

Building partnerships for sustainability

United Nations Principles of Responsible Management Education (UN PRME)

Communication on progress
2019-2020



Gareth Ellis, Energy and Environment Manager, at Cranfield's solar farm

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United Nations Principles of Responsible Management Education (UN PRME)

Communication on progress 2019-2020

Cranfield School of Management is delighted to submit our sixth communication on progress to UN PRME covering the calendar years 2019 and 2020.

About Cranfield School of Management

We are one of the oldest management schools in Europe. As part of Cranfield University, a UK specialist postgraduate university, we are uniquely placed to connect technology and leadership. Our contribution to global innovation is world-leading, changing the way society thinks, works and learns.

Our mission

To transform the practice of management around the world by creating and disseminating applied knowledge.

Our vision

- To be a world-leading management school for responsible management thinking and practice.
- To conduct research that has a real impact on the practice of management around the world.
- To be an employer of choice for faculty who are passionate about transforming the practice of management.

Our key activities

- Leading-edge, collaborative research and consultancy.
- Full time and Part time Postgraduate degree programmes (MBA, MSc, DBA, PhD).
- Executive development for middle and senior managers.
- Customised company programmes.

Accreditations

We are one of an elite group of schools worldwide to hold the triple accreditation of: the Association to Advance Collegiate Schools of Business (AACSB International), the Association of MBAs (AMBA) and European Quality Improvement System (EQUIS).



Students sit in the Cranfield Management Research Institute

Foreword

During 2019-2020, Cranfield School of Management has formed collaborative partnerships, across the University and beyond, to improve the sustainability performance of Cranfield University and of the organisations with whom we engage through our research, teaching, consultancy, and operations.

Through our interdisciplinary teaching (Principle 1), we promote 'sustainability literacy' by equipping all Cranfield students, regardless of speciality, with an understanding of sustainability principles and their relevance to their disciplines and sectors. We also enable sustainability professionals to develop the in-depth skills and knowledge needed to undertake specialist roles in their organisations.

Our new pan-University Grand Challenges research initiative has focused our support for UN Sustainable Development Goals (SDGs) (Principle 2) on four focus areas: Connected resilience, Smart living, Green technologies and Security for development.

We have developed a 'Carbon Brainprint' framework for assessing the intellectual contribution of higher education institutions to reducing carbon emissions through the impact of their research, teaching and consultancy on organisational behaviour (Principle 3). Refining and extending this concept will enable us to evaluate the positive social and environmental impact of our sustainability-oriented research and teaching.

Our collaborative research activities (Principle 4) have enabled us to build collective knowledge of how organisations create sustainable social, environmental and economic value. The School of Management focuses on how environmental and social value creation support long-term business resilience and success, complemented by the environmental knowledge of the School of Water, Energy and Environment and the engineering expertise of the School of Aerospace, Transport and Manufacturing.

Through our research, teaching and consultancy, we are enhancing the sustainability performance of commercial, public, and not-for-profit organisations (Principle 5). Our faculty, staff and PhD and MSc students collaborate with organisations to develop innovative solutions to real-world sustainability challenges.

Our School of Management Sustainability Group continues to facilitate debate and dialogue on sustainability topics by engaging an informal network of scholars, practitioners and students (Principle 6). Our programme of Sustainability Network events has continued online during the Covid-19 pandemic.

We continue to improve our University's own sustainability performance, led by our Board for Energy and Environment (BEE), which reports regularly to the Cranfield Executive Council. We have set new targets from 2020 on carbon, waste and water management, travel, biodiversity, pollution control and climate adaptation, and signed up to the UN University and College SDG Accord.

One benchmark of the School of Management's sustainability performance is the retention of our prestigious EQUIS accreditation for a further five years. EQUIS recognises our commitment to sustainability through research, teaching, education and environmental performance within its over-arching standard on ethics, responsibility and sustainability. The accreditation also recognises our support for business start-ups, our charities, community engagement, observing and maintaining high ethical standards in our teaching and research, and helping all staff and students to acquire and express professional and personal ethics in their work.

Our engagement with the #CranfieldCommunity has been particularly important during the Covid-19 pandemic, exemplified by the Bettany Centre for Entrepreneurship's BGP Response Programme, which helped businesses cope with the unique challenges of each phase of the Covid-19 crisis.

Through these partnerships, connecting the School of Management with our other University Schools and Centres and the community beyond, we contribute to achieving a more inclusive and sustainable global economy. As a trained environmental economist who also occupies a Chair in Environmental Sustainability, this is clearly close to my heart as well as my aspirations for the School.



Professor David Oglesby
Pro-Vice-Chancellor and
Dean of Cranfield School of
Management

Cranfield School of Management: Supporting a University-wide Sustainability Network

Building on the rich heritage of sustainability thought leadership established through the Doughty Centre for Corporate Responsibility and Professor Emeritus David Grayson CBE, the Cranfield School of Management Sustainability Group has taken significant steps during 2019-2020 to advance our mission.

We work to ensure that current and future business leaders develop the knowledge and skills to embed sustainability in core business so they can reduce risk, reduce cost, increase trust, and drive growth through the development of innovative products, services, and processes, whilst maintaining long term financial performance and creating value for society. Through our multi-disciplinary collaborations on research, teaching, and consultancy, we are working to improve our Carbon Brainprint, enabling current and future business leaders to reduce the carbon footprints and enhance the sustainability of their own organisations.



Dr Rosina Watson
Senior Lecturer
Leader, Cranfield
School of Management
Sustainability Group

We are implementing this mission by:

- ensuring management students are well prepared to contribute value to business and society through sustainable management and practice (Principle 1),
- working across management disciplines to mainstream sustainability into corporate strategy, finance, supply chain management, consumer engagement and entrepreneurship (Principle 2),
- creating and using innovative teaching tools which support the embedding of a sustainable mindset in management students (Principle 3)
- working alongside Cranfield's Schools of Water, Energy and Environment and Aerospace, Transport and Manufacturing, who are developing technical solutions to some of the world's most pressing environmental issues, in areas such as crop reliance, carbon capture, renewable energy and water stewardship, to support the implementation of leading technical solutions in business at scale (Principle 4),
- ensuring sustainability experts are well prepared to effectively use their technical skills to enhance the sustainability of industry sectors and their component organisations (Principle 5),
- contributing to a pan-university Sustainability Network which responds to sustainability-related challenges arising from business clients and funding bodies (Principle 6).



Building our collaborative Sustainability Network

Cranfield began as a College of Aeronautics in 1946, and through the 1950s and 1960s the rapid development in aircraft lead to diversification into other areas such as manufacturing and management. In more recent times, the University has evolved into four schools with specialist areas of focus in Management (School of Management), Water, Agrifood, Energy and Power (School of Water, Energy and Environment), Aerospace, Manufacturing, Transport Systems (School of Aerospace, Transport and Manufacturing) and Defence and Security (Cranfield Defence and Security). Now, as we look to support the urgent transition of a range of industrial and commercial sectors, including the aeronautics industry, towards more sustainable practices, we bring this range of academic disciplines together to tackle the grand challenges facing the world.

Partnerships and sustainable innovation
Sustainability, innovation and entrepreneurship
Sustainability, regulation, corporate social responsibility and internationalisation
Social system relations in diffusion of responsible innovation
Green supply chain management
Waste minimisation
Carbon emission reduction
Circular economy
Logistics, sustainability and supply chain management
Managing climate change risks in global supply chains
Connected resilience
Environmental economics
Futures analysis, strategic risk assessment, stakeholder and public engagement
Ecological resilience and systems ecology
Green technologies
Environmental performance, greenhouse gas reduction, and managing resources

Sustainability-related research across School of Management, School of Water, Energy and Environment and School of Aerospace, Transport and Manufacturing

The key stakeholders with whom we collaborate to achieve this are:

- **The School of Management (SoM):** Our centre of expertise forms a hub for the integration of the sustainability context into other management disciplines, for example we are working with the Finance faculty to develop a new Green and Sustainable Finance module. Our research and influence ensure the School's academic output, taught courses and executive teaching remain relevant in the face of mounting sustainability challenges for business.
- **Other Schools across the University:** SoM is an increasingly active partner with the School of Water, Energy and Environment (SWEE) and the School of Aerospace, Transport and Manufacturing (SATM) in identifying sustainable solutions from both the technology and management perspective. For example, we have participated in research bids relating to societal change towards net zero, and into the role of organizational and personal values in greenhouse gas emission reduction strategies. The Sustainability Group plays a key role in facilitating such partnerships and helping fulfil Cranfield University's potential to be a world leader in this space.
- **The academic community:** We are focusing and accelerating academic output through publication, PhDs, Knowledge Transfer Partnerships (KTPs) and winning research bids.
- **The practitioner community.** We maintain close contact to businesses, non-profit organizations, sustainability-oriented intermediaries (for profit and non-profit consultancies) and government bodies (e.g., Southeast Midlands Local Enterprise Partnership) to identify opportunities for relevant and impactful research. We do this through the Sustainability Network event series, executive and masters level apprenticeship teaching, thesis projects and collaborative research projects.



Partnership spotlight: Cranfield School of Management Sustainability Group and the School of Water, Energy and Environment



Dr Kenisha Garnett
Lecturer in Decision Science
Centre for Environment and Agricultural Informatics

I work directly with policy organisations to improve their understanding of systemic change, including persistent or emerging trends, in order to better manage uncertainty and build sustainability and resilience of environmental systems and policies. My research involves developing robust foresight methodologies that link scientific data with expert knowledge to inform analyses of systemic change in environment and food systems, using outputs to communicate future risks and opportunities to policy makers. The work brings together EU knowledge on the environment across different policy groups to encourage timely action to manage environment risks, and to take advantage of opportunities. Our outputs include the [2019 EU Foresight Report](#), an annual collaborative study for the early detection, characterisation and assessment of emerging environmental issues.

Principle 1 | Purpose:

We develop the capabilities of students to be future generators of sustainable value for business and society at large and to work for an inclusive and sustainable global economy.

‘One University’ teaching partnerships build sustainability professionalism and literacy

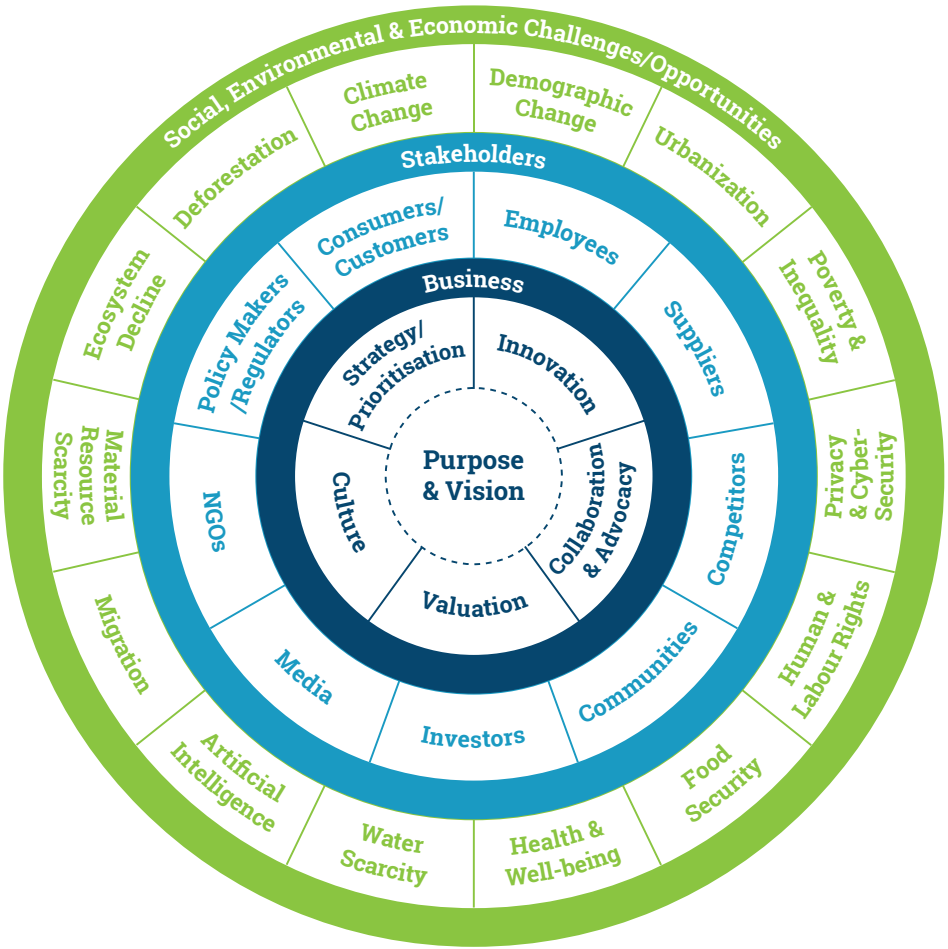
The Cranfield SoM Sustainability Group leads an interdisciplinary sustainability teaching programme, which aims to equip sustainability professionals with practical skills, and enhance ‘sustainability literacy’ for all Cranfield SoM students, regardless of speciality. This is part of a ‘one University’ approach to creating positive impact and making the world a better place. We are developing a network of sustainability professionals creating positive impact within their organisations, with Cranfield serving as a hub to facilitate their ongoing knowledge development and sharing.

Sustainability course offerings	Full-time students	Part-time/ executive students
Students looking to enhance their capabilities in specialist sustainability roles	MSc Management and Corporate Sustainability*	Coming in March 2022: MSc Sustainability Apprenticeship
Students aspiring to embed sustainability into management roles	MSc Management and Corporate Sustainability* Leading Corporate Sustainability module Leading Sustainable Business module Social Entrepreneurship module	Leading Sustainable Business module

*Comprises seven core management modules plus five specialist sustainability modules.

The SoM Sustainability Group is promoting sustainability literacy through the teaching of core sustainability modules across general management programmes such as [Leading Corporate Sustainability](#) (taught on the MSc Management and the MSc Management and Leadership), [Leading Sustainable Business](#) (taught on the [Full-time MBA](#), [Executive MBA Energy](#) and [MBA Defence](#)) and [Social Entrepreneurship](#) (taught on the [MSc Management and Entrepreneurship](#)). The [Leading Corporate Sustainability](#) module is also taught in the School of Water Energy and Environment as part of the [MSc Environmental Management for Business](#), [MSc Food Systems and Management](#) and [MSc Future Food Sustainability](#). Students on all these MSc programmes learn the practicalities of how organisations successfully embed sustainability into their core business purpose and strategy. The course content is structured as shown in this sustainability management ‘compass’.

To ensure that more students recognise the role of sustainability thinking in businesses of the future, the Group also runs a specialist inter-disciplinary [MSc Management and Corporate Sustainability](#). Drawing many of its core management modules from the MSc Management programme, students on this course also take five additional sustainability modules. The ‘Sustainability in Practice’ module provides the opportunity to undertake a practical sustainable business consultancy project. The thesis is also a practical exercise, albeit informed by up-to-date theory. Previous thesis projects have involved working on sustainability-related projects with company sponsors such as Heineken, Unilever and easyJet. The ‘Sustainability in Practice’ and ‘Creating Sustainable Organisations’ modules provide practical leadership skills in driving sustainable business, from strategic issues such as the circular economy to topics such as sustainable innovation, reporting and employee engagement. The ‘Applied Science and Technology for Environmental Sustainability’ module is taught by environmental experts from Cranfield’s School of Water, Energy and Environment, and provides the specialist skills needed to assess and manage environmental impacts from operations to the supply chain.



Leading Corporate Sustainability (LCS) course ‘compass’

Sustainability master’s level apprenticeship: a teaching partnership between the School of Management (SoM) and the School of Water, Energy and Environment (SWEE)

In May 2020 the Institute for Apprenticeships approved a new Level 7 Apprenticeship Standard - Sustainability Business Specialist - with an integrated master’s degree. This presented an opportunity for Cranfield to bring together modules currently taught primarily on SoM’s MSc Management and Corporate Sustainability and SWEE’s MSc Environmental Management for Business, to create a new 2-year part-time Sustainability masters level apprenticeship, compliant with this Standard. Graduating apprentices will be awarded a Sustainability MSc as well as becoming sustainability business specialists.

The course will be delivered online (except for a physical launch and capstone event) to minimise carbon emissions and facilitate inclusive participation.

This course responds to an increased focus on the competencies and credentials of those in technical and senior leadership positions within companies to deliver sustainable businesses, and this is likely to increase, considering the UK Government’s ‘Build Back Better’ agenda for a post Covid-19 pandemic recovery.

“Personally, the work we did in September has completely changed my views and perspectives and I have really benefited from the few days we had to focus on sustainability”.

James Hampton
MSc Management and Leadership student, Head of Development and Engagement at Seasalt, September 2019



Sustainability expertise



Dr Rosina Watson
Senior Lecturer
Leader, Cranfield School of Management Sustainability Group

As head of the Cranfield SoM Sustainability Group, Rosina leads the design, planning and delivery of sustainability-related teaching in the School of Management, and management-related sustainability teaching in the School of Water, Energy and Environment. She supervises doctoral students as well as sustainability-related masters thesis projects. Rosina is also responsible for organising Sustainability Network outreach events for students, faculty, associates and staff across the University, commenting on sustainability topics in the media and developing a coherent presence for the Sustainability Group online and in social media.



Dr Richard Adams
Fellow of the Software Sustainability Institute
Reader in Entrepreneurship

Richard Adams is Programme Director, MSc Management and Corporate Sustainability, and supervises doctoral researchers in a range of sustainability-related topics. These include unlocking the circular economy by realising the potential of the biological cycle; techno-economic, environmental and risk analysis of a hydrogen airliner family market entry; the impact of social impact assessment; how storytelling by social intrapreneurs evolves over time; the role of social system relations in diffusing social innovations in a low income country; and sustainable entrepreneurship as a community of practice.



Dr Namita Shete
Lecturer in Sustainability
Director Designate for MSc Management and Corporate Sustainability

Namita Shete leads the Leading Corporate Sustainability module on the [MSc Management](#) and [MSc Management and Corporate Sustainability](#). She organises guest lectures by experts during these sessions and supervises student masters thesis projects. She also facilitates the online Exploring Sustainable Futures game and helps support the [Cranfield Sustainability Network's](#) Sustainable business networking and events series.



Professor David Grayson, CBE
Emeritus Professor

David is Emeritus Professor of Corporate Responsibility. From 2007-2017, he was director of the Doughty Centre for Corporate Responsibility and Professor of Corporate Responsibility. He joined Cranfield in April 2007, after a thirty year career as a social entrepreneur and campaigner for responsible business, diversity, and small business development. This included founding Project North East which has now worked in nearly 60 countries around the world; being the founding CEO of the Prince's Youth Business Trust and serving as a managing-director of Business in the Community.



Professor John Elkington
Visiting Professor

John Elkington, Co-Founder and Chief Pollinator at Volans, is one of the founders of the global sustainability movement, an experienced advisor to business, and a highly regarded keynote speaker and contributor, from conferences to advisory boards.



Dr Emma MacDonald
Visiting Professor

Professor Emma Macdonald obtained her doctorate from the University of New South Wales in Australia and is a fellow of the Higher Education Academy. She completed a Masters of Business (by Research) degree at the University of South Australia where she continues as Adjunct at the Ehrenberg Bass Institute for Marketing Science. She joined Cranfield from London Business School where she researched continuous improvement through incremental innovation. Prior to joining the academic world, Emma worked for several years in telecommunications, including marketing management for telco professional services and in the market research industry as a commercial researcher for leading consumer brands.



Professor Hugh Wilson
Visiting Professor

Hugh Wilson joined Warwick Business School (WBS) as a Professor of Marketing in 2019, having previously held a similar position at Cranfield School of Management, UK. He now teaches and researches on sustainability marketing, B2B relationships and customer experience management, and works on these issues with companies such as Unilever, Mercedes Benz, Pfizer and Nestlé.



Mike Barry
Visiting Fellow

Mike is a leading strategic advisor, speaker and commentator on sustainable business. He was until recently Director of Sustainable Business at Marks & Spencer, spearheading its ground-breaking Plan A sustainability programme. He co-chaired the Consumer Goods Forum's sustainability work bringing the world's largest retailers and fast-moving consumer goods brands together to work on issues such as deforestation, plastics and forced labour.



Sue Garrard
Visiting Fellow

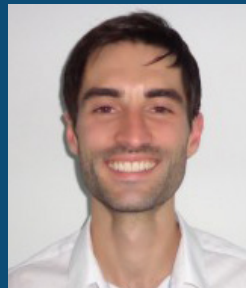
Sue is one of the world's leading expert practitioners in developing sustainability strategies in major companies and aligning them with business objectives. She runs her own consultancy business; her clients currently include Mars, Primark, O2, RBS, Jersey Telecom, and Danone. Alongside her client work, Sue supports three start-up organisations on a pro-bono basis operating in the Purpose and sustainability space. Until September 2018, she was EVP Sustainable Business and Communications at Unilever. In this role Sue led the work to embed the Unilever Sustainable Living Plan to support growth, build brands with purpose, build employee engagement and future proof the business.

Sustainability expertise



Owain Griffiths, BA(Hons) MBA
Visiting Fellow

Owain Griffiths is Head of Circular Economy Strategy at Oakdene Hollins, a technical, science-led analyst and developer of innovative approaches in the circular economy. He completed his MBA in 2017 at Cranfield University, where he worked with the Doughty Centre for Sustainability on a project to combine sustainability strategy and technology, and with a Gates Foundation funded business to commercialise its innovative product. Since joining Oakdene Hollins, Owain has been working with members of the Conseil Européen de Remanufacture (CER) to develop the shared voice of remanufacturers across Europe.



Ben Smith
Head of Social Investment at Esmée Fairbairn Foundation
Vice Chair at RBS Social and Community Capital

Ben Smith leads Esmée Fairbairn's work in social investment, shaping the organisation's social investment strategy and managing a £45m portfolio and designing investment opportunities. He is also Vice Chair of RBS Social and Community Capital. Before joining Esmée, he established and managed UnLtd's social investment department, where he designed, structured, fundraised and managed two new social investment funds and prior to that, led a £9.6m Big Lottery Funded social accelerator programme.



Anita Hoffmann
Visiting Fellow

Anita works on the intersection of leadership, sustainability and longevity and her purpose and passion is helping executives realise how they can use their experience and positions to help solve societal issues and create meaningful work throughout their potentially 60 year long working lives and careers.



Professor Emel Aktas
Professor of Supply Chain Analytics

Emel Aktas teaches Supply Chain Models and cases which incorporate minimising carbon emissions. Lecture materials incorporate carbon emission reduction in logistics operations; similarly, consultancies and research projects focus on increasing vehicle utilisation; hence reducing carbon emissions, in addition to costs.



Michael Bernon
Associate Professor Supply Chain Leadership and Executive MBA Programme Director

Michael is an academic whose scholarly interests include supply chain management and strategy, sustainability, circular economy, reverse logistics, supply chain 4.0 and supply chain improvement. As Director of the [Executive MBA](#) programme, he teaches the elective module, Driving Value Through the Supply Chain, which explores the impacts of sustainability across global supply chains and determines methods of measuring impacts and identifying mitigating strategies. This develops the student's capabilities in identifying and evaluating their organisation's impacts and considering strategies to mitigate them.



Professor Michael Bourlakis
Director of Research and Director of the Centre for Logistics, Procurement and Supply Chain Management

Michael Bourlakis is Director of Research for Cranfield School of Management and Director of the Centre of Logistics, Procurement and Supply Chain Management. The Centre's [MSc Logistics and Supply Chain Management](#) (full-time and executive) and [MSc Procurement and Supply Chain Management](#) programmes have a strong emphasis on sustainability, teaching supply chain aspects in relation to economic, social and environmental challenges faced by organisations and other stakeholders. Sustainability issues are covered in the compulsory Supply Chain Strategy and Sustainability module as well as other modules.



Dr Abhijeet (Abhi) Ghadge
Senior Lecturer in Logistics and Supply Chain Management

As part of the Centre for Logistics, Procurement and Supply Chain Management, Abhijeet (Abhi) Ghadge is part of the teaching team for the [MSc Food Systems and Management](#). The programme features a Food Chain Resilience module, which introduces principles of sustainability to develop resilience in food supply chain networks (e.g. circular economy).



Professor Philip Longhurst
Centre for Climate and Environmental Protection

As Chair of Environment and Energy Technology, Phil leads a team working to promote an understanding of the scientific, technological and social issues of environmental protection and stewardship along with an understanding of global change and resource management. Master's programmes within the energy theme, including [MSc Advanced Chemical Engineering](#) and [MSc Advanced Process Engineering](#), all focus on the management and control of greenhouse gas (GHG) emissions to atmosphere. Teaching is structured to explain the principles, practice and application of the scientific, technological and management principles that underpin the sustainable development goals by engaging students in real-life, problem-solving tasks.



Orsolya Ihasz
Lecturer in Entrepreneurship

Orsi Ihasz is a researcher in responsible innovation management and sustainability and acts as an Enterprise Technology Lead to support entrepreneurial ventures geared towards finding solutions to Sustainable Development Goals (SDGs). Sustainability is incorporated into the [i2i - Ideas to Innovation programme](#), which helps early career researchers to increase their entrepreneurial awareness, encourage innovative ways to exploit their research while opening up the possibility for new venture creation. She also lectures on the MSc Management and Corporate Sustainability course.

Principle 2 | Values:

We incorporate into our academic activities, curricula, and organisational practices the values of global social responsibility as portrayed in international initiatives such as the United Nations Global Compact.

Cranfield Grand Challenges support UN sustainable development goals

Cranfield University has launched a Grand Challenges research initiative, drawing on interdisciplinary management and technological expertise across all its Schools and Centres, to explore four societal issues, all of which link to achieving the UN sustainable development goals set out below.

Connected resilience

Cranfield SoM Professor David Denyer is taking a leadership role with Environmental Technology Professor Jim Harris to explore how to help government, business, and society prepare and respond to disruptive events to survive and prosper.

A major project in progress in this space is looking at the practical steps necessary to strengthen organisational resilience for long-term success. The work is being carried out on behalf of the National Preparedness Commission (NPC), is Chaired by Lord Toby Harris of Haringey and is being carried out in association with Deloitte. The outcome of the project will have the potential to stimulate debate and shape the national preparedness and resilience agenda.



Smart living

Testing an array of technologies designed to support intelligent transport networks, autonomous vehicles, intelligent buildings, smart energy and water supplies along the Oxford-Cambridge arc in which Cranfield University is centrally placed. As our growing population becomes increasingly concentrated in urban areas, this research looks to propose models for smart living that are both economically viable (in developing as well as developed countries), and sympathetically integrated with the natural environment, based on an understanding of the full value of natural capital.



Grand Challenges spotlight: Green technologies



Dr Ana Soares
Senior Lecturer in Biological Engineering
Lead of the Cranfield Grand Challenge in Green Technologies

Cranfield University has launched the green technologies (green tech) Grand Challenge to accelerate the development and implementation of environmentally benign technologies across a wide range of sectors: from manufacturing, materials, transport, to aerospace, energy, water services, and waste management.

To achieve the Government's net zero 2050 targets and many of the United Nations' sustainable development goals (SDGs), rapid transitions based on a fine-grained understanding of the consequences of introducing more sustainable alternative methods and technologies are needed. Relevant SDG goals where green tech plays a significant role include those relating to increasing the share of renewable energy in the global energy mix, adopting clean and environmentally sound technologies and industrial processes, improving air quality, and improving municipal and industrial waste management.

Green technologies

Accelerating the development and implementation of environmentally-sustainable technologies that can increase businesses competitiveness, stimulate innovation, boost economic growth and create jobs to a wide range of strategically important UK industries.



Security for development

Focusing on ensuring sustainable supplies of food and water through collaborative projects that focus on agriculture, soils, eco-systems, irrigation and supplies of clean drinking water. In this vein, Cranfield has been specifically researching food security during the Covid-19 pandemic to identify points of vulnerability, and using scenarios to examine how land use and management responses to Covid-19 could impact UK sustainability goals.



Principle 3 | Method:

We create educational frameworks, materials, processes and environments that enable effective learning experiences for responsible leadership.

Innovating ways to create impact with our teaching and evaluate the impact of our research

Exploring sustainable scenarios game

Since 2018, Cranfield have been using a scenario exploration board game to help master's students think about strategic decision making in the context of four different pathways towards a sustainable future by 2050. Players representing established businesses interact with players representing entrepreneurs, policy makers, civil society organisations and 'the public voice' as they all react to changes in economy,

technology and society along these pathways. The 'winners' are judged not only by the amount of resources they have accumulated, but also by whether they have achieved their purpose, and the teams reflect on the nature of the world they have collectively created through their decisions.

The game concept was originally devised by the EU-Commission's [Joint Research Council \(JCR\)](#), and this version of the game was developed in collaboration with Forum for the



Future and the Academy of Business in Society (ABIS) as part of the [EU-InnovatE project](#). Cranfield have since taken the lead in using and refining the game which has so far been played with over 500 students, with over 20 faculty and PhD students getting involved as 'Game Hosts' facilitating play at each table.

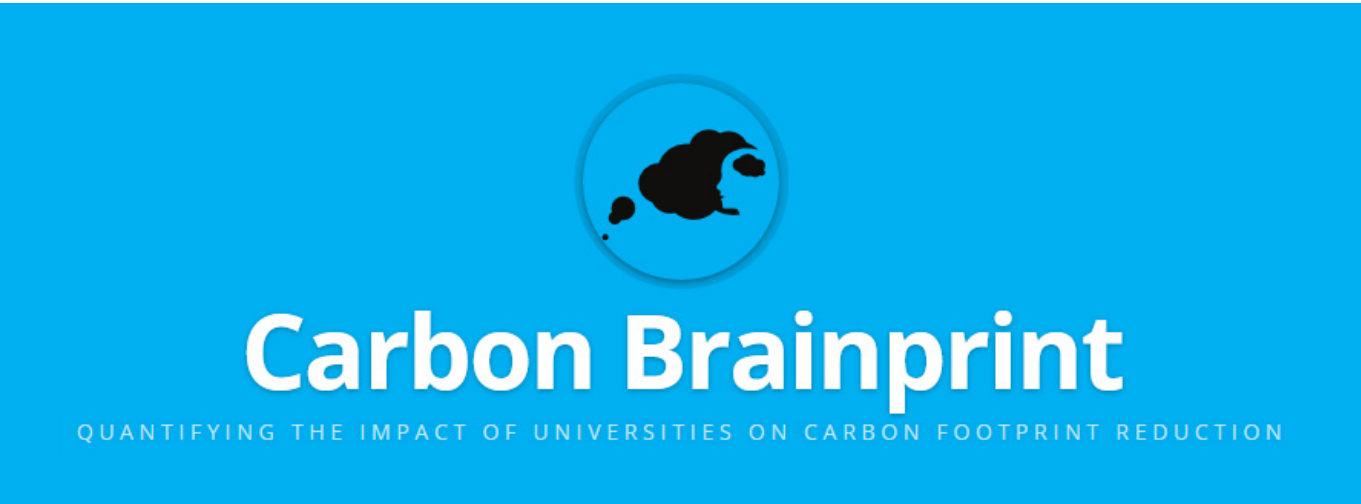
We are refining and improving the game with each use and have started to collect data on the effects on participants. Initial findings show that playing the game deepens students' understanding of:

- the radically different, plausible futures that could unfold,
- the role different actors play in societal change,
- the interrelationship between business, society, and the wider living world,

- what might have to change in the world for sustainable development to happen,
- the scope for business to both regenerate and degrade society.

There is open access to the visual assets required to print copies of the game for any other organisation wishing to use this innovative learning tool.

With the advent of the Covid-19 pandemic in 2020, we adapted the game so that it could be played online via Zoom.



Carbon Brainprint: Evaluating the impact of our intellectual contribution

The concept of the 'carbon brainprint' was developed to "convey the intellectual contribution of higher education institutions to the reduction of greenhouse gas emissions by other parties through research and teaching/training activities" (Parsons et al., 2011). Working with the Carbon Trust, the Carbon Brainprint project team, led by Cranfield University, used case studies from Cranfield, Cambridge and Reading Universities, to establish:

A robust, repeatable method, informed by life cycle analysis methods and PAS2050 for carbon footprinting, for calculating and verifying the contribution of universities to reducing greenhouse gas emissions. This method could be applied across the sector to assess the impact of HE intellectual activities.

All the case studies demonstrated the positive effects of research, consultancy or teaching in reducing greenhouse gas emissions, although the scale of the effect varied considerably.

The project demonstrated that it is possible to begin to quantify the impact that universities have on society's greenhouse gas emissions, and that this impact is large. The current annual brainprint of the four projects assessed at Cranfield University is over 50 times the university's own annual carbon footprint.

Our ambition is to develop and refine the Carbon Brainprint framework further to enable Cranfield University, and other educational institutions, to assess their Carbon Brainprint, alongside their carbon footprint, and thereby create a more robust assessment of the contributions of the higher education sector to improving global sustainability performance.

Examples of Cranfield research and consultancy partnerships which enhance our Carbon Brainprint by enabling other organisations to improve their own environmental performance can be found in the Principle 5 Partnerships section.

Tragedy of the Commons

Dr Richard Adams has facilitated SoM and SWEE groups in playing 'Tragedy of the Commons', an interactive team game developed from Elinor Ostrom's ground-breaking research in which she identified eight "design principles" of stable local common pool resource management and adapted from the research literature. In the game, students explore the complexities of decision making within the paradoxical tensions of 'for-profit' and 'for-good'.

Principle 4 | Research:

We engage in conceptual and empirical research that advances our understanding about the role, dynamics, and impact of corporations in the creation of sustainable social, environmental and economic value.

Collaborative pan-University research partnerships build sustainable business performance

The mission of the School of Management is to improve the practice of management. The Sustainability Group's contribution to this mission is to develop managers who can generate long-term value for their organisations and for society by embedding sustainability into their organisational strategies and managing their response to global social and environmental challenges and opportunities.

To achieve this, our research focuses on three component areas:

- 1 Building capabilities for sustainable organisations:** partnerships, innovation, supply chains, business models,
- 2 Helping organisations understand how to drive behaviour change:** of their leaders – including through the use of learning interventions (e.g. Exploring Sustainable Scenarios Game); and of their consumers,
- 3 Understanding business in the context of sustainable economies:** regulation, financial systems

In 2019-2020, published sustainability research by the School of Management team included a diverse mix of theoretical and empirical studies:

• **Theoretical research:**

- Modelling to align power generation mixes with sustainability targets,
- A new framework and methodology for valuing virtual water allocation,
- A Daoism-based conceptual model for logistics innovation in China.

• **Empirical research:**

- Professors' perceptions of ethics in education,
- Comparing the economic and volumetric value of virtual water stress,
- Performance measurement for smart manufacturing systems,
- Firm-level indicators of instrumental and political CSR processes,
- Cultural influences moderating learners' adoption of 3D games for managerial ethics learning,
- Relationships between natural resource abundance, economic growth, human capital, institutional quality and economic sustainability in Kuwait,
- Ethical and psychological requirements that may be crucial to industrial human-robot applications in the manufacturing sector,
- Decoding travellers' willingness to pay more for green travel products: closing the intention-behaviour gap.

Additional sustainability research focused specifically on logistics and supply chain networks, including:

• **Theoretical research:**

- Model of product-service systems impact on supply chain circularity,
- Model for researching supply chain strategies to overcome natural resource scarcity,
- Short food supply chains as local, sustainable food systems,
- Modelling the impact of climate change risk on bioethanol supply chains,
- Comparing the economic value of virtual water use with volumetric and stress-weighted approaches along the supply chain, shifting from volume to economic value in virtual water allocation problems,
- Managing climate change risks in global supply chains,
- A supplier performance evaluation framework using single and bi-objective data envelopment analysis efficiency modelling,
- Aligning health supply chain maturity with technology transfer in low-and-middle-income countries,

- Modelling supply chain network for procurement of food grains in India,
- A social capital perspective on the role of collaborative interorganisational relationships in supply chain risks,
- Strategies for improving resource efficiency and competitive advantage in supply chains under resource pressure,
- Supply Chain Sustainability Index measures social, environmental, and economic footprints plus stakeholder collaboration, health outcomes, product/service/quality initiatives.
- Aligning health supply chain maturity with technology transfer in low-and-middle-income countries,
- Interventions to improve access to medicine in developing countries: mapping WHO's building blocks and supply chain functions,
- Social network analysis in operations and supply chain management.

• **Empirical research:**

- Sustainability implementation challenges in food supply chains,
- Multi-stakeholder analysis to improve agricultural water management policy and practice in Malta,
- Buyer-led environmental supplier development,
- Does sustainability pay? Evidence from the food sector,
- An integrated lean and green approach for improving sustainability performance,
- How does servitisation affect supply chain circularity?
- SMEs strategy and scale constraints impact on agri-food supply chain collaboration and firm performance,
- Sustainable procurement performance of large enterprises across supply chain tiers and geographic regions,
- Environmental performance within Greek food supply chain: drivers and barriers for the SMEs.

PhD researchers

Cranfield School of Management PhD students are also undertaking sustainability research on a variety of topics, including:

- The role of social systems in the diffusion of externally developed social innovations into low resource markets,
- Unlocking the circular economy: Realising the potential of the biological cycle.
- Techno-economic, environmental and risk analysis of a hydrogen airliner family market entry,
- The impact of social impact assessment,
- How storytelling by social intrapreneurs evolves over time,
- Sustainable entrepreneurship as a community of practice.

Principle 5 | Partnership:

We interact with managers of business corporations to extend our knowledge of their challenges in meeting social and environmental responsibilities and to explore jointly effective approaches to meeting these challenges.

Business engagements build our Carbon Brainprint

In the research and consultancy projects described below, Cranfield University faculty, staff and students (PhD and MSc) work in partnership with external commercial, public and not-for-profit organisations to improve their own sustainability performance, thereby enhancing our own institution's Carbon Brainprint.

Student consultancy projects through company partnerships

In 2020, students on the [MSc Management and Entrepreneurship](#) and the [MSc Management and Corporate Sustainability](#) carried out a consultancy project for non-profit Waste and Sanitation for the Urban Poor (WSUP) whose mission is to help transform cities to benefit the millions who lack access to water and sanitation. WSUP asked the student teams to address key challenges relating to WSUP's rollout of higher quality latrines in Madagascar, and to propose either 1) an improved sales strategy, 2) an improved tool for modelling the dynamics of the current sales model or 3) recommendations for alternative business models.

Cranfield has a long-standing relationship with WSUP, primarily oriented around scientific research within Cranfield's water theme. This project helped broaden our collaboration to include the School of Management, as WSUPs focus evolves from innovation to implementation at scale. WSUP were impressed with the students' innovative thinking and recommendations and will be seeking input on a new set of challenges this coming year, as well as developing teaching cases with Cranfield. The projects gave the students a real-life opportunity to apply their management skills to balance both commercial and social imperatives.

[MSc Management and Corporate Sustainability](#) students also had the opportunity to respond to a set of strategic questions posed by One Third, a start-up company, recently spun out of [Ocean Optics](#) (a division of FTSE100 [Halma Plc](#)). One Third want to use its parent company's spectroscopy technology to assess the shelf life of fresh products and therefore reduce food waste for retailers. The students conducted analysis on the problem of food waste in the UK and Europe, the regulatory landscape around food waste, the relationship between plastic packaging and food waste and the pros and cons of 'co-opetition' between One Third and potential technology providers. One Third will use the insight to develop the strategy for this exciting venture.

Additional research projects are conducted by individual MSc students under faculty supervision to improve businesses' sustainability performance. These include:

- reducing the environmental impact of single use medical products ([Mölnlycke](#)),
- reducing the environmental impact of print publications and improving activation of pro-environmental behaviours (RSPB),
- developing an environmental assessment and action plan for an animal charity ([Blue Cross](#)),
- developing a net zero protocol for restaurants ([Sustainable Restaurant Association](#)).

Cranfield University plays an important role in convening companies, industry bodies, government bodies and other research institutes in projects focused on developing and implementing solutions to key sustainability issues.



'We had a great experience interacting with Gabriel Chemie, Europe's premier Masterbatch manufacturer, to propose sustainable solutions for current challenges. Gabriel Chemie's brief enabled us to explore the dynamic relationship between sustainability and public perception. We learned how to approach problem-solving for clients. It was a great learning opportunity.

Spondon Bhagwati
MSc Management and Corporate Sustainability student 2020-2021

Partnership with City & Guilds

"Throughout 2019, Cranfield University worked with the City & Guilds Group to create a Theory of Change to allow consistent understanding and reporting of social impact across the organisation, identifying the impact each area of the business is working to achieve in building skills for people, organisations and wider society. The City & Guilds Group's history, breadth of engagement and purpose-led focus, demanded a bespoke approach and methodology for evaluation. With that in mind, we then developed an Impact Assessment Framework to provide a blueprint to be used across the Group to assess progress on this journey."

Charlotte Turner and Dr Richard Adams
Cranfield School of Management



The [HyPER](#) project is collaboration between Cranfield University, GTI, and Doosan Babcock and is funded through the Department for Business, Energy and Industrial Strategy's Energy Innovation Programme. The aim of this project is to design, construct and operate a state-of-the-art 1.5 MWth hydrogen production pilot plant at Cranfield University to test an innovative hydrogen production technology that substantially reduces greenhouse gas emissions.



The [PIRI](#) project is a low carbon, smart energy scheme which aims to not only significantly reduce CO₂ emissions by 2030, but also sets out to cut energy bills by up to a quarter. Alongside corporate investment, the project has been granted funding by UK Research and Innovation. It is being led by Peterborough City Council, with partners including Cranfield University, SSE Enterprise, Element Energy, Smarter Grid Solutions and Sweco UK.



Principle 6 | Dialogue:

We facilitate and support dialogue and debate among educators, students, business, government, consumers, media, civil society organisations and other interested groups and stakeholders on critical issues related to global social responsibility and sustainability.

Sustainable business networking and events

The Cranfield SoM Sustainability Group builds community through the Cranfield Sustainability Network. This informal network of scholars, practitioners and students holds events four or five times a year, inviting visiting speakers to seed a discussion on a sustainability-related hot topic to foster dialogue and debate. Past events in the Sustainability Speaker Series have included:

Is there such thing as sustainable fashion?

Fashion has the reputation of being one of the least sustainable industries in the world, but consumer demands are driving the world biggest fashion firms to make sustainability a top strategic priority in the wake of Covid-19. Cranfield Visiting Professor Mary Creagh moderated a panel discussion of the sustainable fashion challenge featuring Deap Khambay, Head of Sustainability at Cornish fashion retailer Seasalt; Bert van Son, CEO-Founder of Netherlands sustainable jeans company MUD Jeans; and Chere Di Boscio, Editor in Chief, Eluxe Magazine.

Is net zero possible by 2050?

Industry professionals from the traditional energy sector and from the renewable energy sector discussed what the UK's commitment to a Net Zero economy means for the energy sector, and the implications of these changes on how we live and work. Cranfield Professor Phil Hart moderated the panel discussion featuring Nina Skorupska CBE, Chief Executive, The Association for Renewable Energy and Clean Technology; Dr Kerry J Mashford OBE, Board Member SEMLEP; Andy Brown Director of Operations and Jenny Young Head of Strategy, Policy and Insights at the Engineering Construction Industry Training Board; and Dr Nazmiye Ozkan, Senior Lecturer in Energy Economics, Cranfield University.

Why we are still not acting on climate change; what is Covid-19 showing us?

In this live interview beamed from The European Sustainability Academy in Crete, Sharon Jackson provided a thought-provoking insight into why so many people do not enact their well-intended climate-change recovery behaviours. Sharon used communication examples from the Covid-19 pandemic to illuminate why our attention towards important issues can become blocked without us realising.

Canary Wharf Group, A career in sustainability

Martin Gettings, Group Director, Sustainability and Julie Dang, CSR Programme Co-ordinator from the Canary Wharf Group discussed their experiences fighting the sustainability cause within their industry and pushing boundaries.

Mary Creagh, From Covid-19 to COP26 - Some thoughts on our recovery

Mary Creagh, Cranfield Visiting Professor, Chief Executive Officer, Living Streets and former Chair of the Environmental Audit Select Committee, discussed the UK Government's policy priorities for a green recovery post Covid-19 and the Government agenda going into COP26.

Green Swans, with John Elkington

John Elkington, one of the founders of the global sustainability movement and creator of the Triple Bottom Line (People, Planet, Profit) concept, discussed the primary transitions in corporate sustainability to the opportunities offered by "Green Swans", a manifesto for system change designed to serve people, planet, and prosperity.

Mike Barry: The 2020s a decade of radical sustainable disruption

Cranfield Visiting Fellow Mike Barry, who spent 15 years at Marks & Spencer launching, developing, and integrating their sustainability strategy, discussed helping businesses, big and small, new, and established, to prepare for and succeed in the great sustainability disruption that will wash through the economy in the 2020s.



Cranfield
School of
Management

The 2020s: A decade of radical sustainable disruption

13 Nov 2019 | 18:00 | CMRI Building 38

The Cranfield Sustainable Business Network will be hosting free evening talks from world leaders in sustainable business.

Mike Barry will talk about how to succeed in the great sustainability disruption that will wash through the economy in the 2020s. The event will also give you the chance to network with like-minded students, researchers and professionals over refreshments.



Speaker
Mike Barry,
Former Director of Sustainable
Business, Marks & Spencer

Register your attendance at:
www.cranfield.ac.uk/sustainabilityevents

Part of Cranfield Green Week 2019

Female FTSE Report

Cranfield has continued to produce the annual Female FTSE benchmarking report, which has analysed the number of women directors on the corporate boards of the UK's top 350 companies since 1999. We are the recognised experts on gender diversity on corporate boards in the UK. See [The Female FTSE Board Report 2020](#) and [100 Women to Watch 2020](#).



Social Media

The Cranfield SoM Sustainability Group communicates with stakeholders on social media via



[@cransustgroup](https://twitter.com/cransustgroup)



www.linkedin.com/showcase/cranfield-som-sustainability-group

Our sustainable University

We understand that our own organisational practices should serve as example of the values and attitudes we convey to our students and partners. As well as enabling businesses and other organisations to improve their own sustainability performance, we are working to continuously improve our own sustainability performance, governed by our Board for Energy and Environment (BEE), which reports regularly to the Cranfield Executive and Council.

The campus as a test-bed for sustainability innovation

Living labs

Cranfield's Urban Observatory is part of a network of observatories funded through UK Collaboratorium for Research on Infrastructure and Cities (UKCRIC) for rapid trialling of solutions at scale, and gathering/curating large volumes of diverse data about current and proposed infrastructure.

Cranfield is one of six universities receiving UKCRIC funding to establish urban observatories as platforms for research into future infrastructure, technology and governance across the social, economic and environmental domains. Cranfield Urban Observatory is a key component of the University's living laboratory and is one of the 'second wave' of urban observatories funded from April 2019.

At the heart of the observatory is a £1.05 million state-of-the-art campus-wide sensor network with associated IT infrastructure. The network harnesses the latest sensor technology and includes environmental and infrastructure sensors to monitor behaviour and factors such as air and noise pollution, customer satisfaction and water usage. The data, analytics and visualisations provided by the network can be used to view and compare infrastructure and environmental performance, quality

of life and wellbeing, allowing the investigation of healthy and sustainable environments and the effects of planned change in a dynamic way.

Unlike other city-based urban observatories, Cranfield offers a unique combination of infrastructure, including our [global research airport](#) and other near-industrial scale facilities, such as our wastewater treatment works and Multi User Environment for Autonomous Vehicle Innovation (MUEAVI), all entirely controlled by the University. Our semi-rural, peri-urban location at the centre of the Oxford-Cambridge Arc also provides an unparalleled research and learning opportunity.

An example of current work is an investigation into how air quality throughout the Arc changes as the Covid-19 lockdown measures are eased. The Arc is a priority area of economic development for the UK Government, and one of its ambitions is for growth in the region to have a neutral or even positive gain on the environment. This study, funded by the Natural Environment Research Council (NERC) and UKCRIC, will be key in understanding infrastructure requirements for better living. The Cranfield Urban Observatory is the cornerstone for these measurements.



UKCRIC National Research Facility for Water and Wastewater Treatment at Cranfield

Hydrogen fuel cell powered flight

In September 2020, Cranfield University supported ZeroAvia in achieving the world's first hydrogen fuel cell powered flight of a commercial-grade aircraft. The Piper M-class six-seat plane completed taxi, takeoff, a full pattern circuit, before landing back at the airport. ZeroAvia were assisted by Cranfield Aerospace Solutions in achieving certification from the Civil Aviation Authority for the aircraft.



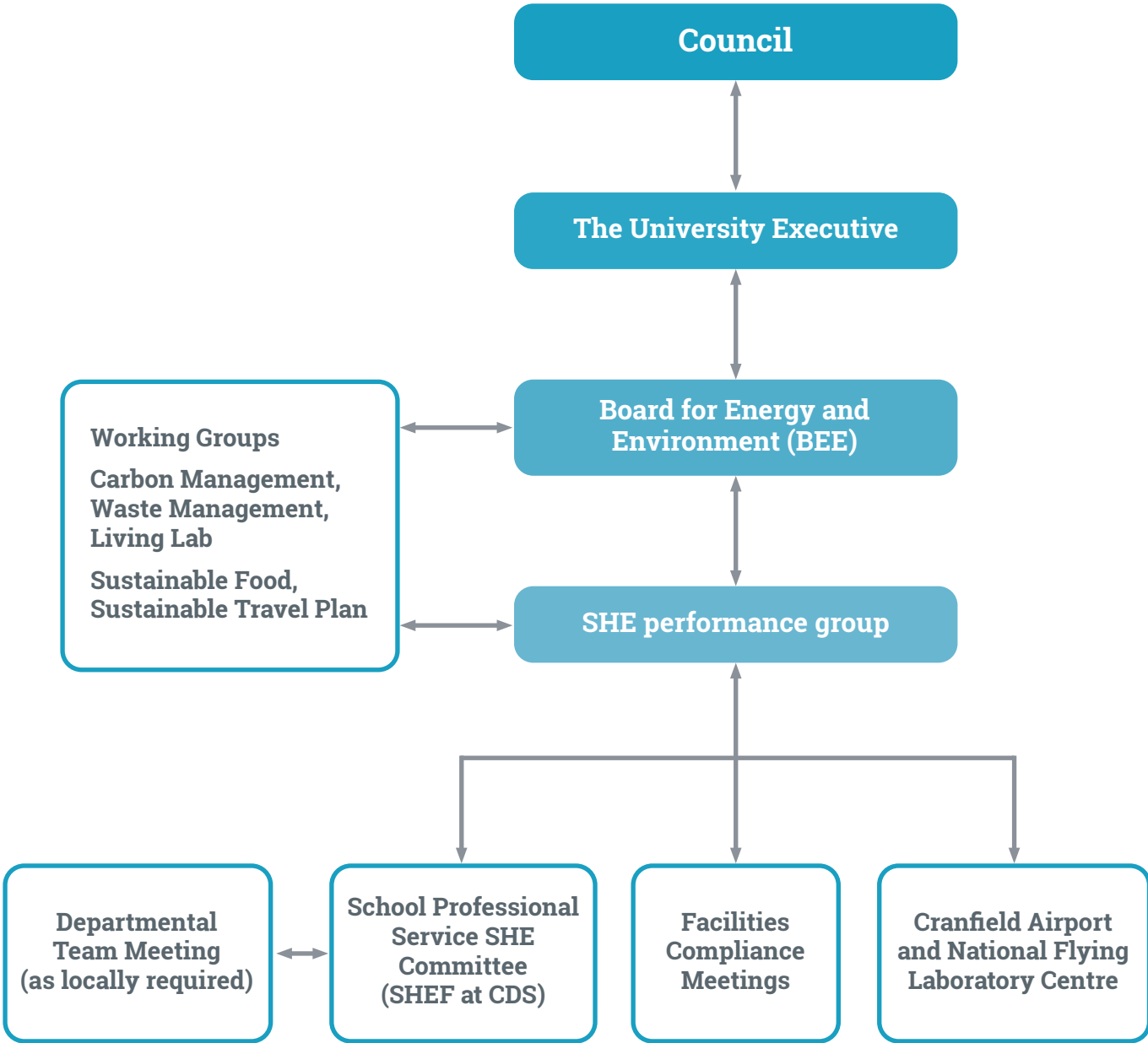
Cranfield's capabilities in aviation and the environment

Cranfield, which in 2020 became a member university of the National Centre for Atmospheric Science (NCAS) and has hosted its Facility for Airborne Atmospheric Measurements (FAAM) Airborne Laboratory since 2007, has major expertise and capabilities relevant to tackling the challenges of aviation and the environment, spanning decarbonising travel, the green airport, environmental technologies and sustainable materials and manufacture. Demonstrated by the appointment of two academics, working jointly across the aviation and the environment sectors, and as the only University in Europe with its own fully operational airport, aircraft and air navigation on campus, Cranfield offers a unique combination of infrastructure for research.



Governance

The Board for Energy and Environment (BEE) reports to the Cranfield Executive and Council on energy and environmental management issues. The priority of the Board is to ensure Cranfield University demonstrates a leading capability in environmental performance by providing oversight and direction. The Board is a sub-committee of the Executive and consists of senior managers from across the University along with student representation. The Board’s working groups, with members drawn from operational and academic staff and students, progress key environmental objectives. A dedicated energy and environment team facilitates delivery of the objectives and reports progress towards target to the Board on a regular basis. The Board aims to ensure a close relationship between BEE’s environmental activities across the University and the teaching, learning and research taking place on environmental best practice. The Governance structure is outlined below.



ISO 14001

Cranfield University operates a university wide environmental management system. The system provides a framework for managing our environmental impacts, risks, and opportunities, for setting environmental objectives and establishing programmes to achieve them. The scope of the certification covers all University operations including Cranfield Defence and Security at the Shrivenham and COTEC sites. The University was successful in achieving re-certification to the ISO 14001 standard in December 2020.

ISO 50001

Cranfield University operates a university wide Energy Management System, which provides a framework for managing our energy use. The scope of the certification covers all University operations on the Cranfield campus, and Cranfield Defence and Security at the COTEC site. Certification was achieved in August 2018 and the second annual surveillance visit was completed by Lloyds in July 2020. There were no major or minor non-conformities. In August 2020 a further audit was undertaken by Lloyds to transition from ISO 50001:2011 to ISO 50001:2018 and that was also successfully completed with no non-conformities.

Performance management

Performance against targets to 2020

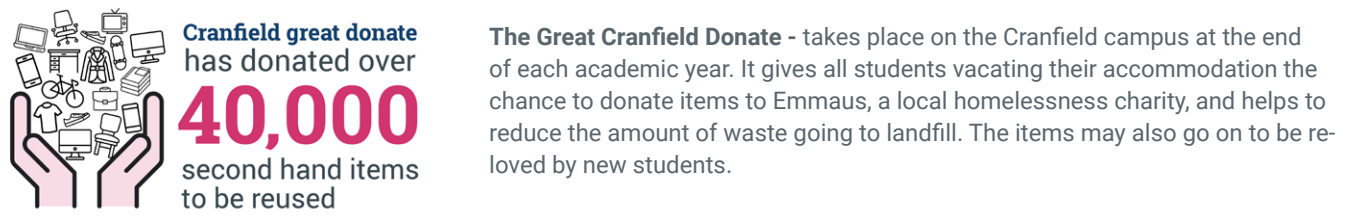
The key performance indicators table from the 2019-2020 Annual Environmental Report shows Cranfield University's environmental performance since the previous UN PRME reporting period (2017-2018).

Issue	Description	Progress	Target	By when
Carbon	Scope 1 and 2 emissions ¹	43%	50% reduction	2020 ²
Waste	Total weight produced	20%	10% reduction	2020
Recycling	Segregated on-site	53%	75% of total waste	2020
Travel	Single occupancy car use	59%	53% of commuters	2023
Water	Consumption volume	17%	30% reduction	2020
Discharges	Ammonia	59%	50% below consent levels	2020
Discharges	Biochemical Oxygen Demand	27%	50% below consent levels	2020
Discharges	Suspended solids	82%	50% below consent levels	2020

Indicates that progress is well behind trend to meet target in time
Indicates that progress is behind trend but can still recover to meet target
Indicates that progress is on trend to meet target

*Targets were set in 2008 for carbon and in 2011 for other environmental issues including waste, water, sustainable travel and biodiversity.

The setting of targets and objectives are a key component of good energy and environmental management. They help drive progress and provide the means for monitoring the continual improvement of the University's management systems. They are also an opportunity to demonstrate leadership on some of the most pressing issues for business and society.



The current targets were set in 2008 for carbon and in 2011 for other environmental issues including waste, water, sustainable travel and biodiversity. A number have already been met including a reduction in single occupancy car commuting and an increase in biodiversity action areas. The remaining targets must be met by university year 2020/2021. Whilst the Covid-19 pandemic has presented recent challenges, we have made significant progress in reducing waste tonnages, reducing carbon emissions through investment in renewable technologies, energy efficiency projects and behaviour change campaigns. So, by 2019/20 we had reduced scope 1 and 2 carbon emissions by 43% from a 2005 baseline and waste by 20% against a 2010 baseline. Progress has also been made in reducing waste consumption with a 17% reduction against 2010 levels. All this against a background of the continued growth of the University.

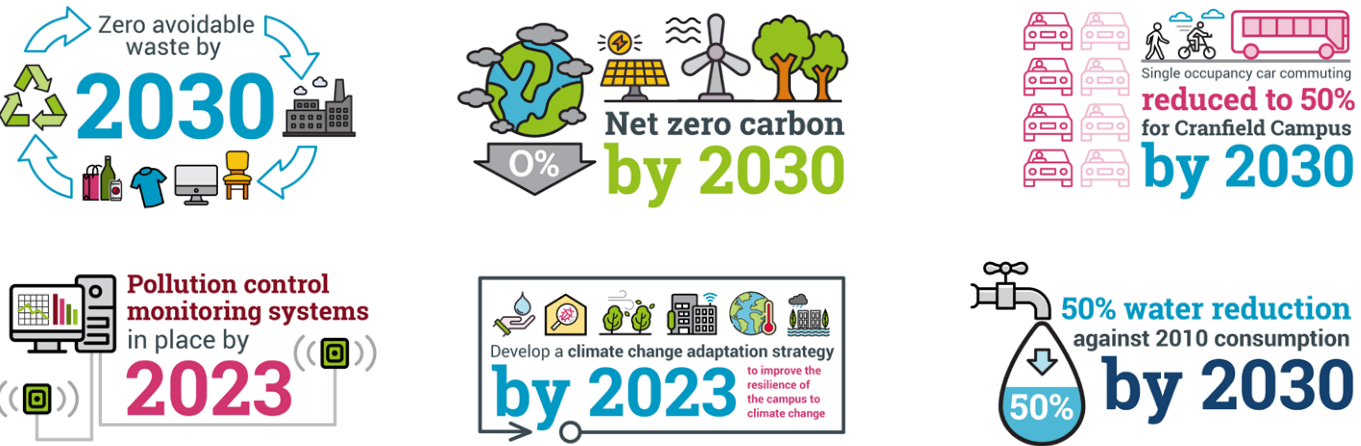
Energy and environment targets beyond 2020

The following table summarises agreed targets following feedback from consultation. This included meetings with key academics, workshops with staff and students and an online survey.

Subject	Target	Comments
Carbon management	Net zero carbon by 2030	Includes some scope three (indirect) emissions (such as business travel), allows for limited carbon offsetting (tree planting in local community forest and University Carbon Brainprint)
Waste management	Zero avoidable waste by 2030	Includes KPIs and objectives to develop and apply circular economy practices and maximise resource efficiency
Water management	50% reduction against 2010 consumption by 2030	Supports carbon reduction and resource efficiency, reducing operating costs and demonstrating best practice to staff and students
Sustainable commuting	Single occupancy car commuting reduced to 50% by 2030 for Cranfield campus	Business travel will be included in the carbon target.
Biodiversity	Net environmental gain including biodiversity gain of 20% to maximise potential on site	Single occupancy car commuting reduced to 50% by 2030 for Cranfield campus
Pollution control	Have monitoring sytems in place by 2023 as part of the Living Lab. Then set targets to minimise emissions to air, water and ground	The Living Lab urban Observatory will be harnessed to monitor emissions and provide new insights and inform appropriate targets
Climate adaptation	Develop a strategy by 2023 to improve the resilience of the campus to climate change	Includes flood management strategy and buildins standards to withstand storms and higher temperatures
Sustainable development goals	Sign up to United Nations University and College SDG Accord	Opportunity to highlight the contribution to sustainable development and reseacrh and learning. The University 'Grand Challenge' would be included. Annual reporting required with evidence of proress

Resources are being sought for an expansion of the solar farm, insulation and re-roofing or the hangars (with solar), upgrade of hangar heating, upgrade of district heating, large scale heat pump for district heating, improved campus building management system (BMS), a large campus scale battery and LED lighting. The most likely projects in the next year or two are an extension to the solar farm, upgrades to the district heating, improvements to the BMS and LED lighting.

Cranfield are also seeking a sustainable replacement for the gas fuelled combined heat and power plant (which currently generates two-thirds of the University's electricity and one quarter of its heat) within the next five years and the wholesale replacement of gas for heating by 2030. This will likely involve heat pump technology and the need to generate and store more of our own electricity. A "Heat Decarbonisation" Strategy is being developed for the campus to support the net zero carbon target.



#CranfieldCommunity supports students, staff and the wider community

#CranfieldCommunity has become a way of bringing together activity and expertise across the whole University to support and serve our students, staff, alumni, partners and clients in these unprecedented times.

Giving health professionals new tools to fight Covid-19

Cranfield's academic experts have been working to rapidly create tools that address the challenges of Covid-19.

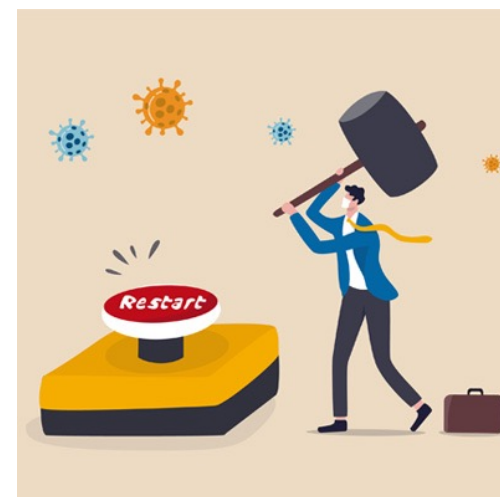
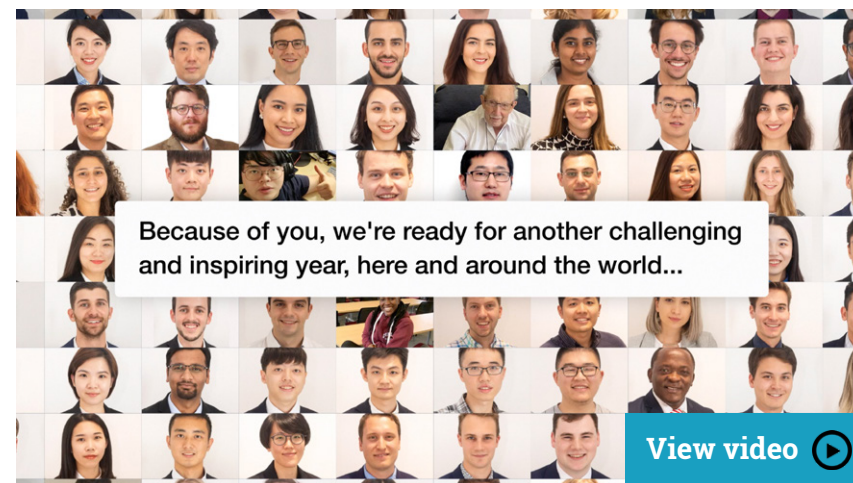
- Professor Leon Williams from Cranfield's Centre for Competitive Creative Design is leading a team that designed a new simple, low-cost bag valve mask ventilator. The design has been built by Georgia Tech in the US and is now being tested by the health authorities.
- Dr Zhugen Yang from Cranfield's Water Science Institute is designing a new paper-based test that can detect early signs of Covid-19 in wastewater.
- Cranfield Impact Centre has worked with manufacturers to crash test their latest stretchers, which have had additional platforms attached to support ventilators. The tests ensure that the stretchers pass British Standards, so they can now be used by ambulances.

Cranfield supports businesses and communities throughout the crisis

At the onset of the pandemic, the University quickly mobilized to provide support to our clients, customers, students, prospective students, associates and alumni through this period:

- We shifted the focus of our online Knowledge Hub towards Covid-19 related content that has been significantly utilised and valued by clients;
- We launched the Cranfield Community website and forum to provide both professional and pastoral care to students, staff and faculty;
- Through the Bettany Centre for Entrepreneurship, we launched a programme of support to help SMEs to react, cope and prepare for re-emergence from Covid-19. Within just three weeks of starting, the programme had hosted 14 events, had more than 1,700 website visits, 1,415 registrations, and an attendance rate of 70%. In the next phase, 'Owning the Winter', the Bettany Centre partnered with SEMLEP Growth Hub to offer webinars, workshops and peer-to-peer networking. Going forward, Peer Networks are focusing on helping businesses prepare for the post-Covid world.

Cranfield University has also signed up to the Government's C-19 Business Pledge, an initiative launched by the Rt Hon Justine Greening to mobilise the business response to Covid-19.



Reflections on progress and building back better

Building sustainability partnerships across Cranfield University...and beyond

As the achievements documented in this 2019-2020 UN PRME report illustrate, Cranfield School of Management has been building on the foundations of the Doughty Centre for Corporate Responsibility (2007 – 2017) to create partnerships for sustainability with other Schools and Centres in our research, teaching and consultancy. The Cranfield Grand Challenges of Connected Resilience, Green Technologies, Smart Living and Security for Development provide additional impetus for pan-University collaboration for sustainability. We look forward to continuing that work in the years ahead.

Cranfield University is a signatory to the Sustainable Development Goal (SDG) Accord, a commitment that learning institutions are making to one another to do more to deliver the UN SDGs, to report annually on each signatory's progress, and to do so in ways which share the learning with each other both nationally and internationally. While our SDG Accord survey results highlight the activities we are already undertaking in support of the SDGs, our support for the SDG Accord will also be reflected in our developing Carbon Brainprint as our sustainability research, teaching and consultancy activities evolve over time.

Six ways business can build back better after the Covid-19 crisis

A summary of alumni webinar delivered by Dr Rosina Watson 17th June 2020

The threat of this pandemic has brought the fragility of our civilisations into stark relief. It will focus policymakers and businesses alike on the importance of protecting and strengthening the health of our communities and our planet. Unfortunately, Covid-19 is not the only threat we face. Climate change, and its related impacts on weather, food, water, and social and geo-political stability, will become increasingly disruptive. What can businesses learn about how to respond to such crises?

Don't just manage risk, build resilience. An alternative to preparing for a specific disaster is to focus on building resilience – the ability to respond and adapt quickly to any new situation. How can we do this?

Protect and strengthen sources of supply. Businesses need to build transparent relationships with their suppliers, and build supply chains designed for resilience, not just for speed and cost. Moving towards more local supply chains can reduce risk and represent opportunities for building stronger communities. By fully understanding our end-to-end supply chains that we can make them more resource efficient and circular, thereby stewarding the planet's finite resources.

Build strong cross-sectoral relationships. The UK government's net zero commitment will entail a programme of legislation designed to rapidly decarbonise our economy. Businesses need to engage with this programme in a spirit of collaboration and innovation rather than defensiveness. NGOs too are valuable partners for business, offering expertise, legitimacy, and access to communities. While building trusting cross-sector relationships undoubtedly takes time, they will yield rewards in a crisis.

Let purpose be your guide. Navigating uncertainty and being able to take a range of partners with you, means having a clear sense of your business purpose. What is your business actually there to do? What value does it create for customers,

wider society, and the environment? Having a clear purpose, which is genuinely 'lived' within your organization guides rapid decision-making in the face of difficult trade-offs.





Scenario planning rather than forecasting. If purpose is your guide, the scenario planning is your map. Scenario planning instead takes an 'outside' approach and allows us to take a systematic approach to building resilience by understanding both vulnerabilities, but equally opportunities, against a range of possible future scenarios. Working with scenarios improves understanding of the radically different, plausible futures that could unfold in society, the interrelationship between business, society and the wider living world, and the agency different that actors have in society to either degrade, or regenerate society.

Innovate

If there is a silver lining to the dark cloud of the pandemic, it is that we have shown that we can rapidly adapt and change our behaviours when we have to. Many companies are taking the crisis as an opportunity to reposition themselves, moving business online, and meeting new or changing customer needs. During the lockdown, people have been enjoying the effects of cleaner air, traffic free cities, and perhaps a reconnection with nature and the sanctuary of home, family and friendship. What other business opportunities might arise from these changes? And more fundamentally, can the pandemic engender a new awareness of our dependence on the planet's resources?

Putting our heads in the sand about the environmental and social crises that still loom is not an option. Instead, we should seize the moment to #BuildBackBetter, by being a little more humble about our business' place in the world, more inclusive about who we serve, more outward looking in our visions of the future, more responsible for the effects we have and the challenges we face, and more ready to be a part of the solutions.



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