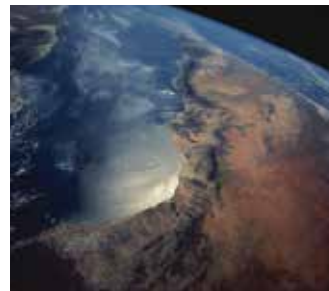




The Lancaster Environment Centre

Business Partnerships and Enterprise



The Lancaster Environment Centre (LEC) is a community of world class environmental researchers, high achieving students, government scientists and commercial enterprises. We work across disciplines, and societal and national boundaries, to address the major environmental challenges facing the world.

Research Excellence with Impact

We focus our research on three inter-disciplinary global environmental challenges:

- Understanding a changing planet
- Improving environmental stewardship
- Innovation for a better environment

Forming Partnerships

Organisations can access our expertise through five types of collaborative partnership:

- Collaborative research
- Facilities for research and development
- Commercialisation of intellectual property
- Professional training
- Student engagement

Our Partnerships Include:

- British Geological Survey
- Centre for Ecology and Hydrology
- Chinese Academy of Sciences
- Federal University of Lavras, Brazil
- Rothamsted Research
- Sabah Foundation, Malaysia
- Environment Agency (England)
- Irish Environment Protection Agency
- Unilever plc
- United Utilities plc
- Waitrose plc

Benefits of Collaboration

- Access world leading, solution focussed research and transfer our skills and knowledge into your organisation
- Access our multi-million pound facilities, including hot desk and office space, and extensive state of the art research laboratories, glasshouses and growth rooms
- Work with us to develop innovative solutions, new products and processes
- Take advantage of our global reach to form international partnerships and access international markets
- Gain extra resources through engaging our skilled students

Student Engagement



We provide organisations with a wide choice of ways to engage with our students to benefit from their up-to-date skills and knowledge. We successfully place over 200 students into organisations each year, ranging from regional SMEs to international corporations.

Ways to Engage

- 1-3 month internships in your business
- Part-time research projects supervised by leading experts
- Postgraduate researchers in industry
- Industry-led collaborative PhDs

Benefits of Student Engagement

- Access a broad mix of expertise
- Gain up-to-date skills and knowledge
- Address a skill or resource shortage
- Save valuable staff time with a low cost or funded resource
- Give a student valuable industry experience
- Trial a new role or research a new idea
- Trial a potential student or graduate employee

Centre for Global Eco-Innovation



Eco-innovation is a key focus for research and development (R&D) at LEC.

The Centre for Global Eco-Innovation unites the expertise, resources and global contacts of Lancaster University, the University of Liverpool and Inventya Limited, to develop new eco-innovative products, processes and services in collaboration with ambitious Northwest businesses.

Finalist in the PraxisUnico Impact Awards 2013 for collaboration, and the Green Gown Awards for research 2013, the centre is part funded by the European Regional Development Fund.

At the heart of the centre are 50 graduate researchers working on three year PhD projects in collaboration with 50 small

to medium sized enterprises (SMEs), supported by senior academic staff at the two world class research universities. The centre also offers shorter term research and development opportunities and support from international consultancy specialists Inventya Ltd to bring Northwest businesses' new products to market.

"Our collaboration with the centre is enabling us to explore research questions directed to our needs and drawing on internationally leading science capabilities. It is playing an essential role in helping us to generate exciting and useful outputs that meet our business objectives."

Rob Lamb, Director, JBA Trust.

Collaborations across NorthWest Europe

KARIM supports SMEs across the UK to innovate more effectively by collaborating with businesses across NorthWest Europe through a network of partners. At Lancaster we offer free support on intellectual property, technical feasibility assessments, R&D funding options, and help finding R&D partners in Ireland or Paris.

"We are very pleased with this collaboration and the opportunity to build a link with Lancaster University's expertise and facilities." Gerard O'Leary, Director, Office of Environmental Enforcement, Environmental Protection Agency, who benefited from KARIM's international student exchange programme.



Collaborative Research

We have expertise in:

- Atmospheric sciences
- Earth sciences
- Ecology
- Environmental chemistry
- Plant and crop sciences
- Society and environment
- Water and soil sciences



Sharing best practice with Waitrose

"The things we have achieved through Lancaster University have been groundbreaking. We are now using this relationship to open up relationships with other universities as well."

Alan Wilson, Technical Manager for Agronomy, Waitrose.

Unilever funds research in China

"The on-going collaborative links between R&D scientists at Unilever's Safety & Environmental Assurance Centre and the Lancaster Environment Centre are enabling us to create new research and training networks with leading Chinese scientists and other academics globally. Together we developed a unique modular Masters course on modern methods of mechanistically-based safety assessment, covering both the environment and human health."

Dr Julia H Fentem, FBTS Global Vice President R&D, Safety & Environmental Assurance Centre.

Environment Agency alliance

"We are developing our long term partnership with LEC into a strategic alliance, making it stronger and more focused." Ellyse Maddocks, a Northwest Knowledge and Partnership lead at the Environment Agency (EA), who has a desk at LEC along with colleagues from the Agency's national evidence directorate.

Ellyse Maddocks



Facilities for Research and Development

Our laboratories enable integrated studies of terrestrial, aquatic and atmospheric systems, using chemical, biochemical, physical and biological analysis. Ten walk-in environment rooms allow us to conduct carefully controlled experiments and simulate a variety of conditions. There are fifteen glasshouses on site, giving easy access between growing areas and laboratories.

Our technical team provides a core resource of highly skilled experts who both run equipment and facilities and provide one-to-one training.

Office space and hot desks

Our business development team provides a unique supportive environment for up to 30 businesses in our office space and hot-desks.

"There are tremendous benefits from locating at the university in terms of the quality of resources and the people which we can work with." Jonathan Lutwyche, CEO, The REACH Centre Limited.



Arid Agritech

Resident company, Arid Agritech Limited, delivers state-of-the-art research knowledge and technology in sustainable crop production into countries challenged by arid climates.

Arid Agritech's Director of Research and Product Development, Dr Jason Moore, explained, "LEC has provided the perfect venue for us to test and develop our products and grow our business. We've been here for four years now and apart from tapping into world renowned academic and business support expertise we also make extensive use of the first rate research facilities."

www.aridagritec.com



Professional Training

We provide a portfolio of courses for industry and professionals both in the UK and abroad. As well as providing masters, doctoral and short training programmes, we can meet specific training needs through tailored in-house and bespoke courses and welcome requests for new training programmes, such as our new courses on climate adaptation, understanding extreme events, and flood risk management.

Postgraduate Certificate in Business Management with Energy and Fuels from Waste (EFFW)

Developed by LEC, the Centre for Education, Training and Development and LEC resident company Stopford Energy & Environment.

"The course is well-structured and well-presented, touching upon the key technical, financial and political issues the EFFW sector is faced with. Delivered

Energy and Fuels from Waste students visit Viridor Limited



through a balance of interactive lectures from practising professionals and from site visits to operational plants, the course provides a great platform for people new

and old within the sector to develop their knowledge, skills and understanding of the industry." Steve Conry, Landfill Gas Area Manager, Viridor.

Commercialisation of Intellectual Property



We actively pursue collaborative partnerships to develop novel products and processes for the global marketplace.

Environmentally sustainable seed treatment makes crops more resilient

Jasmonic Acid (JA) is one of a plant's natural defences against being eaten by pests. Crops sprayed with JA stand a better chance of repelling pests like mites, caterpillars and aphids; however sprayed plants grow less well. Researchers Drs Nigel Paul, Jason Moore, Michael Roberts, and Jane Taylor and their collaborator Patricia Croft of Stockbridge Technology Centre, demonstrated that JA seed treatment of a range of crops improved pest resistance lasting for many weeks after germination without any loss of growth.

Dr Lars von Borcke, Business Development Manager at PBL commented, "The fast turnaround time from invention, to patent application, to field testing and launching a new product is testament to the support and effort from the inventors, as well as the commitment of our commercial partner Becker Underwood. This technology is an excellent example of UK academic research being translated into a valuable product."

www.pbltechnology.com



Key Facts

- We have invested £35M on our buildings and facilities during the past decade.
- We have worked with over 1000 SMEs since 2005, supporting them with European Regional Development Funds in excess of £18.5M.
- In 2013 a Government commissioned report reviewed the work of universities with businesses. The Witty Review highlighted LEC's office space for businesses and cited Lancaster University as one of the top 20 agri-tech and agri-science organisations, and No.1 in the UK for collaboration with oil and gas.

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