

Sector Track Record:

Environmental Science

The environmental sector is an emerging field of focus for IP Pragmatics. Our work in the sector has grown out our experience from long term support work for public sector clients whose research interests broadly span different services and technologies covering the land and marine environments. The environmental sector covers innovations in sustainable land and water use including remediation, through to alternative 'green' energy sources, green chemicals and waste management. The sector has overlaps with aspects of the agriculture sector.

Sector lead: Elaine Eggington

Elaine Eggington has been commercialising early stage technologies through venture capital investment and consultancy since 2000. At IP Pragmatics, she has led two long-term capacity building projects, helping UK government research organisations to increase their commercial revenue. She has conducted over 100 individual projects involving business development support, partnering, market research, competitive intelligence and IP landscaping of opportunities for technologies including several environmental and green chemical technologies. Previously, she was the Investment Manager with day to day responsibility for the Lachesis Fund, the £8m University Challenge Fund for the East Midlands, managing a portfolio of 30 largely biomedical startup companies and development technologies. Her areas of specialisation include Medical Devices, Vaccines and Fundraising Support. Elaine spent 12 years as an information manager in the life sciences industry, working in the NHS, at biotechnology company Peptide Therapeutics and at Schering Agrochemicals. She has an MA from the University of Cambridge and an MSc from The City University.

Recent Experience:

This section highlights some of the recent environmental science related projects and partnerships that IP Pragmatics has been directly involved with:

- A valuation of the income streams that could arise from a new biomass source for bioenergy
- Developing a business plan and identification of potential leadership candidates for a spin out based on a novel microbial fuel cell technology
- Market research and partner identification for a new method to produce omega 3 oils in plants
- Wide-reaching evaluation of the potential product lines from biorefining of grass materials
- IP audit and valuation of a novel gas-to-liquid fuel technology for the petrochemical industry
- Long-term ongoing support to increase the external income generation opportunities for a public sector research organisation which focuses on environmental research



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Technology	Sample Clients
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Environment	Queens University Belfast The Interact Partnership Forest Research Natural England Plymouth Marine Laboratory James Hutton Institute Defra Royal Botanic Gardens, Kew University of Portsmouth
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Cleantech	Rothamsted Research Queens University Belfast Glyndwr University Tokyo University of Agriculture and Technology (Japan) Yamanashi University (Japan) University of Western England MLS UK Limited University of Essex Utility Partnership Ltd
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Green chemistry	Rothamsted Research Bangor University Aberystwyth University Warwick Ventures
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Case Studies

Queens University Belfast

The QUESTOR Centre is a global environmental research network founded by Queens's University Belfast (QUB). The research program is managed by four industry led research clusters covering:

- Water & Wastewater Research
- Waste & Remediation Research
- Environmental Monitoring Research
- Energy from Biomass Research

Anaerobic digestion (AD) is the conversion of feedstock (any organic non-woody material) by microorganisms in the absence of oxygen into biogas and digestate. The application of AD is growing rapidly leading to a potential problem with managing waste streams. IP Pragmatics has helped QUB with a commercialisation plan for a novel invention, which solves the problem of the disposal of waste liquor from anaerobic digestion processes. The innovative approach concentrates the waste stream, which is then processed to form a granular fertiliser. The work involved a detailed assessment of the AD sector for energy production, as well as the wider fertiliser business.

Support to a second project at QUESTOR involved a market assessment and commercialisation plan for a novel "Biosettler", an improved form of final settlement for wastewater treatment plants that will allow additional aerobic treatment to occur during the period of settlement. This work involved an assessment of the waste water treatment sector in the UK and globally to identify potential development partners.

Rothamsted Research

Rothamsted Research is the longest running agricultural research station in the world, providing cutting-edge science and innovation for nearly 170 years. Their mission is to deliver the knowledge and new practices to increase crop productivity and quality and to develop environmentally sustainable solutions for food and energy production.

IP Pragmatics has provided market assessments and commercialisation support to a number of Rothamsted technology projects that fall broadly into the environmental sector. This included:

- A soil additive for managing fertiliser usage and nitrate leaching, which involved an assessment of the fertiliser market and the impact on environmental legislation on changing land management requirements for agriculture.
- A valuation of the Rothamsted national willow collection for biofuel applications which involved a detailed assessment of the biomass sector in the UK and Europe.



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The Interact Partnership

IP Pragmatics ran the InterAct Project from 2004 to 2011. The project is a unique partnership between six leading UK government research organisations, including the Food and Environment Research Agency (Fera) and the Centre for Environment Fisheries and Aquaculture Science (Cefas), covering amongst other areas the commercialisation of environment, animal health, human health, aquaculture and agriculture related research. IP Pragmatics' role has been to assist the partners with a bottom-up, technology led and a top-down, market led analysis of new commercialisation opportunities that could be created through combining the partners' IP, know-how and R&D services. Over the project's past 6 years IPP has helped the InterAct partners identify more than 220 potential opportunities. These opportunities ranged from new spin-out company concepts, new product licenses and new enhanced commercial service or R&D offerings. These opportunities were initially assessed using published, proprietary and direct market/industry contacts to identify if a market existed for the product or service. Using this analysis around half of the opportunities were progressed to more detailed market entry strategy analysis including identification of partners and competitors.

IP Pragmatics has also been actively involved in the subsequent exploitation of these opportunities through: business planning and fund raising for new ventures; marketing and negotiation of new licenses; business planning and marketing of new commercial service offerings across a range of industries including the animal health sector. To date 46 exploitation vehicles have resulted from this work.

Commercialisation projects we supported in the environmental sector included:

- Commercial services for Sediment Profile imagery (SPI). The SPI technology is now employed to visually collect cost-effective data in an image format of the seafloor.
- Anti-fouling paint
- Environmental data logging devices
- Commercial services and consultancy relating to REACH (the Regulation on Registration, Evaluation, Authorisation and Restriction of Chemicals)
- Exploitation of a novel water sampler
- Coastal ocean benthic observatories (COBO) remote monitoring
- Aquatic products evaluation services

Glyndwr University

The Centre for Solar Energy Research (CSER) is a Centre of Expertise of Glyndŵr University based at OpTIC in the city of St. Asaph. CSER is part of the Low Carbon Research Institute (LCRI) which collaborates on renewable energy R & D across Wales and has proven expertise and a world class reputation in researching novel photovoltaic materials and devices.

CSER has been involved in the development of novel coating head for in-line deposition of semiconductor thin films and photovoltaic devices by atmospheric pressure metalorganic chemical vapour deposition (AP-MOCVD). This invention comprises a novel coating head suited for inline manufacturing of semiconductor thin film devices, particularly for photovoltaic (PV) applications. IP Pragmatics Limited was retained by the University to deliver support to provide a valuation of its PV manufacturing technology taking into account

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factors such as: the University's patents and know how in the field, the extent and variability of the markets serviceable using the improved manufacturing technique in the coming years, in particular the thin-film photovoltaic device sector, the competitor technologies and companies operating in the sector, as well as investments made by the university and its partners in the past years.

University of Western England

Researchers at the Bristol Bio-Energy Centre at the University of Western England have developed a patented stacked Microbial Fuel Cell (MFC) unit capable of increased power output and waste clean-up rates, in an improved, lower cost and more flexible configuration than is currently available. IP Pragmatics is currently supporting UWE to review and evaluate the commercialisation options for this exciting MFC technology. Potential applications being considered include wastewater, industrial liquid waste, urine or liquid sewage treatment and simultaneous electricity generation. A prototype has recently been successfully tested at the Glastonbury Festival. IPP is now helping to develop a business plan for a potential spin out company to exploit the technology, including supporting the search for a CEO to lead the venture.