

Valuing water

Water is essential to life and our most precious resource. Without appropriate management, whether for municipal supply, agriculture, industry, community development, or maintenance of a sustainable environment, we risk over-exploitation and contamination of this most essential commodity

Managing our water resources better will be one of the most pressing challenges in our lifetime – and fundamental to how we sustain economic development, whilst feeding another 2 billion people, reducing poverty, and reversing ecosystem degradation. At Cranfield we work in all aspects of water – whether it is helping to ensure safe, clean supplies for domestic consumption, assessing agricultural needs for food production, protecting and enhancing natural habitats or improving process engineering for manufacturing and industry.

We also work at the interface between water and society – helping to provide an in-depth understanding of the social, legal and institutional factors that influence water management.



Water for People...

In many countries, population growth, new regulation and demands for greater environmental protection are exerting pressure on public water supplies. Treatment processes play a key role in delivering safe, reliable supplies of water to households, industry and agriculture and in safeguarding the quality of water in rivers, lakes, aquifers and around coastal areas. At Cranfield, we have the largest academic and research group specialising in process technologies, engineering and policy for water quality improvement.

Water for Food....

Water is critical to food security. Globally, agricultural production is the largest consumer of water. As the world's population grows, competition for food and water will increase. But in trying to increase productivity, ensuring available supplies of water for agriculture will lie at the heart of the problem – more food must be produced whilst using less water. There is simply no way around this. Understanding how to manage water better in agriculture will be key to meeting future food demands.

At Cranfield, we are researching ways to improve irrigation efficiency, water conservation, developing technologies for precision irrigation, studying how water and carbon footprinting can reduce environmental impacts, and helping to build institutional capacity and governance in agricultural water management. Modelling the impacts of a changing climate on yield and water use in key commodity sectors and identifying appropriate adaptation options are also key themes in our work.

For over 20 years we have also worked internationally in community water supplies for the rural and urban poor. Globally more than one billion people do not have a safe, reliable and affordable water supply, and more than twice that number still lack access to basic sanitation. Our activities in this area are helping to provide the skills and knowledge to plan and implement water supply and sanitation projects, working with communities in less developed countries

Water for the Environment...

Human effects on the quality and quantity of water represent major threats to ecosystem structures, species diversity and ecological functions around the world.

At Cranfield, our activities in this area help to provide the skills and knowledge required to solve complex problems involving human water consumption (in households), agriculture, industry, recreation, and in the natural environment, including impacts on vulnerable wildlife and their habitats, at different spatial scales. Our work focuses on understanding and solving complex issues relating to water resources and water quality management, including footprinting, lifecycle analysis, habitat creation and management, flooding and flood risk management, surface and groundwater modelling, and the economic, policy and legal environment in which water managers need to work.



Water for Industry...

The use and discharge of wastewater from industrial processes presents a significant pollution risk to the environment. Our work at Cranfield involves studying the links between the sustainable use of energy in water and wastewater treatment and water recycling in industry. This includes studying the potential for anaerobic treatment and sludge disintegration technologies to improve biogas production and nutrient removal. Five of the major UK water companies are also funding work on endocrine disrupting compounds (EDCs) and pharmaceuticals examining their removal in biological wastewater treatment processes.

Staff are also involved in hazardous substance research examining the fate and behaviour of organic and inorganic micro-pollutants, such as pharmaceutically active compounds, personal care product ingredients, pesticides and bromate, in wastewater and sludge treatment and in the natural environment.



Postgraduate learning

Successful water management depends on the development of integrated solutions. This requires an appreciation of the relevant scientific, technical, social, institutional and environmental issues. Our MSc courses at Cranfield do just that

At Cranfield, the Water Programme has been developed in close collaboration with its industry partners, to make sure we provide postgraduates that meet their needs – water managers, engineers and technical specialists that have the skills and creativity to address the complex range of water challenges they are likely to face, whether it be in relation to water supplies and treatment for domestic use, flood risk water management, irrigation engineering or water policy planning. Our Water Programme offers postgraduate training opportunities (MSc/MTech/PgDip/PgCert) that span the science, technology, engineering and management of water - all accredited by the Chartered Institute of Water and Environmental Management (CIWEM).



Water and Wastewater Engineering and Water Processes

These courses are ideal for individuals who want to help improve water supplies, or to maintain and enhance river and ground water quality. Treatment processes play a key role in delivering safe, reliable supplies of water to households, industry and agriculture and in safeguarding the quality of water in rivers, lakes, aquifers and around coastal areas. Well educated, skilled and experienced graduates are required to operate and manage vital water and wastewater treatment services. The courses are relevant to those graduates keen to pursue careers within companies involved in water and wastewater treatment, including utilities, contractors, consultants, equipment manufacturers, suppliers and industrial water users, and to existing employees in the water sector keen to extend their qualifications.

All courses are a mixture of taught modules, a group project and a thesis. The thesis is usually linked to an industrial partner, helping them to solve a real problem, either in the UK or internationally. The MSc Water Programme at Cranfield means you join a special group of people – working in water and part of a growing alumni linking the University with the industries it serves.

"There are not many universities where the science, management and engineering of water are genuinely studied in an integrated way - that's what sets our postgraduates apart in the real world. When it comes to water, they understand the big picture." Professor Simon Parsons, Head of Centre for Water Science

Working with us

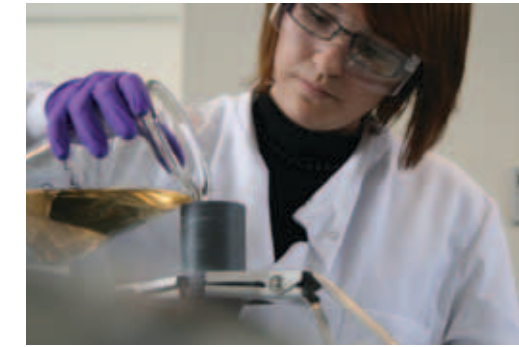
Increasing water demand for cities, industry and agriculture will require the development of new technologies, infrastructure and policy. Whether you work in government, industry or the non-governmental sector, working with us revolves around developing innovative solutions and fostering long-term partnerships

The management of the hydrological cycle from source to tap is an environmental priority for both affluent and developing nations. Cranfield offers internationally-leading expertise on water and sanitation, water policy and governance, water and wastewater technology and risk management for the water sector.

Our research, consultancy and training activities are underpinned by world class facilities, including a pilot-plant hall at the University's own sewage treatment works, state-of-the-art soil and water laboratories with extensive advanced analytical services, a grey water treatment pilot area, a managed borehole drilling site and soil and irrigation testing facilities.

Research

Most of our research is applied and industry focussed, helping to solve real problems for a diverse range of companies, government agencies and NGOs, both in the UK and overseas. We have a large community of post-doctoral staff and researchers, making it the UK's largest water-focused postgraduate group. The high quality of our research was reflected in the latest Research Assessment Exercise, explaining why we are one of the UK's top five research intensive universities. Our funding comes from the Research Councils, government agencies, charities, the European Commission and industry, notably the water utilities.



Consultancy

Our consultancy activities centre around problem solving – linking business needs to our expertise. We undertake short term feasibility studies, and develop strategic partnerships with clients so that they can access our expert knowledge and specialist advice. We also help companies to add value to their businesses, by leveraging funding from government departments and regional development agencies to develop or test new products and gain competitive advantage.

Short course training

We offer both tailor-made training for clients and short courses shaped around our postgraduate modules to help bring clients up to date with technical developments and management strategies. The emphasis is 'hands on' not 'chalk and talk'. Delegates participate in group exercises, demonstrations, and practical sessions using our facilities and equipment. Many of our courses have CPD accreditation with professional bodies.



We aim to provide an environment which is intellectually challenging, where research excellence is encouraged, and where people and ideas can flourish

Water

for People
for Food
for Industry
for the Environment

www.cranfield.ac.uk/sas/water

A guide to the courses we offer, the opportunities for research and the services we provide. See how you can be part of our work into the science, management and engineering of water in the natural and man-made environments

Working in water flowing ideas

We have been working in water for over 40 years. Our academic and research staff, including scientists, engineers, technologists, policy specialists and social scientists continue to deliver postgraduate teaching, research, consultancy and training in an international arena. Whilst we deal with new water challenges in the 21st century, let's not forget some important landmarks in our history

1980

Silsoe launch an international programme to encompass teaching, research and consultancy. Over 50 different nationalities study at postgraduate level

Promoting knowledge transfer between academia and agribusiness – the UK Irrigation Association is founded at Silsoe



1985

George Solt establishes the School of Water Sciences at Cranfield

1981

Partnership formed with Severn Trent Water Authority to develop strategies for agricultural flood risk management

1987

The Soil Survey and Land Research Centre joins Cranfield University at Silsoe

1989

UK water industry is privatised

MSc in Community Water Supply launched. 20 years later, 272 students have completed the course



1990

Prof Tom Stephenson is appointed Head of the School of Water Sciences

Research for development – a 9 year linkage programme in agricultural water management with the Kenyan Agricultural Research Institute

1993

National Rivers Authority commission Cranfield to produce the first UK 'Demand for Water' report



MSc in Water Pollution Control launched

1998

Formation of the River Restoration Centre at Silsoe - moves to Cranfield in 2007



1995

Training in irrigation management for the African sugarcane industry with courses in Mauritius, Zambia, Zimbabwe and Swaziland

Cranfield and BGS produce guidelines on groundwater vulnerability in England and Wales

EPSRC funded project on magnetic water treatment

1999

Establishment of an integrated MSc Water Management programme



2001

RegIS - the first regional integrated assessment of the effects of future climate and socio economic change on flooding, agriculture, water resources and biodiversity



2000

First international book on Membrane Bioreactors (MBR) for Water and Wastewater Treatment written by Cranfield staff



2002

NERC/Tyndall Centre project awarded to investigate climate change impacts in agriculture and leisure sectors



2004

EPSRC award Cranfield 5 year Platform Grant for Water Process Science and Engineering: Nanoscale to Megascale



2006

Bill and Melinda Gates Foundation project to support water, sanitation and hygiene for the rural poor

Cranfield involved in AquaStress, an FP6 EU funded integrated project to mitigate water stress



2008

Partnership with the Environment Agency, English Nature and Internal Drainage Boards to improve water management in the Norfolk Broads

2010

Cranfield lead Defra project on benchmarking water use in agriculture, and a Defra Hortlink project on developing precision irrigation technologies for horticulture



2009

Working with WHO to develop guidance on improving public health, in relation to safer drinking water and household hygiene



Cranfield involved in Defra funded research into water footprinting in food production

Centre for Water Sciences lead consortium of UK universities to win an 8.5 year (£6.8m) Industrial Doctorate Centre for the UK water sector



Professor Richard Carter retires after 28 years work in sub-Saharan African water management

2003

GWINTO (now EUSkills) Award for Best Training Provider



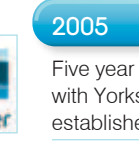
Cranfield awarded 1st American Water Works Association Research Foundation (AwwaRF) grant

2003

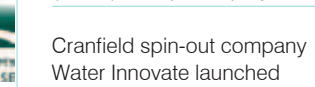
GWINTO (now EUSkills) Award for Best Training Provider



Cranfield awarded 1st American Water Works Association Research Foundation (AwwaRF) grant



Rural Economy and Land Use (RELU) floodplains project



Cranfield spin-out company Water Innovate launched

2007

Staff from Silsoe campus and School of Water Sciences merge

Cranfield publish 'A fair share of water for agriculture' the first national water strategy for UK agribusiness

Professor Simon Parsons appointed Head of the Centre for Water Science

The people we work with

We work with a broad range of clients across all sectors of commerce, industry and government

In government, our research clients include the Research Councils (e.g. EPSRC), the Environment Agency, rural development agencies (e.g. East of England Development Agency), the European Commission, Natural England, Defra, and DFID. Internationally, our clients include the World Bank, BP, Shell, Unilever, Veolia Water, the International Water Association, American Water Works Association, Keppel Seghers, and the Bill and Melinda Gates Foundation.

In consultancy, our clients include the US Water Recycling Programme, Singapore Public Utilities Board, Hong Kong Drainage Services Department, various charitable organizations and NGOs, the Lloyds Register, US National Water Research Institute, Sentinel, Reckitt Benckiser, Unilever, Procter and Gamble, the Environment Agency, Fera and McCain Foods.

We also run bespoke short courses and training programmes both in-house and on-site. Recent examples include a short course on water processes, technology and engineering for the Abu Dhabi Water and Electricity Authority, training for regulatory officers in the Scottish Environmental Protection Agency (SEPA), water management training for the African sugarcane industry, and water and wastewater treatment training for Yorkshire Water.

For more information

If you would like to know more about our water activities at Cranfield, whether it be in relation to studying for one of our postgraduate degrees or to discuss how we might be able to work with you within a research, consultancy or training capacity, then please contact one of the following depending on your interest area:

Water for People
 Professor Simon Parsons
 E: s.a.parsons@cranfield.ac.uk
 T: +44 (0)1234 758311

Water for Food
 Dr. Jerry Knox
 E: j.knox@cranfield.ac.uk
 T: +44 (0)1234 758365

Water for Industry
 Dr. Bruce Jefferson
 E: b.jefferson@cranfield.ac.uk
 T: +44 (0)1234 754813

Water for the Environment
 Dr. Mick Whelan
 E: m.j.whelan@cranfield.ac.uk
 T: +44 (0)1234 752975

Cranfield University
 Cranfield
 Bedfordshire MK43 0AL
 T: 01234 750111
www.cranfield.ac.uk