



**ARC UNIVERSITIES AND  
THE ENVIRONMENT**

**OXFORD —  
CAMBRIDGE  
ARC**

UNIVERSITIES GROUP

# THE OXFORD- CAMBRIDGE ARC

...the area incorporating the ceremonial county areas of Oxfordshire, Buckinghamshire, Northamptonshire, Bedfordshire and Cambridgeshire forms a strategic belt, which we refer to as the **Oxford-Cambridge Arc** ('the Arc').

Government ambition and joint declaration between Government and local partners, 2019

Citation: Graves A.R., Burgess, P.J., Zawadzka, J., Holden, A. Lomax, Evans, C. (2020). Baseline report – The Environment. Cranfield University: Arc Universities Group, 31 pages.

## CONTEXT

The Oxford-Cambridge Arc is one of the most dynamic and innovative regions in the world. It has an astonishing record of accomplishment in terms of technology and innovation, contributing c. £110 billion in GVA to the UK economy.

The National Infrastructure Commission's 2016 report projected that, by building on the Arc's strengths in science, technology and innovation, it can become a powerhouse of knowledge-intensive industries. The Government's 2020 budget confirmed that the Arc is a key economic priority and that it remains at the heart of its Industrial Strategy.

The region is home to 3.7 million people, generating more than 2 million jobs in the area. If present ambitions are fulfilled, by 2050 it will grow by a further 2 million people and at least 1 million new jobs.

The universities that make up the Arc Universities Group (AUG) are already major contributors to national and regional innovation, playing a role in all of the region's innovation clusters.

**Together the institutions have a combined turnover of £5 billion and contribute c. £13 billion to the UK economy each year. Attracting a collective research income of £2 billion per annum, they generate nearly 17% of all UK university spinout companies.**

### Recommendations:

1. To develop a positive courageous environmental vision for the Arc
2. To encourage the creation of an Arc Universities Environmental Partnership
3. To strengthen teaching and learning on the environment across the Arc universities
4. To promote and raise awareness of the work the universities are doing
5. The universities should consider, as a group, developing a net carbon zero pledge.

# AIMS



Peter Horrocks CBE

- 1 To illustrate the expertise in the universities in the Oxford-Cambridge Arc that can enable the future development of the region to be both sustainable and resilient.
- 2 To understand the potential to realise collective gain for the region, by working closely together.
- 3 To apply the United Nations' Sustainable Development Goals (SDGs), and the UK Government's 25-year Environment Plan, as frameworks for addressing the specific context of sustainable development in the Oxford-Cambridge Arc.

**“All economic progress over the next few years will be seen through a COVID-19 lens. What this pandemic has brought to the fore is the robust nature and innovative capacity of the region’s universities and businesses, and the importance of our ability to collaborate and respond, at speed, to protect the health and livelihoods of our communities.”**

**Peter Horrocks CBE**  
**Chair of the South East Midlands Local Enterprise Partnership**



# INTRODUCTION

Looking at the capabilities across the universities, this report examines what is already being done to support environmental and sustainability goals.

The study reveals an extraordinary breadth of capability in research, innovation, and engagement, with examples being selected from all of the universities. It has already led to improved collaboration between our universities, and this should continue.

We should improve how we collaborate with others associated with the environment, from those responsible for planning to potential investors and developers.

We trust that this report assists in bringing environmental concerns to the fore as we seek to support the economic vision of the Oxford-Cambridge Arc.



**Professor Sir Peter Gregson FEng, MRIA, DSc**  
Chief Executive and Vice-Chancellor,  
Cranfield University



**Professor Simon Pollard OBE, DSc FEng,**  
Pro-Vice-Chancellor, School of Water, Energy and  
Environment; Pro-Vice-Chancellor, International,  
Cranfield University

With thanks to Cranfield University for taking the lead on the research, and to the members of the research team: Dr Anil Graves, Dr Paul Burgess, Dr Ann Holden, Dr Joanna Zawadzka, to all those who contributed to the study from the universities of the Oxford-Cambridge Arc, and to those from the LEPS and other organisations. Edited by Alistair Lomax and Ceri Evans.



# FOREWORD



The universities of the Oxford-Cambridge Arc are well placed to make major contributions to achieving environmentally sustainable economic growth. By working with each other and with partners, they can effect real change across the region and beyond.

This report highlights the resources available, showcasing what the universities can deliver. Their contribution will be vital if the challenges of protecting and improving the environment and ensuring net environment gain, net biodiversity gain and net zero carbon, can all be achieved. These present exciting and challenging opportunities and responsibilities.

While the activity within our institutions may not yet be consciously designed to meet the UN's Sustainable Development Goals, we are already moving towards this aspiration.

Our collective work in research and development; in identifying and assessing the challenges; monitoring, modelling, and spatial planning; innovation, technology, policy, governance, are globally significant.

People living and working in the Oxford-Cambridge Arc highly value its natural environment assets, wildlife, landscapes and green spaces. These are the basis for creating attractive, resilient, and productive places for people to live and work. However, they are already facing significant pressures and many are fragmented or in poor condition.

If the proposed economic, housing, and infrastructure developments are not properly designed, developed and maintained, they will place additional unsustainable pressures on our natural environment. It is therefore essential for people and the economy that the environment is not only properly protected, but also enhanced.

This can be achieved if developments protect and enhance the natural environment, are based on net environment gain, and deliver the objectives of both the UN's Sustainable Development Goals and the Government's 25-year Environment Plan; objectives restated in the Government's ambition and joint declaration with local partners for the Arc, published in March 2019.

We hope that this report stimulates further ideas, actions and collaboration opportunities and partnerships, so that, together, we can play a full role in building a green economic region that showcases the very best of environmental sustainability in practice.

**Professor Paul Leinster CBE**

Chair of the Oxford-Cambridge Arc Local Natural Capital Plan Partnership Group, Chair of the Bedfordshire Local Nature Partnership and Professor of Environmental Assessment, Cranfield University.

**“People living and working in the Oxford-Cambridge Arc highly value its natural environment assets, wildlife, landscapes and green spaces. These are the basis for creating attractive, resilient, and productive places for people to live and work. However, they are already facing significant pressures and many are fragmented or in poor condition.”**

# ARC UNIVERSITIES, ONE FUTURE



## “Data & Analytics Facility for National Infrastructure (DAFNI) revolutionising the UK’s ability to adapt to a changing climate and technological landscape”

Renewable energy technologies, low carbon transport, smart electric systems, sequestration, plastics management and recycling, behavioural change, governance and policy, biodiversity conservation and ecology, complex systems modelling and simulation.



## “Delivery of life cycle zero carbon buildings and retrofit”

Oxford Brookes School of the Built Environment brings together some of the largest teams of expertise worldwide, approaching life cycle environmental impact and economically viable and deliverable zero carbon buildings.



## “Working with industry, home to the Renewables Innovation Centre”

Renewables Systems Management Innovation Centre, diesel fuel combustion technology, agriculture and agri-food, water quality, behavioural change, district heating systems, smart cities, sustainable construction, e-vehicles, working with industry.



## “The development, demonstration and training on precision agriculture and engineering at the Agri-EPI Centre”

Renewable energy technologies, sustainable power systems, agriculture and food systems, natural capital, ecosystem services, air quality, water and wastewater systems, environmental management systems.



## “Helping to deliver sustainable practices for business at the Centre for Sustainable Business Practice and Research”

Social, psychological, ecosystem services, flooding, cultural aspects of sustainable business, environmental sciences, waste management.



## “Pledge for campus to be carbon neutral by 2030”

Environmental crime and policing, environmental studies, carbon reduction in business and facilities, vegetation and water quality monitoring.



## “Developing sustainable buildings of the future through The Martin Centre”

Land economy, circular economy, environmental behavioural change, governance and policy, plastics substitution, recycling and re-use, environmental sustainability leadership for business, policy, industry and finance, sustainable urban buildings and infrastructure design, monitoring and regeneration.



## “Psycho-social research at the Global Sustainability Institute to understand behaviour”

Automotive engineering, animal behaviour, conservation, ecosystem services, marine services, sustainability research, behavioural change, nature-people relationships.



## “Research to support programme makers such as the BBC in the Blue Planet”

Transforming public attitudes and raising awareness about our oceans’ health through co-producing the Blue Planet II TV series.

# TOWARDS SUSTAINABLE DEVELOPMENT IN THE OXFORD-CAMBRIDGE ARC

“The UK was at the forefront of negotiating the Sustainable Development Goals and will be at the forefront of delivering them. The 2030 Agenda for Sustainable Development is an historic global agreement to eradicate extreme poverty, fight inequality and injustice, and leave no one behind.”

UK Government’s response to UN Sustainable Development Goals 2019

OF THE 17 SUSTAINABLE DEVELOPMENT GOALS (SDG) PROPOSED BY THE UNITED NATIONS, WE HAVE CATEGORISED THESE INTO FOUR GROUPS.

**1. QUALITY EDUCATION**

A key focus of universities is the provision of learning. This theme is embedded across each of the topics described by the SDGs.

**2. ENHANCING THE ENVIRONMENT**

Long-term sustainable development must be founded on the enhancement of the environment.

**3. THRIVING ECONOMY AND COMMUNITY**

Issues such as responsible consumption, production, and the development of sustainable communities are critical.

**4. GOVERNANCE AND PARTNERSHIP**

In addition to learning, the main activities of universities are research, engagement, and the operation of the university.



Fig 1. In this report, the 17 Sustainable Development Goals are grouped into four categories, which can be addressed in terms of the teaching and research, public engagement, and operations of the universities.

# QUALITY EDUCATION



The success of the Oxford-Cambridge Arc depends on the skills and motivation of all the people living and working in the area.



## THE CHALLENGE

To ensure inclusive and equitable quality education and promote lifelong learning opportunities for all. Learning how to make decisions that take account of the impact on the environment, in a complex world, is the foundation for sustainable development. Access to a range of educational opportunities can equip people with the tools to develop innovative solutions for the environment.

## WHAT COURSES ARE THE UNIVERSITIES DEVELOPING TO RESPOND TO THE CHALLENGE?

Sustainability and the environment are not stand alone in university curricula, but are already deeply embedded in the culture of the Arc's learning institutions.

There are a wide range of specialist courses that have long addressed the subject of the environment. Looking specifically at the interaction between physical and human aspects, these include the more traditional courses, such as Biology, Chemistry and Geography.

## THE EVOLUTION OF TEACHING AND LEARNING

More recently, courses have been developed that offer a more practical entry into the environment sector. They give students a mix of technology, science and management skills that provide practical skills to manage land, water, and food resources; these include Agricultural Sciences, Advanced Water Management, and Future Food Sustainability.

The themes of the environment find their ways into many courses, whether this is linking to the environment through the economic, political and social sciences, or through highly applied engineering and technology-based courses that tackle environmental challenges. The relationship between business and the environment is now being addressed in management courses. The Open University runs the OpenLearn environment, providing free courses on topics including Nature and the Environment.

Cranfield Water Science Institute is training the next generation of water engineers through its Water Infrastructure and Resilience Centre for Doctoral Training.

The Cambridge Institute for Sustainability Leadership provides business and sustainability education for company boards and over 2000 business executives each year.

# ENHANCING THE ENVIRONMENT



Sustainable development in the Arc requires individuals, communities, and organisations to focus on enhancing the environment: ensuring the availability of clean water and sanitation; affordable clean energy; the creation of sustainable communities; the need for climate action; and the protection of life below water and on land.



Credit: © Dr Anil Graves, Cranfield University

## THE CHALLENGE

The Arc is located in one of the driest parts of the UK, where provision of sufficient clean water for a growing population is a significant challenge.

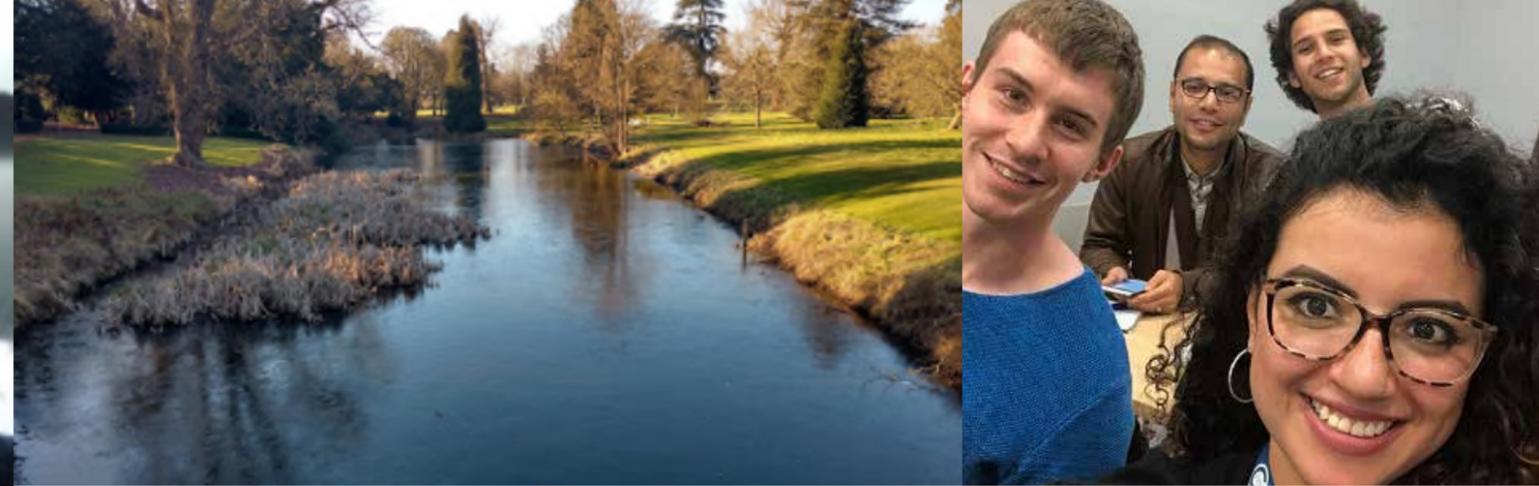
Under the Paris Agreement, a commitment was made to limit global temperature increase to no more than 2°C above pre-industrial levels, while pursuing means to limit the increase to 1.5 degrees. To support this, the UK has pledged to achieve net zero greenhouse gas emissions by 2050.

The 25-year Environmental Plan, published by the UK Government, sets out six areas where action will be focused to help the natural world regain and retain good health. These are:

- 1 Using and managing the land sustainably
- 2 Recovering nature and enhancing the beauty of landscapes
- 3 Connecting people with the environment to improve health and wellbeing
- 4 Increasing resource efficiency and reducing pollution and waste
- 5 Securing clean, productive, and biologically diverse seas and oceans
- 6 Protecting and improving the global environment.



Credit: © Dr Anil Graves, Cranfield University



Credit: © Dr Anil Graves, Cranfield University

**“Conserving and enhancing the natural environment is at the heart of the Government’s ambitions for the Arc. The 25 Year Environment Plan also sets out our comprehensive approach to improving landscapes and habitats, and the aspiration to move to a policy of net environmental gain.**

**The Oxford-Cambridge Arc Government ambition and joint declaration between Government and local partners, 2019**

**WHAT COURSES ARE THE UNIVERSITIES DEVELOPING TO RESPOND TO THE CHALLENGE?**

**Food production and zero hunger:**

Many of the universities are doing work to help develop efficient, integrated systems to strengthen approaches to food production.

- The University of Oxford’s Environmental Change Institute addresses outcomes across food security, livelihoods and enterprise, and environmental goals.
- Cranfield University hosts a hub of the Agri-EPI Centre, aiming to optimise new agricultural technologies in support of Agri-food businesses, food businesses, agrochemical companies, genetics and seed companies, agronomists, and research providers.

- The Open University undertakes extensive research on agricultural and food systems and sustainable agriculture.
- The University of Bedfordshire’s International Tourism Management courses investigate the development and management of sustainable tourism, and some of its most pressing issues including the impact of new technology on travel and mobility and the environmental, economic and social impacts of tourism.

**Clean water:**

Research on water security and pollution levels is informing Government policy and is helping to improve access to clean water on global scale, as well as for the Arc region.

Cranfield’s Water Science Institute is supporting stakeholders globally to provide safe water supplies – e.g. in Africa, helping select the optimum water and sanitation technologies; in India, helping communities to manage scarce water supplies; in Ethiopia, measuring the emotional wellbeing of pastoralists and how this is impacted by water availability and use.

- Oxford Water Network leads research on droughts and floods, looking at the challenge of managing water (both salt and freshwater) in a complex and uncertain world, working in partnership with Government, research and business communities.
- The University of Bedfordshire has helped develop advanced sensors to better detect pollution in water to improve water quality in the River Lea. The sensors could lead to the development of a new generation of ultra-sensitive and low-cost fluorescence sensors to monitor water quality.
- The University of Northampton undertakes research in flooding and water resources management. Their Environment Research Group (ERG) addresses important topics in the physical, biological, and social sciences.

- Buckinghamshire New University is researching the use of solar disinfection in India as part of a project funded by the European Union and the Indian Government, aiming to reduce the number of people in India’s rural communities relying on unsafe drinking water.
- Researchers at the University of Bedfordshire have helped develop an advanced sensor which could detect pollution in water more effectively. The sensors, which use plasmonic nanoantenna arrays, could lead to the development of a new generation of ultra-sensitive and low-cost fluorescence sensors that could be used to monitor water quality.

**Affordable and clean energy:**

With energy supply responsible for 65% of greenhouse gas emissions, research into long-term renewable energy sources is a common theme across the universities.

- The Oxford Martin School at the University of Oxford leads research on how the energy landscape can be transformed to integrate renewable energy, while remaining energy secure.
- Cranfield University is piloting methods to examine how to capture CO2 from fossil fuel and biofuel systems.



**Climate action:**

Climate research across the universities range from climate science and methods to reduce fossil fuel use, to ways of increasing carbon sequestration to reduce global warming.

- At the University of Oxford, key technologies have been identified that remove carbon from the atmosphere.
- Cranfield University is quantifying the carbon emissions of agricultural and horticultural products and supply chains. Extensive research into agroforestry systems has focused on removing carbon in tree biomass, while allowing arable and livestock production to continue.

**Life below water:**

By highlighting and researching marine environmental challenges, the universities are helping to drive initiatives that have a global impact, not only on policy, but also on the attitudes of individuals.

- The BBC-Open University series Blue Planet II catapulted awareness of marine environmental challenges to the global stage. The series was watched by more than 37 million UK viewers and has changed public attitudes and behaviour to plastic waste. It has been credited by politicians for driving policy initiatives to control plastic pollution, leading to an EU-wide ban on single-use plastics.
- At Buckinghamshire New University, research is addressing the decarbonisation of sport leisure marinas through their development of an International Masters Module programme.



Credit: © BBC/Alex Board

**Life on land:**

With a landscape ranging from low rolling hills of the Chilterns to the open landscapes of Bedfordshire, good land stewardship is crucial for the 1.15 million hectare Arc region.

- The University of Cambridge Conservation Research Institute leads research on conservation methods for protected and productive landscapes, using remote sensing to examine the value of nature to society.
- At the University of Oxford, the Environmental Change Institute studies how ecosystems and biodiversity are affected by change, and how governance can conserve these.
- The Open University, Cranfield University, and Buckinghamshire New University all have biodiversity projects across their estates. These include wild flowers, bird boxes and meadow grass, 'green' roofs and sustainable drainage.



Credit: © Ceri Dawson

## ENGAGEMENT

The universities in the Arc are able to perform a key role in raising public awareness of environmental challenges.

- The Open University runs the OpenLearn environment, providing free courses on topics including Nature and the Environment.
- Buckinghamshire New University is part of a European innovation project, SOCLIMPACT. Funded by the EU Horizon 2020 scheme, the project models climate change effects and their socio-economic impacts in European islands, aiming to develop climate projections, assess impact, risk and vulnerability to island communities.
- Cranfield University has undertaken research associated with public stakeholder perceptions of biodiversity.
- The Cambridge Institute for Sustainability Leadership convenes a corporate leaders group of companies to advocate evidence-based policy towards a Net Zero economy in the EU and UK.

## OPERATIONS

The universities are supporting the reduction in consumption of fossil fuels across their estates, championing carbon reduction and where possible, zero carbon initiatives.

- The Open University's electricity supplies are 100% green certified. It has reduced carbon emissions by 49% through energy-saving projects and improved building management systems.
- Anglia Ruskin University has recently joined a collaboration of 20 universities to buy wind energy directly from wind producers, to become carbon neutral by 2030.
- Cranfield University has achieved ISO 50001 accreditation for energy management, and reduced its energy consumption by 37% since 2007.
- Buckinghamshire New University has pledged to go net zero carbon by 2030. It has reduced its carbon footprint by 43% since 2005 through initiatives including electric vehicles, better building insulation, and intelligent lighting.
- The University of Bedfordshire has reduced annual carbon emissions by 40% since 2005 and launched a Target Zero campaign in January 2020.
- At Oxford Brookes University, the John Henry Brookes Building incorporates features that manage how light enters the building into the design. The natural ventilation of the building is more effective, and is a significant feature of the building's comfort strategy.



# DEVELOPING A THRIVING ECONOMY AND COMMUNITY



In order to develop a thriving economy and community across the region, the focus must be on the creation of stable, high skilled jobs that integrate environmental enhancement and social cohesion into every facet of business and community.

**“There is no difference between our business strategy and our sustainability strategy...they are totally integrated.”**

**Alan Jope,**  
CEO, Unilever

## THE CHALLENGE

If present ambitions are fulfilled, by 2050 the Arc region will grow by a further 2 million people and at least 1 million new jobs. How do we ensure that the Arc is a desirable place to live, grow, and invest?

## HOW ARE THE UNIVERSITIES RESPONDING TO THE CHALLENGE?

### Industry, innovation and infrastructure:

Understanding the impact of our industrial and business strategy on the environment is an important step towards lasting changes.

- The Open University is investigating air quality downwind of industrial facilities, and acoustic monitoring of biomass, soils, and greening for noise control from road surfaces.
- At Cranfield University, research has been conducted on the development of natural capital accounting in food, forestry, and agroforestry systems, as well as the evaluation of soil degradation and wetlands.
- Cambridge University's Whittle Laboratory and the Cambridge Institute for Sustainability Leadership are collaborating on a zero carbon aviation accelerator, which aims to speed up the innovation process towards zero carbon flight, through a unique collaboration between industry leaders and academics based at the Whittle Laboratory.

### Sustainable communities:

From supporting urban regeneration schemes, to addressing the impact of climate change on infrastructure, the universities are already playing a key role in development and regeneration across the Arc region and beyond.

- The Martin Centre at the University of Cambridge is researching sustainable urban buildings and urban regeneration.
- At Oxford Brookes University, the School of the Built Environment is applying digital tools such as Building Information Monitoring and Geographic Information System to make the delivery, operation, and renewal of our built environment cleaner, safer, more efficient, and more collaborative.

### Responsible consumption and production:

In the UK, about 5.2 million tonnes of plastic waste was generated in 2018. Although only a small amount (less than 1%) annually seeps into the environment, this builds up, damaging biodiversity and human health.

- The Oxford Martin Programme on “The Future of Plastics” is leading research on the development of recyclable and biodegradable plastic substitutes. One potential solution involves developing pyrolysis oil from plastic waste.
- Oxford Sustainable Fuels (OSF) has been spun out through University of Oxford Innovation, the University's research commercialisation arm, to turn plastic waste into transportation fuel.
- The Cambridge Creative Circular Plastics Centre (CirPlas) is a UK Research and Innovation (UKRI) funded programme, coordinating research on alternatives to plastic, innovations in recycling, and behavioural research on how people use and recycle plastics.
- The Open University is investigating the impact of plastics in the environment and how waste management can be improved.



**“With around \$560 billion forecast opportunity for the electric vehicle market, we can go green and create jobs at the same time. We need to think about our infrastructure as a whole system. We can improve on what we have today in order to have a green, mobility solution and better places to live tomorrow. The Oxford—Cambridge Arc could be a global exemplar for how this can be done well.”**

**Helen Wylde,**  
**Connected Places Catapult, speaking at SEMLEP AGM, 2019**



#### **ENGAGEMENT**

The universities are engaging with stakeholders at local, national and international levels, bringing sustainable technologies and renewable energy to the attention of communities and business.

- University of Bedfordshire’s climate change work builds on their Renewable Energy Innovation Centre (RENEW), a world-class hub that focuses on renewable energy systems in partnership with TWI Ltd. Established in 2019, it was founded to develop new sustainable technologies for the renewable energy industry.
- The jointly funded Centre will carry out research programmes designed to identify, test and qualify new sustainable energy technologies that will form the basis of tomorrow’s renewable energy industry. It also demonstrates the University’s commitment to a sustainable future, as well as underpinning their leading, industrially focused STEM research.

- Innovations are already being put into practice through spin out companies. Kepler Energy is applying the research on new designs for tidal turbines to achieve higher energy conversion than current designs.
- Again, at the University of Bedfordshire, their Sustainability Forum is an alliance with Bedfordshire’s Climate Change Forum. It holds monthly meetings to promote practical action to reduce the carbon and environmental footprints of local people.

#### **Environmental innovation:**

From artificial intelligence to low carbon transport systems, the universities, together with public and private sector partners, are helping to pioneer new ways to support sustainable development.

- The University of Oxford supports the commercialisation of university research, and has helped establish spin out company, Oxford PV, specialists in low cost, highly efficient photovoltaic technology integrated with standard silicon solar cells.
- Both University of Oxford and Oxford Brookes University are part of Local Energy Oxfordshire (LEO), a smart grid trial to determine how communities can benefit from smart electricity systems.
- The Transport Studies Unit at the University of Oxford is looking at ways to transition to low-carbon, energy-efficient transport systems.
- Cranfield Aerospace Solutions at Cranfield University is researching the use of electric aircraft.
- The University of Bedfordshire organises regular public events in partnership with Willmott Dixon and Cawleys Waste Management, to help raise awareness of climate change and emission targets, as well as identifying potential actions.
- The University of Bedfordshire is researching ways in which artificial intelligence, machine learning, and the internet-of-things can be applied to improve the maintenance of pumps and electric motors.



#### **OPERATIONS**

The universities are already playing a primary role in propelling circular economy approaches into reality, creating a dynamic interaction between estate, curriculum, governance, and environmental impact.

- The Centre for Sustainable Business Practices and Research at University of Northampton is researching social, psychological, cultural and ecological sustainability, and the circular economy for business operations and supply management.
- The Open University is researching the use of electric vehicles and battery technology, as well as addressing renewable energy, energy consumption, insulation, and solar energy. It is also developing sustainable construction methods and reducing carbon emissions from buildings.
- BREEAM (Building Research Establishment Environmental Assessment Method), first published by the Building Research Establishment (BRE) in 1990, is the world’s longest established method of assessing, rating, and certifying the sustainability of buildings. The University of Bedfordshire’s Luton campus library has received the “BREEAM – Excellent” award in recognition of meeting best practice standards for environmental performance of buildings.
- Oxford Brookes University has set up ESCO-in-a-box, an operating system for energy services to deliver energy efficiency projects to small and medium sized enterprises. Oxford Brookes University is leading a joint research project with other universities to develop a Tool Kit for knowledge integration to envisage buildings as components of future Distributed Renewable and Interactive Energy Systems.

# GOVERNANCE AND PARTNERSHIPS



A successful sustainable development agenda requires partnerships between Government, the private sector, and society as a whole. These inclusive partnerships must be built on shared values, vision, and goals.

## THE CHALLENGE

The biggest challenge is to work together across boundaries, disciplines, and organisations. Universities have their own goals, and it can be difficult to bring them together to work for the wider benefit.

**Breakthroughs can be achieved through relatively small changes in policy. The 5p charge for single use plastic carrier bags to reduce plastic waste, introduced in 2015, has led to an 80% reduction in use.**



Credit: © Dr Anil Graves, Cranfield University

## HOW ARE THE UNIVERSITIES RESPONDING TO THE CHALLENGE?

### Research on governance:

- Research at The Open University's Open Space Research Centre is examining environmental governance in water and leadership in climate change.
- The Centre for Sustainable Business Practices and Research at the University of Northampton is researching social, psychological, cultural, and ecological sustainability and the circular economy for business operations, and supply management.
- At the University of Oxford, the Smith School of Enterprise and the Environment is looking to find solutions to environmental challenges through its economics, enterprise, finance, and law disciplines.
- Anglia Ruskin University's Global Sustainability Institute uses psycho-social research to understand how public consumption patterns can become more sustainable.
- The Cambridge Institute for Sustainability Leadership works with company Boards and leadership teams to help them understand the commercial consequences of social and environmental issues, such as climate change, for long-term corporate performance.



Dr Emily Shuckburgh OBE, Director of Cambridge Zero



**“Cambridge Zero is an ambitious new University of Cambridge climate change initiative aimed at transitioning to a zero carbon world. It aims to bring together the collective expertise of the University – from science and engineering to law and philosophy – to offer integrated, holistic, and practical solutions to climate change and to bring these developments to bear at international, national, and local levels.**

**Dr Emily Shuckburgh OBE,  
Director of Cambridge Zero**



Professor Jim Hall, Professor of Climate and Environmental Risks, School of Geography and the Environment, University of Oxford

### WORKING IN PARTNERSHIP

There are already examples of how the universities across the Arc are working together.

- Cranfield University, the University of Oxford and the University of Cambridge are part of UKCRIC (UK Collaboratorium for Research on Infrastructure and Cities), a group of 15 universities established to improve understanding of critical infrastructure systems and their importance for urban resilience. The UKCRIC is modelling long-term future development and growth across the Arc. This was presented in a report in February 2020: A sustainable Oxford-Cambridge Corridor: Spatial analysis of options and futures for the Arc.
- The universities in the Arc work closely with the UK Centre for Ecology and Hydrology, headquartered in Wallingford in Oxfordshire. The centre employs a team of 500 scientists, all involved in ecological and hydrological research and monitoring at a national level.
- The University of Cambridge has strong links to the UN Environment Programme World Conservation Monitoring Centre (UNEP-WCMC). A 100-strong team monitors global biodiversity and works closely with scientists and policymakers.
- Cranfield University's work on Connected Resilience on critical infrastructure and climate change is being applied by organisations such as Bedford and Luton Combined Fire and Rescue Service, the Civil Aviation Authority, and the British Standards Institution.

**“UKCRIC is the biggest single UK investment in research facilities to address infrastructural challenges to date and aims to radically transform the way that this type of research is carried out.”**

**Professor Paul Jeffrey**  
UKCRIC Director of Director of Research Impact,  
and Director of Water Theme, Cranfield University



# RECOMMENDATIONS

## 1. TO DEVELOP A POSITIVE AND COURAGEOUS ENVIRONMENTAL VISION FOR THE ARC

The first recommendation is for the universities to contribute to the creation of a vision for the environment. This first step is vital if the challenges of protecting and improving the environment and ensuring net environment gain, net biodiversity gain, and net zero carbon, can all be achieved.

## 2. TO ENCOURAGE THE CREATION OF AN ARC UNIVERSITIES ENVIRONMENTAL PARTNERSHIP

Such a partnership could share best practice, identify and develop joint research projects, and bring forward new technologies, biodiversity enhancements, and recycling strategies.

## 3. TO STRENGTHEN TEACHING AND LEARNING ON THE ENVIRONMENT ACROSS THE ARC UNIVERSITIES

The current capability in teaching and learning is wide-ranging but there is so much more to do. The provision of environment and sustainability-related teaching could be expanded and deepened and consideration given to how the UN's SDGs can be deliberately embedded.

## 4. TO PROMOTE AND RAISE AWARENESS OF THE WORK THE UNIVERSITIES ARE DOING

As a combined entity, the universities offer a formidable resource; existing skills, knowledge, convening power, and facilities. Promoting this more widely in the region and nationally will ensure the skills, innovation, and research capability in the Arc does not go unnoticed.

## 5. THE UNIVERSITIES SHOULD CONSIDER, AS A GROUP, DEVELOPING A NET CARBON ZERO PLEDGE

This would allow the Arc universities to become exemplars of good environmental practice, providing students and staff, communities and wider stakeholder groups with examples of sustainable development.



For further information, please visit:  
**[www.arcuniversities.co.uk](http://www.arcuniversities.co.uk)**

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**“Sustainable economic growth and the enhancement of the environment are compatible and achievable. I have every confidence that by focusing on the opportunity for the Arc to be an internationally significant ‘Green Arc’, we can create a model for all future development. The collaborative work of its outstanding universities is key to the success of this ambition.”**

**Councillor Bridget Smith**

**Chair of the Environment Pillar, Oxford-Cambridge Arc,  
Leader, South Cambridgeshire District Council**