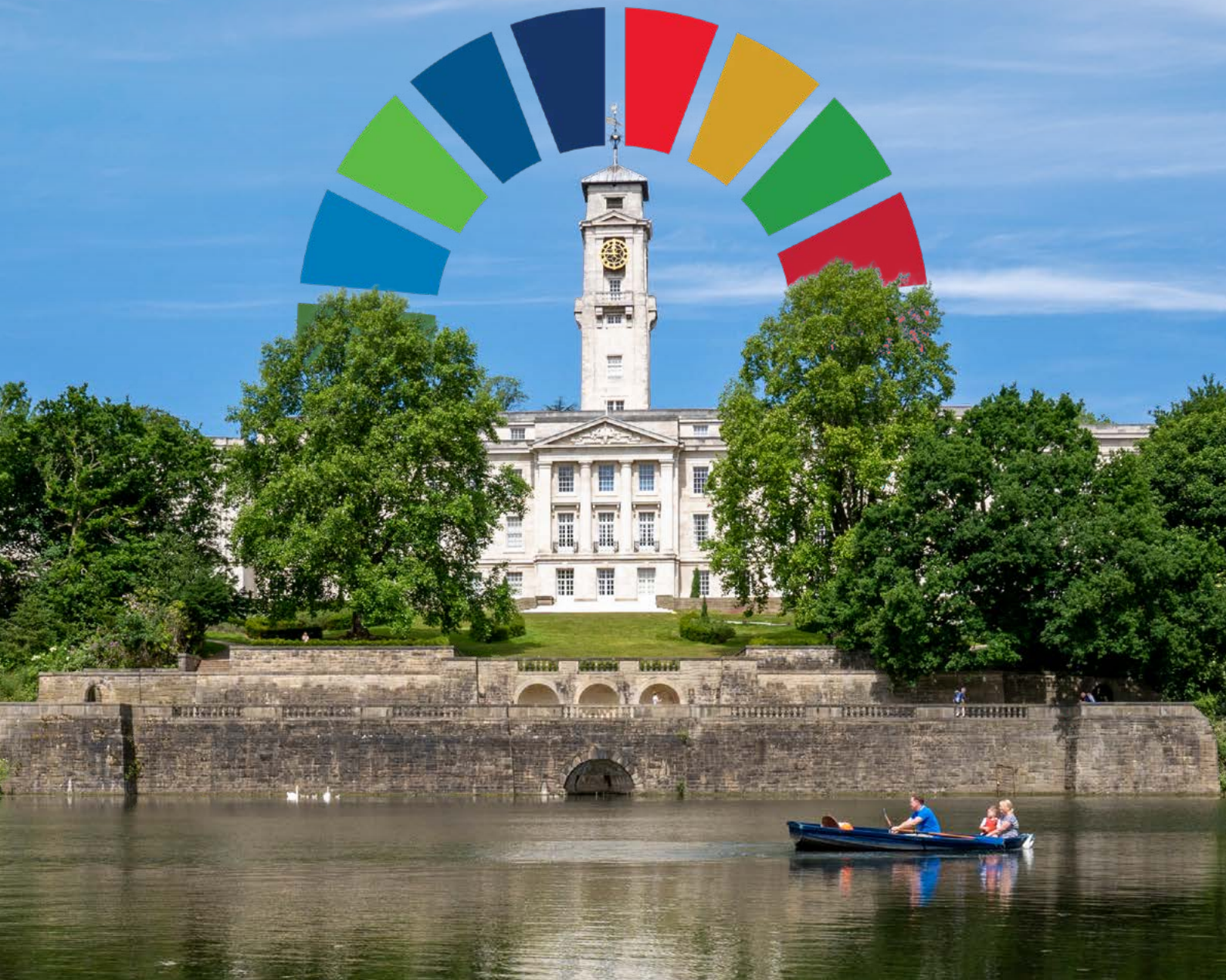
University of Nottingham
UK | CHINA | MALAYSIA

SUSTAINABLE DEVELOPMENT GOALS

Towards a fairer world

2022/23 report



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1st
UK higher education institution to receive Athena Swan Gold Award

Top 20%
of universities for working with business

75
global teaching partnerships with 200+ universities

340k
alumni living in 195 countries

£77m
public funding secured for industry collaborations

£1m
invested in student wellbeing support every year

6,500
research collaborations with institutions

40%
reduction in carbon emissions between 2010 and 2020

Introduction

Sustainability is at the heart of all we do

I am delighted to share this update on the University of Nottingham's commitment to the United Nations Sustainable Development Goals, We're proud to be recognised among the world's top higher education institutions for our efforts in this area, being placed in the Top 200 in the Times Higher Education Impact Rankings 2024. These global rankings evaluate more than 2,000 universities from 125 countries based on their performance against the UN's 17 Sustainable Development Goals, which set out a blueprint for creating a more sustainable future.

Delivering sustainable development across the world is more than a goal for our university – it is inherent in our core values. We are a global university, with campuses in the UK, China and Malaysia, which work collaboratively with a wide range of partners to deliver solutions to complex challenges that will transform lives and achieve a sustainable future. Staff, students and researchers across our international campuses are encouraged and inspired to develop a truly global mindset, and our ability to forge cross-border partnerships strengthens our ability to deliver high-quality research that addresses global challenges and deepens the impact of our innovations in the UK, Asia and across the world.

> 'Bringing hearts and minds together with a shared purpose is a powerful catalyst'

This report is a snapshot of progress to achieve this aspiration. It underlines that sustainability is at the heart of all we do, and highlights how we are addressing the UN Sustainable Development Goals across our research, education, engagement and outreach, and operations and policies.

Achieving a sustainable and fairer future is a tough challenge. We recognise that achieving sustainable development must address income disparity and health inequalities. We must ensure that the transition to green energy and carbon-neutral economies is fair and equitable and we must be mindful that building resilience to climate change is most critical in marginalised and disadvantaged communities.

Our commitment to sustainable development is embedded in curricula, teaching and the student experience, with good practice and resources shared across faculties and between our UK, China and Malaysia campuses.

This report also underlines our commitment to fairness and environmental stewardship across every aspect of the university's operations. We strive to make our campuses green, pleasant places to work and learn, and have been awarded more consecutive Green Flags than any other university. We're also working to reduce the environmental impact of our infrastructure and activities, with a 63% cut in carbon emissions targeted by 2030.

Our researchers meanwhile form partnerships that give our innovations real impact, changing lives in communities on the doorsteps of our campuses and across the world. In the UK, we are working with industry to establish a world-class hub of innovation in net-zero technologies. Our innovators at the University of Nottingham Malaysia are providing ASEAN economies with the tools and data to navigate towards net zero. In China, collaborations with the petrochemical sector will help decarbonise manufacturing industry and partnerships with local enterprises are promoting responsible business practices, a culture of sustainability and green innovation.

I hope this report sparks new ideas and inspires further collaborations and partnerships with our UK, China and Malaysia-based innovators to deliver positive change.

Professor Sarah Metcalfe
Deputy Pro-Vice-Chancellor for Research and Knowledge Exchange

1 NO POVERTY

End poverty in all its forms everywhere

50% or 100%
tuition fee grants for international postgraduate students with development solutions for home countries

2078
students attended Oasis free breakfast club in 2022/23

446
lives impacted in 2022/23 by Enactus Nottingham, a student-led social enterprise organisation

Research

Tackling food insecurity on our doorstep

Food insecurity – lack of reliable access to enough affordable, nutritious, healthy food – is a growing issue both globally and nationally and has significant impact on health and wellbeing. Work at the University of Nottingham is seeking to establish the extent of food insecurity in Nottinghamshire and its effect on nutrition and health. This is the first work of its type in the county and by bringing together biosciences and business academics with public health officials from Nottinghamshire county and city councils as well as food charities, the project hopes to influence local policy interventions. Our research has highlighted significant discrepancies between predictions of food insecurity based on national data and the reality on the ground, highlighting the need for detailed local assessments. Identifying the drivers behind low income and food insecurity at local level will inform interventions and how these could be scaled to national policy.

Learning and students

Managing money at university

Learning how to **manage money** is a crucial part of life at university. We offer students advice and support on managing their finances whilst studying and what financial independence means in everyday terms, from achieving a healthy and nutritious diet on a budget, to coping with the cost of living and avoiding scams and frauds. An online module, understanding your budget, further helps students learn about how different situations may impact their finances.

Engagement and impact

Building financial resilience

The university is a member of the **Nottingham Financial Resilience Partnership**, which brings the public and private sector together to improve the financial resilience of people and communities in the city. The work focuses on tackling debt, low income, access to banking, tackling high cost credit and improving access to more affordable credit, supporting saving, financial education and increasing financial capability for adults and young people.

Reducing fuel poverty one meal at a time

An outreach project hopes to reduce fuel poverty in the city **one meal at a time** by teaching people how to make their own energy saving slow cooker. The **Faculty of Engineering's Food, Water, Waste** research group has teamed up with **Tiger Community Enterprise CIC** to deliver workshops for volunteers. The project was inspired by the concept of hayboxes, as well as the simple but revolutionary non-electric slow cookers that originated in South Africa. After bringing a pot of food to the boil on a stove, they can cook food for up to eight hours without any additional energy source – which could not only save households money on their bills in the long run but simultaneously cut down their carbon footprint too.

Improving financial inclusion in China

The **Centre for Inclusive Finance**, established by the University of Nottingham Ningo China and the city's branch of the People's Bank of China, is the country's first such research collaboration. It aims to make high-quality, research-based policy recommendations, showing how financial inclusion can be promoted in Ningbo and other areas in China. For example, Ningbo is a mountainous region, making it challenging for people especially the elderly, to visit city centre bank branches. Researchers are exploring alternative solutions, including using local convenience stores to help provide financial services, and how technology such as mobile phones can improve access to banking services.

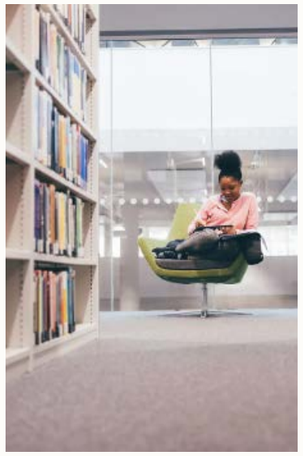
Sharing data expertise to tackle debt

The university's **City as Lab**, which connects researchers, communities and partners in collaborative projects that tackle real-world challenges in the Nottingham area, is exploring the use of big data to identify tangible ways to boost support mechanisms for those experiencing financial difficulties. One in 5 people in Nottingham struggle to pay monthly bills, and the **Overcoming Indebtedness** research project is working with the Nottinghamshire and Lincolnshire Credit Union to improve its data management and ultimately boost its services to those in need.

Policy and operations

Bursaries to ease financial pressures

University of Nottingham **bursaries** help ease financial pressures on students while they are studying with us. Unlike a student loan, bursaries are non-repayable, and students are free to spend it in any way they wish during their studies. Bursaries are based on financial situation, personal circumstances or the subject being studied. The Core Bursary, Nottingham Potential Bursary and Care Experienced and Estranged Bursary have unlimited places. This means anyone who meets the criteria of these bursaries will receive the funding.



End hunger, achieve food security and improve nutrition and promote sustainable agriculture

Learning and students

Exploring the future of food

As part of a Food Systems Futures module, Nottingham students explore sustainable food systems, focusing on transitions to equitable, ecologically viable practices. They examine food production and consumption from a systems perspective, addressing issues like food poverty, climate change, land use, biodiversity, and socio-economic inequalities. Students also collaborate with UK organisations to tackle real-world challenges, presenting solutions on topics such as fair and equitable food systems, sustainable agriculture, and improving access to nature-friendly food for marginalised groups.

#1
Only UK university with research expertise across the food system

1st
Midlands university to carbon label menus

>1,000
UK-China agriculture research projects

Research

Wheat's heat shield: research tackles climate challenge

Understanding how some crops tolerate high temperatures is crucial to securing food security in the face of climate change. Plant physiologist Dr Lorna McAusland from the School of Biosciences has been awarded a prestigious **BBSRC Discovery Fellowship** to develop techniques to improve the wheat flower's tolerance to heat. Her research focuses on the role non-foliar structures, like the wheat flower itself, play in surviving rising temperatures. Understanding these adaptations will lead to the development of new wheat varieties resilient to climate change.

Collaborating with world's food giant

UK-China agriculture research and cooperation is playing a key role in developing more sustainable food systems and bridging the gap between innovators and industry. A report by the Chinese Academy of Agricultural Sciences and the University of Nottingham highlighted that the UK-China Joint Research and Innovation Partnership Fund has sponsored more than 1,000 food and agriculture collaborations. China is the world's largest agricultural economy, producing one quarter of the world's grain, and the report emphasised the importance of knowledge sharing and joint research in securing a transition to sustainable agricultural practices.

Engagement and impact

Nourishing communities

Nottingham and Nottinghamshire has pockets of food poverty. Limited access to nutritious food is a marker of inequality and has an impact on every aspect of people's lives and the resilience of communities. **Our research**, supported by the Research England Policy Support Fund, is exploring how 'More than Food' services – such as community cafes, social eating or dining/ lunch clubs, school holiday clubs, meals at home and adult day services – are responding to this challenge. By engaging with participants and stakeholders, our research examined how this community-based food ecosystem can innovate and be more cost-effective, and how policymakers can better support these dedicated and vital organisations.

Policy and operations

Expertise across the food system

The University of Nottingham's **Food Systems Institute** brings together researchers from across disciplines to work with industry and policymakers to deliver solutions to transform the food system. The institute will strengthen Nottingham's reputation as the only UK university offering research expertise and capabilities across the food system covering everything from production and processing to transport, consumption, waste and sustainability. Our mission is to ensure access to palatable, healthy and sustainable food for all.

A carbon-conscious campus

We have taken a significant step towards sustainability by becoming the first university in the Midlands to introduce **carbon labels on food menus**. These labels empower staff and students to make informed choices about their meals, helping to reduce the environmental impact of food consumption.

Ensure healthy lives and promote well-being for all at all ages

300
weekly student wellbeing support appointments

25%
reduction on tics in Neupulse clinical trial

#1
World's first wearable brain scanner

Engagement and impact

Hope for people living with Tourette's

Researchers at the University of Nottingham, along with spin-out company Neupulse, are making waves with an innovative wrist device designed to manage Tourette's syndrome. **Clinical trials** show users experienced a reduction in tic frequency by over 25%. This innovative technology, attracting almost **£1m in funding for commercialisation**, offers real hope for those living with Tourette's. Even singer **Lewis Capaldi** swung by to test it out.

Singing for wellbeing

Our researchers are exploring the powerful link between music and wellbeing, exemplified by their work with people and families living with dementia. With the support of Nottingham-born actor Vicky McClure and a BBC series, the project has highlighted how singing can improve cognitive function and social interaction. **Funding** from the National Institute for Health and Care Research allowed the team to further evaluate community singing as an effective therapy for dementia sufferers and their carers.

Research

A breath of fresh air for lung cancer detection

Researchers at the University of Nottingham, working with colleagues at the University of Oxford, have developed a ground-breaking tool to revolutionise lung cancer diagnosis. By analysing extensive health records, **CanPredict**, accurately identifies individuals at high risk of developing lung cancer within a decade. This early warning system enables targeted screening, saving lives and optimising healthcare resources. The tool, which draws on the anonymised health records of 19 million adults from across the UK, outperforms existing methods and can significantly improve lung cancer outcomes.

Quantum leap in brain imaging

We developed the **world's first wearable brain scanner**, which uses quantum sensors the size of LEGO bricks inside a lightweight helmet. This means, for the first time, brain function can be measured while a person is moving or undertaking tasks. The helmet offers unprecedented insights into how the brain develops and into neurological disease like epilepsy, neurodegenerative disorders such as Alzheimer's disease, and mental health conditions such as schizophrenia. The scanner has been commercialised via a University of Nottingham spinout company, **Cerca Magnetics Limited**.

Innovations help wound healing

A research team led by Dr Yuanhao Wu has developed a **revolutionary new material for surgical dressings**, which not only speeds up healing but also significantly reduces the risk of melanoma recurrence. This innovative material, combining graphene oxide, elastin, and ethanol, harnesses the power of light to target and eliminate cancer cells. In parallel, scientists from Nottingham's schools of Life Sciences and Pharmacy have discovered a **polymer that accelerates wound healing**, offering new hope for diabetic patients suffering from chronic wounds.

Learning and students

From lab to lunchbox

We're nurturing a crop of food scientists, who are developing sustainable food solutions that promote health and wellbeing. From transforming insects into delectable snacks to creating a **flavourful seed-based pesto**, these award-winning young entrepreneurs are demonstrating the potential of promoting healthier lives through nutritious, sustainable food, while getting a hands-on experience of what it takes to bring an eco-friendly food or drink product to market.

Policy and operations

Mental health matters

Nottingham is a supporter of the **University Mental Health Charter Programme**, a national initiative dedicated to prioritising mental health across campuses. This partnership underlines our commitment to providing students with the resources and support they need to thrive. The programme offers access to a network of best practices, workshops and resources. Our students can also access 24/7 clinical expertise and trained practitioners who can help with mental health issues including anxiety and depression through the online platform Togetherall.

Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all

Learning and students

Celebrating technician talent

Kelly Vere MBE, Director of Technical Skills and Strategy at the University of Nottingham, led a **national report** setting out a bold vision for how technicians can strengthen science, engineering and the creative industries. Kelly leads Midlands Innovation's TALENT programme, a £5m collaboration between Midlands universities that nationally champions the role of technicians and delivers strategic insights into delivering the technical skills the UK needs to drive economic growth.

Global engineers growing solutions

In 2023, the University of Nottingham hosted an **inaugural engineering competition** for students in Ghana. This brought together young minds to tackle real-world problems and develop innovative ideas. The competition aimed to broaden young people's understanding of STEM subjects (Science, Technology, Engineering and Maths) and engage the next generation of industry leaders.

Specialist maths school

In collaboration with the East Midlands Education Trust, the University of Nottingham launched a **specialist maths school** for 16 to 19-year-olds. This exciting initiative equips mathematically minded students with the skills and knowledge to excel in STEM degrees and future careers. The school will build on successful models of maths schools around the UK and in addition, will run an outreach and continuing professional development scheme for other schools and colleges in the East Midlands.

30,000 -50,000
UK technicians championed in TALENT report

16,942
local young people supported by IntoUniversity partnership

4 out of 5
of our students land highly skilled jobs or go into graduate level study within 15 months of graduating

Research

Breathing easy

A study led by experts at the School of Medicine looked at the **impact of face masks** on young people in schools. In the midst of the Covid-19 crisis, there was little time for experts to fully understand the impact on pupils of having to wear face masks, and whether the benefits outweighed the costs. Our 2022 study will help schools understand how face masks affected their pupils and help prepare for any future pandemic.

Engagement and impact

Building brighter futures, together

For over a decade, we have worked with IntoUniversity, helping young people from disadvantaged backgrounds realise their potential. Together we run three community learning centres in Nottingham, providing 7 to 18-year-olds with after-school support, university-student mentors, workshops and direct experience of university life. This partnership has enabled 16,942 local young people to receive support and encouragement to do well at school and go on to university.

Bridging borders, building futures

The university's **Hub for Education for Refugees in Europe** (HERE) supports displaced people seeking access to education. By bringing together academics, policymakers, practitioners and refugee communities, HERE is developing innovative strategies to support refugees throughout their educational journeys. From early childhood to higher education, our work is focused on creating pathways to success and building a more just society.

Policy and operations

Scholarships to help widen participation

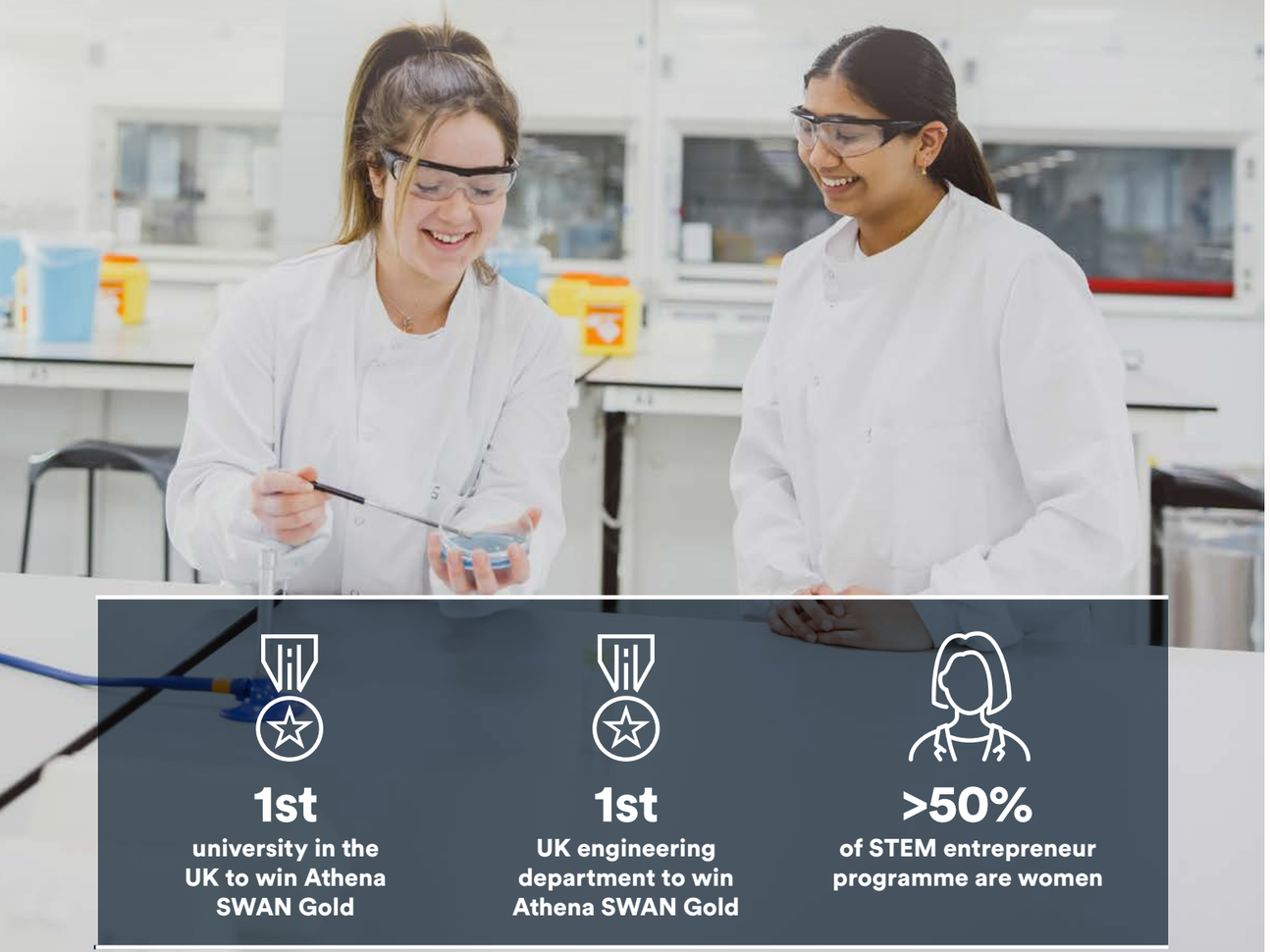
The university offers **scholarships** to Nottingham students who are leaving care or are estranged from their families. The scholarship, funded by the Unite Foundation, covers accommodation and bills for 365 days a year for up to three years of study. Nottingham was selected to take part in the programme, which is match funded between the successful partner universities, the Unite Foundation, Astra Foundation and the Dulverton Trust, after demonstrating a clear commitment to doing more to support such groups of students.

Achieve gender equality and empower all women and girls

Policy and operations

A gold standard for gender equality

We are the first university in the UK to achieve the **Athena Swan Gold Award**, which recognises and celebrates our commitment to gender equality across all that we do in higher education and research. The University of Nottingham was one of the first institutions to join the Athena Swan Charter, launched in 2005 to encourage and recognise commitment to advancing the careers of women in science, technology, maths and medicine. Our **Faculty of Engineering** is the first engineering department in the UK to be awarded an Athena SWAN Gold, and the School of Health Sciences also holds this accolade.



1st
university in the UK to win Athena SWAN Gold

1st
UK engineering department to win Athena SWAN Gold

>50%
of STEM entrepreneur programme are women

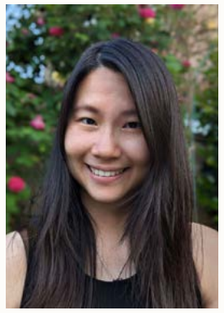
Learning and students

Supporting female entrepreneurs

Women entrepreneurs are actively supported by the **YES programme**, delivered by the university's **Haydn Green Institute for Innovation and Entrepreneurship**. YES raises awareness among engineering and science research students about how innovations can be commercialised, and features female role models, guest speakers and case studies to help address gender imbalance among entrepreneurs from STEM backgrounds. As a result, over half of the budding entrepreneurs participating in YES are women.

Engagement and impact

Li Shean is a space pioneer



Astropharmacy researcher Dr Li Shean Toh has been selected as an **Emerging Space Leader** by the International Aeronautical Federation, the world's leading space advocacy body. The award will help Dr Toh highlight her research into space medicine and share understanding of how innovative drugs developed for astronauts, who may experience illness in challenging environments far from medical support, can inform better treatments on Earth.

Empowering women in rural communities

Plant scientist Dr Zinnia Gonzalez-Carranza was awarded a **Distinguished Mexican Medal** from the country's Ministry of Foreign Affairs, in recognition of her work with the **Mezquite Project**, which promotes sustainable use of the evergreen tree to improve lives in Mexico, Kenya and Tanzania. In addition, she has worked with the ethical trading company Etico, social business networks and cooperatives in Nicaragua to empower women through recognising the unpaid work they carry out to produce the food we eat. Dr Gonzalez-Carranza is developing strategies to address this inequality through cooperatives owned by women and networks that empower women and pay them fairly.

Research

Shining a light on stellar research

Professor Clare Burrage's groundbreaking research on dark energy in the universe has earned her the prestigious **Laureate in Physical Sciences and Engineering** from the Blavatnik Family Foundation and the New York Academy of Sciences. This is the first time in the history of the Blavatnik Awards in the UK that all three Laureates were women scientists.

Measuring hidden crimes against women

The UK Home Office commissioned our researchers to lead a **groundbreaking study** on the prevalence of forced marriage and female genital mutilation. These crimes, which stigmatise survivors of such abuse and take place within family units, are hard to detect and even harder to track and study. Our experts in forced marriage are working with mathematicians to develop innovative methods to measure the prevalence of these hidden crimes, helping policymakers and practitioners to implement more effective interventions to better protect vulnerable women and girls.

Leading the way in FinTech

Professor Meryem Duygun is one of the most influential women leading innovation in the UK finance industry. Professor Duygun, of Nottingham University Business School, was recognised on the Women in FinTech Powerlist in 2020, 2022 and 2023. She is founder and co-lead of **INFINITY,** the University of Nottingham-hosted Inclusive Financial Technology Research Hub, which aims to accelerate the adoption of innovative technologies by the financial sector, making financial services fairer, inclusive and more accessible.

6 CLEAN WATER AND SANITATION

Ensure availability and sustainable management of water and sanitation for all

Engagement and impact

Sewage into drinking water

Researchers at Nottingham are informing the debate around how best to conserve water and best protect and use this precious resource in the face of rising temperatures and water scarcity. Professor of Water and Resource Processing Rachel Gomes MBE, provided expert commentary following Environment Agency boss Sir James Bevan's call for Britons to be less squeamish about the prospect of turning sewage, thanks to advances in sustainable processing, into drinking water.

Policy and operations

Cutting consumption and reusing our water

The university consumes 1.97 million litres of potable water per day. We have set a target to reduce our water consumption by 36% by 2040, using 2019 consumption as a baseline. Over the past five years, investments in metering, leak detection, and low-water consumption equipment has cut our water use. This includes the decommissioning of cooling towers at the Medical School, with the installation of new electric chillers. At Jubilee Campus, we hold an abstraction licence and tap into the aquifer, using a borehole supply for non-evaporative cooling, topping up ponds on campus as part of the natural habitat, and for toilet flushing at the Jubilee Conference Centre.

140
areas of India in genome study of waste water

36%
University's target for reduction in water use by 2040

1st
study of trace metal pollution from former Wales mines

Research

Ensuring wastewater is safe for crops

Reusing wastewater for agricultural irrigation aligns with several sustainable development goals, and is particularly beneficial in areas most affected by climate change. Yet the environmental risk from contaminants of emerging concern (CECs) present in wastewater, such as pharmaceuticals, is under-studied in the Global South. Nottingham engineers and pharmacists, in collaboration with the National Autonomous University of Mexico, supported by Mexico's National Water Commission, are addressing this challenge in the Tula Valley, a farming area that is among the world's largest reusers of wastewater. **Sampling data is giving a clearer picture** of the presence of CECs, and informs understanding of the risks and benefits of wastewater reuse for agriculture in the Global South.

Genome sequencing of water to tackle disease

The Covid-19 pandemic showcased the power of genomic sequencing to tackle the emergence and spread of infectious diseases. Researchers from the faculties of Medicine and Health Sciences and Engineering examined wastewater samples taken in Nagpur, Central India, during the pandemic, to explore how metatranscriptomic sequencing of total microbial RNAs has the potential to track multiple infectious diseases, such as rabies, norovirus and influenza. This **unprecedented study** has the potential to allow public health officials to better detect and respond to future pandemics, and direct interventions where diseases emerge in local populations, as well as qualitatively characterising health over time.

Tracking antimicrobial resistance in farm waste

Waste from dairy production is one of the largest sources of contamination from antimicrobial resistant bacteria and genes in many parts of the world. At Sutton Bonington campus, a working dairy farm offers an opportunity for research into how vets and farmers can reduce the risk of spreading antimicrobial resistance in farm waste while maintaining animal welfare. This complex challenge is being **addressed by researchers** including bioscientists, sociologists, engineers, pharmacists and data scientists and includes modelling resistance in the environment, while engaging with stakeholders to translate research into agricultural practice and policy.

Lead mining's toxic legacy

Lead and other metal pollution from mining is a global problem. Research led by the School of Veterinary Medicine and Science into **contamination from abandoned metal mines in Wales** is raising questions about risks to human and animal health and the environment. Lead, zinc and gold from Wales' 1,300 abandoned mines can discharge into rivers, streams and lakes, damaging ecosystems, and the first studies of their kind show trace metal pollution **is entering the food chain at farms near abandoned mines**, posing a potential health risk. Expert evidence has been submitted to the Welsh government and MPs at Westminster, with calls for more testing to inform responses from policymakers.

Learning and students

Insights into sustainable water use

Our chemical, environmental, and food process postgraduate students take modules in water treatment and engineering, and their experience is enriched by guest speakers from industry and site visits. At the **Hockerton Housing Project**, a sustainable housing development in Nottinghamshire that seeks to act as a catalyst towards ecologically sound ways of living, they get first hand insights into the practice of **aquaponics**, rainwater harvesting and how off-grid, community-level water treatment systems are a model for sustainable water use and reuse.

Ensure access to affordable, reliable, sustainable and modern energy for all

Research

Delivering next-generation batteries

Next-generation batteries will help accelerate the transition to electric transport. The School of Chemistry is receiving a share of **£29m from the Faraday Institution**, a leader in energy storage research, to focus on Li-S (Lithium-Sulfur) batteries, which are based on lighter materials than used in conventional Li-ion batteries and are promising for weight-sensitive technologies, such as in haulage, defence, shipping and the aerospace sector.

Smarter charging to boost battery life

V2G (vehicle to grid) chargers have the capacity to both charge and discharge electric vehicle batteries. Researchers from the Faculty of Engineering, with funding from the government's EV-elocity project, are exploring how **intelligent vehicle to grid charging** can reduce the degradation of batteries, cut carbon emissions and reduce the running costs of electric vehicles, saving up to 450 kg of emitted carbon dioxide (CO_2) or £400 per vehicle each year.

Decarbonising cold food chain

The university is part of the H2Cool project to develop **dual-use energy storage technology**, capable of delivering hydrogen to a fuel cell and generating direct cooling for refrigeration. The system would allow hydrogen power to help decarbonise the UK's 'cold food chain', which is responsible for 18% of the country's total energy use. The technology will target commercial food operations, where refrigeration can be responsible for 30-60% of electricity usage (1.2% of the UK's total CO_2 emissions).

up to 60%
reduction in running costs of laboratory fumehoods

£60m
Energy Institute's research portfolio

500
low energy homes at community energy scheme

Learning and students

Keeping creative spaces sustainable

Under the 'Energy for Business' scheme, Anousha Bhugun, a student studying for an MSc in Sustainable Energy and Entrepreneurship, worked as an intern with Spenbeck, a business focusing on sustainable retrofits of office space in heritage buildings. Anousha worked with contractors, supply chains and tenants to develop a **sustainable implementation plan** informed by the UN's Sustainable Development Goals, for the creation and running of new offices in Nottingham's Creative Quarter.

Engagement and impact

Helping ambitious businesses to succeed

A new system is cutting fuel bills and carbon emissions at **Trent Basin**, an award-winning community energy scheme made up of more than 70 energy-efficient homes on the banks of the River Trent. The system transfers solar energy from the homes to an energy centre, which determines where the energy is best placed to be used –in residents' meters, to reduce their energy bills, or out to support the grid. The development is a partnership between the university, developer **Blueprint** and energy firm **SmartKlub**.

Policy and operations

Making labs more sustainable

A **Sustainable Laboratory Good Practice Guid**e offers technicians, students and researchers guidance on reducing energy consumption and waste in the lab. This includes best practice on use of fumehoods, which capture and remove air-borne gases and vapours generated during experiments, and make up most of the energy use in laboratories, both electrically and thermally. These measures cut the cost of running fumehoods by 60%.

Shaping the future of energy

The **Energy Institute** draws on multidisciplinary expertise across our faculties of Engineering, Science and Social Sciences. A portfolio of research, development and demonstration has been built up over 25 years, attracting significant funding from government and industry to deliver high-profile impact. Energy activities are focused on the key societal challenges of transport and mobility, energy generation and management, and communities and the built environment.

Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all

Learning and students

New routes into engineering

Our **engineering apprenticeships** provide a practical pathway into the industry. Combining hands-on experience with academic study, our apprenticeships offer a valuable alternative to traditional university degrees. This programme equips students with the skills and knowledge needed to succeed as engineers as part of a skills-rich workforce.

1st
study of underemployment across UK and Europe

£1.1bn
University's annual economic impact in the UK

270
SMEs supported by aerospace innovation programme

Research

Uncovering underemployment

Underemployment – where people work below their potential or preference in terms of hours, wages and skills – has a negative impact on individuals and the economy. **In the first study** of the levels and experiences of underemployment in the UK and across Europe, Nottingham University Business School researchers and their project partners, including the Poverty Alliance and civic and research collaborators in Nottingham, Bristol, Salford and the West of Scotland, hope to provide policymakers with data to address this pressing issue and create a more inclusive labour market.

Forced labour in focus

Our research is shining a light on a critical issue in the food industry: forced labour. A study revealed a widespread **risk of forced labour** across the U.S. food supply chain. From hand-picked fruits to processed foods, the research highlights vulnerabilities in both domestic and imported production. By exposing these issues, the research aims to drive systemic change and ensure ethical practices throughout the food industry.

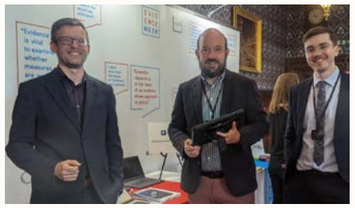
Engagement and impact

Business unit drives electric revolution

We are the first UK institution to create an independent business unit for the industrialisation of electrical motors and drive systems. **Nottingham Drive Specialist Services** (NDSS) delivers commercial services to companies across the world, such as bespoke development, manufacturing and testing of electrical motors and drives. Based at the Power Electronics and Machines Centre, NDSS offers businesses a unique service that spans the life cycle of a project, from design to manufacture and testing – as well as access to more than £20m of state-of-the-art equipment.

Helping ambitious businesses to succeed

In 2023, we launched a programme to support ambitious UK businesses. By providing access to expertise and resources, we aim to help these companies achieve their growth potential. The **Ultimate Scale Up** initiative will foster innovation and create jobs, offering decades of hands-on-experience, cutting-edge management tools as well as peer to peer support.



Real-time tracking of the economy

Professor John Gathergood showcased our Track the Economy tool in Parliament, providing policymakers with real-time economic data. This engagement, part of **Evidence Week**, highlights our commitment to ensuring research informs fair and inclusive policies that support economic growth and decent work across regions.

Policy and operations

Taking a stand against slavery

Our pioneering 38-step blueprint for a **slavery-free campus** has gained international recognition. Developed by our Modern Slavery Act Working Group and informed by world-class research from the Rights Lab, this blueprint equips universities with a roadmap to eradicate slavery from their operations, and covers four areas: governance, awareness/training, supply chains and civic engagement. This reflects the university's commitment to acting ethically and with integrity in all its business relationships and to implementing and enforcing effective systems and controls to ensure slavery and human trafficking is not taking place anywhere in its supply chains.

Build resilient infrastructure, promote inclusive and sustainable industrialisation and foster innovation

£20m
for green aerospace innovators

#1
Indonesia's leading UK research partner

£5.5m
UK Institute of Technical Skills and Strategy

Learning and students

Technicians transforming tomorrow

The university hosts the **Institute for Technical Skills and Strategy** (ITSS) – a national hub dedicated to upskilling and recognising technicians who are crucial for sustainable innovation. ITSS champions the vital role technicians play in research, education and green technology, and will help ensure the UK has the technical capability and capacity to realise its ambitions of being a research and innovation superpower.

Research

Pioneering the future of wireless

The university is at the forefront of developing the next generation of wireless networks. Our researchers are exploring innovative technologies such as Reconfigurable Intelligent Surfaces (RIS) to create **more efficient and sustainable 6G networks**. By optimising signal transmission and reducing energy consumption, RIS has the potential to revolutionise how we connect and communicate.

Growing for gold

Faculty of Engineering researchers are pioneering a plant-based alternative to **recover precious metals** such as gold, silver and copper from mining waste. They are combining a plant-based technique called phytomining, where plants absorb metal ions through their roots, with an advanced biotechnological approach to retrieve the resulting metal nanoparticles from the waste. Metallic nanoparticles have a wide range of current and emerging applications. This project aims to identify efficient routes to their manufacture from mining wastes, at low cost and with minimal environmental impact.

Engagement and impact

Driving Indonesia's electric revolution

The Faculty of Engineering is spearheading Indonesia's **transition to sustainable transport**. Our collaboration focuses on developing the nation's electric vehicle infrastructure and workforce. By sharing expertise in vehicle maintenance, safety standards and battery technology, we aim to create a thriving electric vehicle ecosystem. Nottingham is the UK's leading institution for knowledge exchange with Indonesia and its role extends to supporting local industries, fostering innovation and ensuring the safe and efficient operation of electric vehicles.

Forging steel's greener future

Our multidisciplinary Microwave Process Engineering Group is partnering with industry giant Rio Tinto to develop technology that could **decarbonise the global steel industry**. Biolron™ uses sustainable biomass, such as wheat straw, sugar cane bagasse, canola sticks or barley straw, and microwave technology to replace coal in the iron ore conversion process, offering massive reductions in CO_2 emissions. The process will be tested at a larger scale and could offer a commercially viable pathway to a sustainable steel and iron industry.

Policy and operations

Royal Society Entrepreneur is Nottingham alumnus

For the first time, the Faculty of Science hosted a **Royal Society Entrepreneur in Residence**. Martin Whitaker advised the faculty innovation hub project, which helps academic staff to engage with industry and supports the commercialisation of research. Martin is a Nottingham alumnus, completing a PhD in Pharmaceutical Science and gaining 20 years' experience working in the pharmaceutical industry. Two of his products have been approved worldwide for the treatment of cortisol deficiency.

Supporting aerospace innovators

The **Aerospace Unlocking Potential (UP)** programme is helping small and medium-sized enterprises develop new technologies and solutions to make aviation greener. The £20m programme, delivered by the University of Nottingham and the Midlands Aerospace Alliance, was supported by the European Regional Development Fund and Midlands Engine. A **£3.8m funding injection** to the programme was announced at the Farnborough Air Show with more than 60 members of the faculties of Engineering and Science engaging with business and innovation partners.

10 REDUCED INEQUALITIES

Reduce inequality within and among countries

54
BAME, Disabled Staff and Women's networks attended career development sessions

5,474
users of AccessAble app

221
attended the University of Nottingham disability initiatives event

Policy and operations

Open doors, open minds

We revised our **chaplaincy recognition procedure**, streamlining the process for chaplains of all faiths to join our dedicated team. This inclusive approach ensures all students have access to spiritual guidance and a welcoming space to connect with their beliefs.

Learning and students

Tackling hate crimes and harassment

The university joined **GoodCourse**, the London-based EdTech start-up, to co-create a new style of micro-learning course to raise **awareness of misogyny and hate crime**. The course, informed by our ground-breaking research with police forces into the language of hate crime, uses short, accessible videos to engage students and show them how to keep each other safe and tackle harassment.

Role model chemist

Professor Robert Mokaya remains the UK's only Black professor of chemistry. Kenya-born Professor Mokaya was **elected Fellow of the Royal Society in recognition** of his contribution in the field of sustainable energy materials and his commitment to sharing access to chemical knowledge across Africa. As Pro-Vice-Chancellor for Global Engagement (2019-24), Professor Mokaya championed international collaboration and is a role model and mentor especially to Black academics and students in the UK.

Building brighter futures

Our **Foundation Year** Arts course provides students from diverse backgrounds with the skills and knowledge needed to thrive in a university environment. The programme bridges the gap between school and university, and is aimed at students whose personal background and grades means they may not consider higher education as a viable option.

Research

Coffee, cash, and knowledge

We're brewing up a recipe for financial literacy in rural Africa. Our experts secured a prestigious grant from the Royal Academy of Engineering to investigate the most effective practices for improving the **financial literacy of coffee farmers in Uganda.** They will evaluate an innovative programme uses an offline mobile app and local agents to deliver financial education in local languages. The project will also help farmers prepare for climate change and its impact.

Engagement and impact

Giving the marginalised as voice

Research at the University of Nottingham Ningbo China is helping to tackle discrimination against marginalised groups. **Dr Vikrant Kishore**, Associate Professor in International Communications, uses documentary filmmaking to help give marginalised people a voice. A current project documents the first-hand experiences of Indian-Australians facing caste discrimination. By capturing personal stories, documentaries can evoke empathy, challenge prejudices, and prompt viewers to reconsider their bias, while collecting valuable qualitative data through interviews and on-site recordings.

Zine-making LGBTQ+ students

We launched a Queer Zine-Making Project to provide a **platform for Chinese LGBTQ+** students to express themselves creatively. The initiative offered a supportive space for students to explore their identities and share their experiences. The project provided a safe space for self-expression and fosters a sense of community. It also equipped participants with practical skills like design and storytelling.

The zines - miniature magazines - featured in the 'Let Untold Stories Rise' exhibition at London's LGBTQ+ Community Centre. The exhibition was the first of its kind in the UK.

Make cities and human settlements inclusive, safe, resilient and sustainable

Engagement and impact

Green festival connects communities

The university's Institute for Policy and Engagement, in partnership with the Green Hustle Collective, supported the delivery of Nottingham's first **Green Hustle** festival. Our academics engaged with the public about their research through exhibits and talks. Around 10,000 people attended the two-day event, which explored how the city of Nottingham can better connect communities and build a greener, healthier future. Our contribution included showing how to create urban gardens and grow plants in virtually any space, and working with the Friends of Wollaton Park to demonstrate how leaves can be collected and used in many interesting and sustainable ways.

3rd
in world for sustainability

£3.2m
saved in China green highway project

10,000
audience for Green Hustle festival

Learning and students

Students at the heart of sustainability

The University of Nottingham understands that a sustainable future starts on campus. In 2023, we launched a **student living strategy consultation**, inviting students to actively participate in shaping their living environment. This initiative ensures our residences are not only comfortable but also resource-efficient, fostering a sustainable lifestyle for our student community. The strategy marked the first time that the city council, the University of Nottingham and Nottingham Trent University made a commitment to work together on shared priorities for housing and local services, as well as maximising the benefits that students bring to our city.

UK-first software is building green dreams

Nottingham is the first university in the UK to integrate **specialist building information software** training directly into its courses. The software uses digital models and data to help design, construct and manage a building throughout its life cycle. This makes building construction and management more efficient and cost-effective, using fewer resources and minimising environmental impact. Hands-on experience of this tool is helping equip our architectural and engineering students with the skills to build a career as built environment professionals, while helping the industry address an ongoing skills shortage through sharing knowledge of Building Information Management systems.

Policy and operations

Third in the world for sustainability

The University of Nottingham has been ranked **third in the world** in a list of the most sustainable universities – retaining our top three position for a third consecutive year. The **UI Green Metric**, produced by the University of Indonesia, is the only university ranking in the world that measures commitment in developing an 'environmentally friendly' infrastructure. The rankings look at six indicators: setting and infrastructure, energy and climate change, waste, water, transportation, and education. More than 900 universities from 84 countries take part in the rankings every year and, since first taking part in 2010, Nottingham has consistently been placed in the top four.

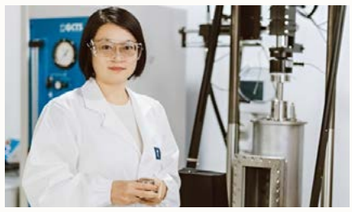
Research

Caves a catalyst for regeneration

The university's archaeologists and historians are bringing the city's hidden history to life as part of the regeneration of the Broadmarsh area. The **City of Caves** project aims to make Nottingham's famous underground caves a signature feature and highlight Broadmarsh as a leading example of heritage-led place-making, vital to the growth of tourism and the visitor economy. The City of Caves project is funded by the **Arts and Humanities Research Council's Place Programme**, and is one of nine projects intended to support cultural regeneration and boost regional economies around the UK.

Laying foundations of greener construction

Experts in soil mechanics at the University of Nottingham Ningbo China are laying the foundations of a greener construction industry. Innovative processes to absorb waste soil back into construction materials have been piloted on a highway project connecting the cities of Hangzhou and Ningbo. By improving its durability, soil excavated from the construction site was turned into foundation materials, saving the project around 30 million RMB (£3.2m). By understanding how soil characteristics vary in different regions, the technology could be rolled out across the country, with potential to reduce the environmental impact of China's huge construction industry.



12 RESPONSIBLE CONSUMPTION AND PRODUCTION

Ensure sustainable consumption and production patterns

44%
of university waste recycled in 2022/23

500
tonnes of campus garden waste is composted each year

18,000
government records accessed in study of UK smoke control regulations

Research

Plugging a gap in the recycling chain

Flexible plastic packing for food is everywhere – and one of the most challenging materials to separate, process and recycle. Our School of Chemistry researchers are helping to develop a **revolutionary waterless cleaning process**, using low-pressure super-critical CO_2 and green co-solvents to remove oils, fats and printing inks, which allow food-grade plastic films to be effectively decontaminated and reused. This innovative technology, being co-developed with Nextek Ltd, was awarded the £3m Alliance Prize to fast-track development of the project.

Grain to graphene

Countless millions of tonnes of rice husks are discarded by farmers throughout Asia. Researchers at the University of Nottingham Ningbo China are exploring how **agricultural waste could be sustainably turned into graphene**, with the potential for transformative applications in healthcare. Made up of a single layer of carbon atoms, graphene is an ideal candidate for binding on to anti-cancer agents – whether it be chemotherapy drugs, proteins or antibodies – so that they can be delivered precisely into the body.

Learning and students

Zero waste warriors

The university encourages and supports our students to do their bit for the environment. By reducing waste on campus, students can also save money. **During Zero Waste Week**, we highlighted how using reusable cups for drinks bought on campus earns a discount at the till, cuts plastic waste and reduces carbon emissions. In August 2022, 2,860 drinks were sold in reusable cups, saving 9.44kg of plastic from the bin and preventing 105kg CO_2 from entering the atmosphere. We also encouraged staff and students to use water refill points, recycle pens and writing materials, and cut back on printing.

Student sustainability ambassadors

The **Sustainability Ambassadors** are a group of students who are passionate about the environment. The group works together to make the university eco-friendlier, such as by championing the Switch Off campaign to cut energy bills and emissions in halls of residence, and by providing feedback to the Sustainability Team on such initiatives.

Policy and operations

Call for action on wood-burning stoves

Wood-burning stoves have grown in popularity and are the biggest domestic source of fine particulate pollution in the UK. Wood particles from stoves can cause breathing difficulties or exacerbate conditions such as asthma or heart and lung disease. Even so-called smokeless stoves emit 350 times the particulate matter of a gas boiler. Yet in the first **UK-wide study of its kind**, our researchers found local authority smoke control areas are largely unenforceable. Our research underlines the need for updated regulations and enforcement on wood-burning and smokeless stoves, to better protect people and the environment, while incentivising cleaner sources of domestic heating and protecting people from fuel poverty.

Engagement and impact

Green light for budding entrepreneurs

Nottingham University Business School's **Ingenuity Programme** supports aspiring entrepreneurs with bright ideas to tackle social and environmental challenges in local communities. The programme brings together a UK network of 30 partner universities, charities, and businesses to support ideas that promote sustainable ways of living. The competitive programme, designed alongside Nuffield Health, gives entrepreneurs one-on-one support from specialist mentors to develop their idea into a business plan and be in with a chance of receiving significant investment and support.

Immersive technologies for SMEs

We're helping businesses thrive sustainably by enabling them to move from carbon-heavy practices and adopt new technologies. Our **LEADD:NG programme** offers subsidised support for small and medium-sized enterprises, independent artists/creatives and sole traders who work in the creative and digital industries, focusing on immersive technologies, such as augmented reality. Our **Virtual and Immersive Production (VIP) Studio** also allows SMEs, creatives and community groups to create content virtually, further reducing their environmental footprint.

13 CLIMATE ACTION

Take urgent action to combat climate change and its impacts

3 million
litres of water a year saved by switching to air condensers in chemistry labs

Leading overseas university in
$123m
Chile net zero project

90%
lower emissions from hybrid-electric aircraft being co-developed at UoN

Research

Hybrid-electric aircraft taking off

The university's Institute of Aerospace Technology received a share of £10m to fund research into the **future of net zero aviation**, with our researchers working alongside more than 20 other leading organisations across Europe. The award, from the EU, will fund innovations such as high-power electronic converters for a new generation of 50-100 seat hybrid-electrical aircraft, which use batteries or fuel cells to achieve 90% lower emissions and are expected to be ready to come into service by the mid-2030s.

Rethinking our roots

Our researchers unearthed a **surprising discovery** that challenges our understanding of forests and their impact on climate change. The study, uprooting 30 years of previous thought thanks to new approaches to modelling, suggests that early forests around 385 million years ago may have had a smaller effect on atmospheric CO_2 levels than previously believed. This research, led in collaboration with the University of Copenhagen, sheds light on the complex relationship between forests and greenhouse gases.

Engagement and impact

How biodiversity shapes the goals

The threat to biodiversity touches every aspect of our lives. By focusing on the social, economic and health benefits of protecting biodiversity, Dr Linjun Xie of the University of Nottingham Ningbo China is **informing international policy**. Her research shaped decisions at COP15, the UN Biodiversity Conference in 2022, while the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services commissioned Dr Xie to further investigate the links between biodiversity and water, food and health, and evidence how conservation is integral to delivering such sustainable development goals.

Plotting the path to zero carbon

Southeast Asia's developing economies have seen dramatic rises in carbon emissions. **Researchers from the University of Nottingham Malaysia**, together with colleagues from the UK, Philippines and Japan, are developing virtual tools to identify optimal use of energy resources, subject to constraints such as budget, uncertainty and planning over time. The team's DECO2 (DECarbonisation Options Optimisation) software, which uses mathematical programming models to determine optimal pathways to decarbonisation, is freely available to policymakers and industry.

Driving Chile's mining industry towards net zero

The university, the only UK member of Chile's Institute of Clean Technologies, is finding innovative ways to minimise the environmental impact of the country's mining industry. Chile is world's largest copper producer and has the world's largest reserves of lithium – both metals play a globally important role in the transition to net zero, with much of Chile's copper ending up in electrical wiring and electronics, whereas next-generation batteries are dependent on lithium. As the leading overseas university taking part in this **US$123m project**, our expertise in developing hydrogen, solar energy and electromobility technologies will help make Chile's huge mining industry more sustainable, and influence further international partnerships to decarbonise mining.

Learning and students

Climate change, made real

Undergraduate and PhD students from the **School of Geography** gain hands-on experience of how communities can build resilience to climate change, with field work and research projects in Mexico and Belize providing insights into the impact of human activity and a changing climate, particularly changes in rainfall patterns and amounts. The **ICARUS** (Integrated ClimAte Resilience) project, for example, brings together Belize, Mexico, US and UK researchers to develop new approaches to building resilience. Nottingham students develop field skills with farming and coastal communities, and also have the opportunity to share knowledge with counterparts at Mexico's the Autonomous University of Yucatán (UADY), learning how research partnerships, real-world data and engagement with local communities inform approaches to sustainable solutions.

Policy and operations

Lab technicians are green champions

Our lab technicians are committed to making a positive impact on the university's sustainability. The **Technical Sustainability Working Group** (TSWG) shares best practices for greener ways of working and is having a significant impact in reducing the university's carbon footprint. School of Pharmacy Technician Lee Hibbett, who set up TSWG, received a **Green Gown Award**, recognising the exceptional sustainability initiatives being undertaken by universities and colleges across the world.

Conserve and sustainably use the oceans, seas and marine resources for sustainable development

23
industry partners in MariNH3 green shipping fuel programme

140
members of Water Works, an Interdisciplinary Research Cluster

5 million
potential audience for BBC One Show's item on research into plastics pollution

Engagement and impact

Fuelling the future of shipping

Shipping is critical to global trade and a significant contributor to greenhouse gas emissions. The International Maritime Organisation plans to reduce shipping emissions by at least 50% by 2050, and phase them out entirely this century. The university is helping to achieve these ambitious targets as a leading contributor to the **MariNH3 programme**. With industry partners and other research institutions, we are exploring the technical, social and legislative hurdles to adopting ammonia as a clean fuel for shipping. Unlike fossil fuels, ammonia does not emit carbon dioxide when burned.

Mussels and biodiversity

The School of Geography's **Dr Alexandra Zieritz**, whose research focuses on the conservation of tropical freshwater biodiversity of Sundaland (the Malay Peninsula, Borneo, Sumatra and Java), is a member of the International Union for Conservation of Nature (IUCN) Species Survival Commission **Mollusc Specialist Group**. Molluscs are markers of ecosystem health and biodiversity, and Dr Zieritz's expertise helps inform the work of the IUCN, a global authority on the status of the natural world and the measures needed to safeguard it, which brings together 1,400 government and civil society organisations.

Research

From hydropower to flood defences

Reservoir dams, coastal flood defences and offshore wind and wave energy farms are key to sustainable development. Researchers within the Environmental Fluid Mechanics and Geoprocesses Research Group are investigating how to make such hydraulic structures more resilient. The group delivered an unprecedented survey calling for a step change into research into **subaerial landslide-tsunamis** (caused by rockslides, glacier calving and snow avalanches), which can have a devastating impact on lakes and reservoirs, and harnessed expertise in 2D and 3D modelling to explore the **impact of waves** on wind and wave energy farms and flood defences.

Fresh look at global water modelling

Global water models are essential tools for understanding the water cycle and the impact of climate change. Yet models from different regions around the world may have inconsistencies or differences in approaches to data evaluation and their conclusions. Researchers from the School of Geography are working with international partners to investigate more holistic approaches to **global water modelling**, and this study will be the first to use large-scale relationships between climatic and hydrological variables to reveal differences between models and in comparison to observed data from rivers and groundwater sources around the world

Tackling sargassum from space

Sargassum, a brown seaweed that floats in island-like masses, is spreading across the Caribbean. Sargassum turns clear sea water brown, beaches on coastlines and gives off sulphurous fumes as it rots - damaging ecosystems and the tourism industry. The explosion of sargassum is linked to global warming but little is known about how to predict its build-up. An international team, led by the university, developed a UK Space Agency-funded satellite monitoring system to provide authorities on Mexico's Caribbean coast with real-time data on the seaweed's location. This helps allocate resources to minimise the impact of the 'stinking seaweed' and the cost of clean-up operations on the region's renowned beaches. In the longer term, the university's world-leading Earth observation expertise has the potential to support emerging bio industries, which are turning sargassum into sustainable fertilisers and biofuels.

Policy and operations

Sustainable seafood on our menus

We ensure that campus food sourced from seas and rivers is sustainably and ethically harvested, as part of the university's **sustainable food policy**. This pledge includes catered accommodation, retail outlets, bars, delivered catering and events and mobile catering. We also ensure our menus include a diverse range of species. This policy puts less strain on fishstocks, better protects the marine environment and aquatic ecosystems, and sustainably supports the livelihood of fishing communities and those who rely on the seafood supply chain.

Learning and students

Doctoral student tackles plastic waste on prime time

Morag Nixon, a doctoral student with the university's EPSRC-funded **Centre for Doctoral Training**, shared her expertise on **BBC TV's the One Show**, which was investigating how plastic waste has seeped into the Thames estuary due to coastal erosion exposing a former landfill site. Morag highlighted a sustainable solution – by adding bacteria to the waste, half of the plastic disappeared over 10 days. By taking this discovery out of the lab and scaling up the biotechnology for application by the waste industry and water providers, viewers heard that Morag and her supervisor Dr Samantha Bryan may have found a way to make plastic waste sustainably disappear altogether from waterways such as the Thames.

Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss

World's 1st
biodiversity credit standards

Gold
award as Hedgehog Friendly Campus

22+
Green Flag awards for our campuses

Research

World's first biodiversity credit standards

A research team from the School of Geography is working on a £1m project to inform the development of the world's first biodiversity credit standards, to help businesses and governments to quantify their impacts on the natural world. Legislation in the UK, EU and across the world is demanding that organisations are more diligent in reporting the effects of their activities on both carbon and nature. Growing recognition of corporate social responsibility - and the power of positive publicity - is also driving increased private sector interest in nature conservation.

Designing roots to reach new depths

A discovery by bioscientists in Nottingham and colleagues from the universities of Bologna, Adelaide and Penn State has shown how root systems could be designed to grow deeper and at steeper angles. By adapting a gene in barley and wheat that controls the angle of root growth, future crop varieties will be better able to reach the nutrients they need to grow, which could also help develop new ways to capture carbon in soil.

Engagement and impact

Indigenous insights into managing bushfires

In a world first, researchers from the School of Geography and collaborators based in Australia, Germany, South Africa and the Czech Republic teamed up to confirm that the risk of catastrophic wildfires in Australia greatly increased with the introduction of non-indigenous plant species and bushfire management techniques. Contemporary approaches to forest management in Australia are based on suppression, extinguishing bushfires once they've started, or seeking to prevent them through hazard-reduction burning. In contrast, Indigenous Australians developed sophisticated relationships with fire over tens of thousands of years. They minimise bushfire risk through frequent low-intensity burning, in contrast to the current scenario of unpredictable, high-intensity fires.

Landscape and the power of place names

The Institute for NameStudies works with farmers and landowners to examine field-naming practices. Historic field-names are a powerful record of the environment and how it changes over time, and are markers of the influence of farming and other human activity on the landscape, as well as invoking a sense of place and identity. By collaborating with such organisations as the National Trust and National Landscapes, our researchers, including historians, geographers and linguists, explore what names can tell us about ways of managing the land that create healthy natural environments, restore its characteristic landscape and increase wildlife as an integral part of farm business.

Hedgehog friendly campus

The University of Nottingham is an accredited hedgehog friendly campus. We are proud of our green campuses and are committed to protecting and growing their biodiversity. A Hedgehog Friendly Campus Group for staff and students aims to raise awareness of the plight of hedgehogs (there are just one million in the UK, compared to 30 million 75 years ago) while taking practical steps to improve their habitats and circumstances.

Learning and students

Developing tomorrow's environmental leaders

The School of Geography's MSc Environmental Leadership and Management programme weaves together knowledge of complex environmental challenges with activities to develop the skills to lead change for a sustainable future. In 2023 students worked with the Institute of Environmental Management and Assessment to undertake a 'horizon scan' of future environmental leadership challenges, which was presented at the Transformations 2023 sustainability conference. The cornerstone of the programme is a project that students design and implement with external environmental organisations, including The Environment Agency, WWF-UK, Atkins, Nottingham City Council, and Natural England.

Policy and operations

Images reveal how plants grow and adapt

The Hounsfield Facility is a world-leading multidisciplinary research centre which focuses on understanding plant and soil interactions and their responses to environmental stresses. It integrates scientists from across a wide spectrum of disciplines in the Schools of Biosciences, Computer Sciences, Mathematics and Engineering, who employ state of the art imaging techniques such as X-ray Computed Tomography and Laser Ablation Tomography. This is increasing understanding of how to adapt crops and farming to the challenges of climate change.

Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels

Research

Exploring the global outlook of China's media

Researchers at the University of Nottingham Ningbo China are exploring changes in the Chinese media landscape, and especially how Chinese media outlets are increasingly posting correspondents around the world, giving domestic audiences the opportunity of better understanding of global events. The researchers also study the impact of digital technology on Chinese media and the state's role in this transformation.

Promoting the values of media freedom

Researchers at the University of Nottingham Malaysia are working with partners including the Southeast Asian Press Alliance to explore how the values of **media freedom** can be better protected in Malaysia and throughout the region. Findings were presented as a set of policy recommendations to the government.

50
joint PhDs in Universities for Nottingham programme

11
organisations signed up for Universities for Nottingham Civic Agreement

2,000+
policymakers and practitioners attended courses run by Human Rights Law Centre

Learning and students

Supporting higher education in Ukraine

The University of Nottingham has twinned with a Ukrainian university to offer a **joint master's degree programme** that will improve Humanities teaching, knowledge and research in Ukraine. This latest collaboration between the University of Nottingham and the Ukrainian Catholic University will help challenge Russian propaganda and support social transformation in Ukraine.

Engagement and impact

Nottingham Youth Climate Assembly

The university supported the **Nottingham Youth Climate Assembly**, which was created to put together a plan to involve young people of Greater Nottingham in information, planning and decision making to support the city's just transition to carbon neutrality. The assembly is a forum where young people can find a voice, explore solutions themselves and feel better equipped to shape the future. The assembly is also an opportunity to study how the climate crisis affects the wellbeing and sense of security of young people.

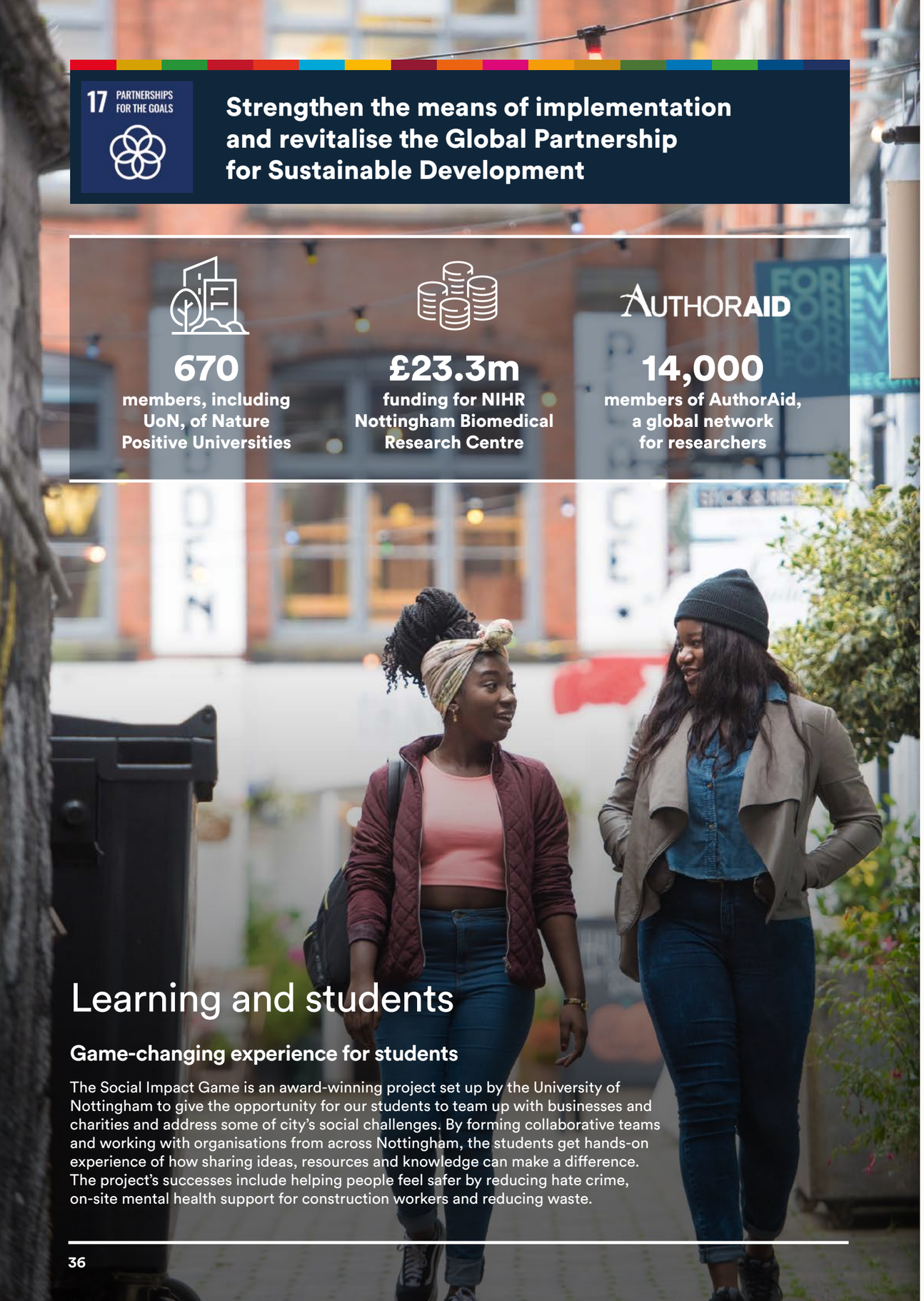
Advancing the rights of the child through litigation

Researchers at the Human Rights Law Centre are working with global partners to explore how the rights of children can be better protected through **strategic litigation**, by bringing and supporting cases before national, regional and international decision-making bodies and by building stronger relationships between children's rights advocates and academia.

Policy and operations

Developing PhD students as civic leaders

The Universities for Nottingham Civic Agreement brings together 11 key organisations from across Nottingham and Nottinghamshire, to work collectively in support of the residents and the communities that unite us. One project is supporting a University of Nottingham-Nottingham Trent University **joint doctoral training partnership,** which will train 50 PhDs, deliver 30 community events, provide 25 paid 'Citizen Scientist' research placements, support 15 community projects, and produce a national blueprint for how to support PhD candidates to develop as future civic leaders.



17 PARTNERSHIPS FOR THE GOALS

Strengthen the means of implementation and revitalise the Global Partnership for Sustainable Development

670
members, including UoN, of Nature Positive Universities

£23.3m
funding for NIHR Nottingham Biomedical Research Centre

14,000
members of AuthorAid, a global network for researchers

Learning and students

Game-changing experience for students

The Social Impact Game is an award-winning project set up by the University of Nottingham to give the opportunity for our students to team up with businesses and charities and address some of city's social challenges. By forming collaborative teams and working with organisations from across Nottingham, the students get hands-on experience of how sharing ideas, resources and knowledge can make a difference. The project's successes include helping people feel safer by reducing hate crime, on-site mental health support for construction workers and reducing waste.

Engagement and impact

City campus in heart of community

For the first time since our earliest days, the University of Nottingham has a campus in the centre of our city. Castle Meadow Campus, sitting at the foot of Castle Rock and its historic castle, is an opportunity to reaffirm our connection to the community we serve, and align on-site research and teaching to local challenges and opportunities. To support this, we invited local people and organisations to join an **advisory board** to help shape development of the campus and share expertise in sustainability, digital learning, multi-use spaces and community partnership.

JVT: a passion for public health and service

Professor Sir Jonathan Van-Tam, who joined the Medical School in 1982 to train as a doctor, went on to have a remarkable research career in epidemiology at Nottingham. While on secondment to the Department of Health as England's Deputy Chief Medical Officer, 'JVT' became a household name, famous for his plain-speaking briefings from Downing Street during the Covid-19 pandemic. Professor Van-Tam was **knighted in 2022** for services to public health, and his skill as a communicator was recognised later that year by the Royal Society, which awarded him its annual **Attenborough Prize** for outstanding public engagement in science.

Global collaboration, sustainable solutions

The **Adelaide-Nottingham Alliance** builds on years of collaboration in research and education between the University of Adelaide and the University of Nottingham. This strategic global partnership, with a focus on our world-leading strengths in food, health and sustainability research, is addressing the challenges shared by Australia and the UK and our partners across the world, while developing the next generation of students with a truly global mindset.

Policy and operations

Positive about nature

The University of Nottingham is a **founding member** of the United Nations' environmental programme, the **Nature Positive Universities Alliance**. Some 670 universities from more than 100 countries have joined the network, which is encouraging members to reduce their environmental impact, nurture biodiversity and advocate for nature conservation. As a member of the alliance, we pledge to continually assess the impact of our activities on nature, and work to ensure our award-winning green campuses will be enjoyed by staff, students and the community for generations to come.

Research

Accelerating new treatments

A £23.3m **funding boost** will strengthen the **NIHR Nottingham Biomedical Research Centre**'s mission to translate research discoveries into real-world treatments. This collaborative hub brings together the university's expertise with Nottingham University Hospitals NHS Trust, Nottinghamshire Healthcare NHS Foundation Trust, and other partners across the East Midlands. The award, from the National Institute for Health and Social Care Research, will accelerate the development of new treatments for illnesses such as asthma, irritable bowel syndrome, depression and arthritis.

Global network for researchers

Nottingham researchers such as Dr Rebecca Dewey, a Senior Research Fellow in the School of Physics and Astronomy, are members of **AuthorAID**, a free pioneering global network that provides support for researchers in low- and middle-income countries. The online platform offers free mentoring and collaboration, online courses and resources. There are currently over 14,000 members from 175 countries. For Dr Dewey, AuthorAid has allowed her to work with 42 researchers from 20 countries, contributing to more than 100 papers and co-authoring 46 published articles.

SDG data sets

2019-2023

Measure	SDG1	SDG 2	SDG3	SDG4	SDG5	SDG6	SDG7	SDG8	SDG9	SDG10	SDG11	SDG12	SDG13	SDG14	SDG15	SDG16
UoN publications assigned to SDG	195	616	6309	606	356	592	2366	874	1694	658	778	856	1099	219	456	821
UoN % of total UK publications for this SDG	2.0%	4.3%	3.0%	3.0%	2.0%	4.7%	5.4%	3.6%	4.9%	2.3%	3.0%	4.7%	4.0%	1.9%	2.6%	2.7%
UoN rank among UK universities for number of publications (excluding Ningbo/Malaysia)	22	7	14	10	18	14	6	11	6	22	19	8	13	31	21	11
Average Field Weighted Citation Impact (FWCI) for UoN publications	1.6	2.26	2.65	1.85	2.4	2.53	1.66	2.5	2.06	1.83	1.47	2.4	2.33	1.84	1.86	2.35
UoN publications co-authored with international researchers	106	420	3741	262	162	447	1651	562	1064	339	487	572	777	165	366	346
UoN outputs with co-authors from low and low to middle income countries	26	139	729	43	42	170	351	142	181	69	89	141	217	57	113	66
Policy citations for UoN research outputs related to this SDG*	204	374	3749	230	207	286	136	856	286	456	161	324	443	70	163	508
UoN outputs related to an SDG cited by policy*	49	107	831	71	60	61	75	188	116	133	67	94	141	20	77	159
News source references that cite UoN research outputs related to this SDG**	145	1551	27746	270	1114	1206	405	882	457	670	1075	349	2099	99	1229	903
UoN outputs related to an SDG cited by a news article since 2019**	18	77	1165	50	50	40	81	80	77	71	51	49	110	20	76	105

Sources

Data relating to research outputs and metrics obtained from SciVal

*Data relating to policy citations obtained from Overton

**Data relating to news mentions obtained from Altmetric Explorer

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