

Introduction

The University of Westminster is submitting to this unit of assessment for the first time, based on the expansion and innovative work of the Environment Research Group within the University's Policy Studies Institute (PSI). This submission is part of a strategic decision by the University under the leadership of the new Vice Chancellor, Professor Geoffrey Petts, to commit to a programme of high-quality environmental research and scholarship, building on the successful track-record of environmental policy research in PSI, and to promote inter-disciplinary research and knowledge transfer in this field.

The University of Westminster, uniquely among the modern universities, has four "internationally renowned research centres" (Sunday Times, 23.09.07) that achieved scores of 5 in 2001 and four other internationally-recognised UoAs. The University is known for excellence in transferring knowledge into policy and practice. The Westminster mission is to 'Educate for Professional Life'; this distinctive strategy advances research that improves policy and enhances practice, and uses experience from practice to stimulate new research.

Research Achievements

PSI became a wholly owned subsidiary company of the University of Westminster in 1998. The Environment Research Group at PSI began in 2000 under the leadership of the then PSI Director, Professor Jim Skea, who submitted to UoA39 - Politics and International Studies - in RAE2001. It has since gained a reputation for excellence and innovation in environmental policy research, led by a team of internationally-recognised experts, winning grants and competitively-tendered commissions from a wide range of sponsors. These include UK Research Councils, UK Government departments and agencies, the EU, trade associations, charitable research foundations, environmental campaigning organisations and the United Nations.

Over the last seven years, the group has secured over £4m of income from national bodies (eg ESRC, EPSRC, Defra, Environment Agency, SDC and DETR) and international funding bodies (e.g. DG Region Framework 6, DG Environment, and DG Employment). Research income in 2006-2007 exceeded £1 million. The group has also generated a large body of publications in a diverse range of media as well as conference papers.

The range of environmental policy areas covered by our research has included:

- resource productivity and technical change;
- energy policy and climate change;
- the regressivity of green taxes and other environmental policy instruments;
- the governance of science and technology;
- sustainable development scenarios

- the social dimensions of environmental policies, and public engagement with them; and
- quality of life indicators and concepts.

The work of the Environment Research Group corresponds directly with the University's strategic research theme of Sustainability.

Key elements of the Group's research are outlined below.

Environmental Policy Instruments and Environmental tax reform

This research, the main example of which is *Resource Productivity, Environmental Tax Reform and Sustainable Growth in Europe* led by Professor Paul **Ekins** and funded by the Anglo-German Foundation (£650,000 over three years) focuses on the increasing interest in market-based policies, such as environmental taxes and 'emission permit' trading, as a complement to, or as a substitute for regulation.

Another example is our research on *the implications of market-based approaches for individuals and households*. In addition to the innovative work by Dr Mayer **Hillman** on personal carbon allowances, the Group has undertaken work on the potential distributional issues that might arise from the introduction of environmental taxes and charges in the United Kingdom and how these could be alleviated. The "Green Living Initiative", developed by PSI in collaboration with Green Alliance has received widespread media coverage.

Energy and climate change

This theme focuses on the role played by research in helping to inform long-term energy policy goals. PSI has become one of the UK's leading sources of expertise in "E4" (energy-environment-economy-engineering) analysis of energy systems, taking a whole-systems, integrated approach. Two of the Group's major research efforts in this area are through its involvement in the UK Energy Research Centre (UKERC) and the UK Sustainable Hydrogen Energy Consortium (UKSHEC).

Energy systems

Within UKERC, PSI is leading the cross-cutting theme of Energy Systems and Modelling, through which new scenarios and modelling approaches and tools are being developed. Specifically, our work is focused on the development of state-of-the-art UK modelling, including the MARKAL energy systems model; integration of top-down economic models with bottom-up technology models; and energy modelling networking in the UK and internationally. As well as the peer-reviewed outputs, this research contributed decisively to the analysis and evidence underlying the UK Government's energy review *Meeting the Energy Challenge, A White Paper on Energy* (May 2007), and will make an increasingly important contribution to understanding and quantifying the evolution of the UK energy system.

Hydrogen use

UKSHEC, of which PSI's Environment Group is a partner, is a long term research programme funded by the EPSRC under its SUPERGEN (Sustainable Power Generation and Supply) research programme. The consortium combines high level scientific research into innovative methods of hydrogen storage and generation with a broader socio-economic approach that aims to examine the role of hydrogen technologies within future energy systems, as well as social and political structures. Research at PSI has been carried out through three linked activities:

- (a) the development of a hydrogen module within the MARKAL model of the UK energy system, in order to examine the effects on energy demand and supply of increasing levels of hydrogen use, for instance in relation to possible changes in the use of nuclear energy;
- (b) an economic analysis, within the context of technological transition theory, of end-use applications of hydrogen; and
- (c) the development and analysis of hydrogen futures scenarios in partnership with the University of Salford.

Sustainability Impact Assessment

The Environment Research Group has made innovative contributions to the development of sustainability impact assessments, understood broadly as the systematic analysis of the environmental, social and economic impacts of different kinds of policies, before and after their introduction in relation to various decision-making and innovation processes.

European Structural Funds

Two European projects led by **Ekins** and funded by the European Commission's DG Research (£400,000 in total of which £100,000 to PSI) have assessed the contribution to sustainable development of the European Structural Funds. The research found worrying evidence of the sacrifice of environmental capital in the process of economic development. The results will be published in a special issue of the journal *European Environment* in 2008.

Trade agreements

Another European project funded by DG Research (£70,000), SIAMETHOD, is developing existing methods of Sustainability Impact Assessments (SIAs) of trade agreements, by including in the SIA consideration of the reasons why countries may resist trade liberalisation.

The cost of legislation

Recent analysis conducted by PSI for the European Commission showed that the cost of environmental legislation is often over-estimated when it is proposed. The results of this project and one funded by DEFRA will be published in a book by Edward Elgar in 2008.

Material flow analysis

Material flow analysis (MFA) is a relatively new tool in the assessment of sustainability and the pursuit of resource efficiency. Using this analytical tool, PSI has assessed for DEFRA the £10m Biffaward programme and provided guidance as to how the outcomes should inform future data gathering.

Research Culture and infrastructure

The Group is led by Paul **Ekins**, Professor of Sustainable Development in the University of Westminster, and Director of PSI. Ekins is also a Co-Director of UK Energy Research Centre (UKERC) and a Member of the Royal Commission on Environmental Pollution.

PSI has a second major programme of research: Work and Social Policy (submitted within UoA36 Business and Management in partnership with the Westminster Business School). Both Research Group Heads report to the Director of the Institute, which operates within the policy and procedural framework of the University of Westminster.

The current Group members come from a wide range of disciplinary backgrounds; spanning economics, sociology, geography, regional planning, environmental sciences, engineering and science and technology policy. This is reflected in the range of quantitative and qualitative methodologies that are used in the Group's research activities. We plan to develop this complementary "skill-base".

The Group comprises eleven permanent staff: Professor Paul **Ekins**; Professor Jim **Skea**, currently working as full-time Research Director of UKERC, Dr Simon **Dresner**, Dr Nazmiye **Balta-Ozkan** and Dr Neil **Strachan**, Paolo **Agnolucci**, who is about to submit his PhD thesis, Nick Hughes, Kate McGeevor, Ben Shaw, Julia Tomei and Andrew Venn. In addition, Dr Mayer Hillman is a Senior Fellow Emeritus, and Derek Smith a Visiting Fellow.

Of those not submitting to the RAE, Ben Shaw is a recent recruit from the Green Alliance where he specialised in waste management policy; his remit is to develop this strand of research. The remainder of the research staff have been working as researchers for less than three years.

PSI recruits only permanent staff to ensure continuity and build long term capability. PSI seeks to offer staff flexibility in their employment arrangements in order to help individuals to achieve a work-life balance. All, however, contribute to the life of the Institute and the University.

Group members work closely together as one group with more experienced staff providing support and coaching where appropriate. All projects are supervised by a senior or principal researcher and there are regular progress reviews. The collective ethos underpinning the Institute is one of encouraging scholarship and rigour whilst maintaining a focus on policy and engaging actively with stakeholders. Senior and Principal Researchers support junior colleagues both in their research development and in submissions to sponsors.

The Group has grown rapidly over the last five years.

- there is now an ongoing seminar programme providing methodological, theoretical and policy-focused events drawing on speakers from government, industry, charitable foundations as well as academic researchers. PSI researchers contribute working papers and research findings at these seminars;
- staff in the Environment Research Group are active in the Sustainable Development Research Network and participate regularly in its events;
- the group meets regularly to discuss projects and explore opportunities for funding;
- PSI has a training budget which supports staff on training courses and attend or participate in conferences;
- every researcher has an annual appraisal in which performance is reviewed, training needs are identified and objectives agreed for the next 12 months;
- support for staff includes a mentoring scheme.

New research staff receive induction into the University covering its mission, values and working practices. They are assigned a 'buddy' whose role is to ensure that they are quickly and fully integrated into the Institute and any problems that they encounter are rapidly resolved.

PSI has become integrated within the University of Westminster and has recently re-located to its Cavendish Campus. Relationships with other departments have evolved as PSI has broadened its engagement with sustainable development. PSI is a partner with the Centre for the Study of Democracy (CSD), the School of Architecture and the Built Environment, the Department of Social and Political Studies and the Centre for Urban and Regional Studies in a new Governance and Sustainability Programme (see www.wmin.ac.uk/governance+sustainability). The three post-doctoral students working on this programme are based within CSD but are closely linked to PSI as 'honorary members' of the group. This Programme includes the coordination of a range of activities and events and the stimulation of a programme of research exploring governance issues at global, regional and local level.

Collaborative research

The Group collaborates with many other research organisations, most obviously through the UKERC and its membership of the UK Sustainable

Hydrogen Energy Consortium, but also through European and joint projects. Close links are maintained with, among others, the Tyndall Centre and the Cambridge Centre for Climate Change Mitigation Research, the Centre for Environmental Strategy at Surrey, SPRU at Sussex, the Imperial College Centre for Environmental Policy and Technology, Cambridge Econometrics and AEA Technology.

Research audiences and engagement

The Group works to clarify, interpret and increase the profile of sustainable development research through such activities as the DEFRA-funded Sustainable Development Research Network (SDRN). Coordinated by PSI since 2000, SDRN provides a unique channel of communication between stakeholders. It contributes to sustainable development in the UK by facilitating the better use of evidence and research in policy-making. 'Rapid Research and Evidence Reviews' provide policy-relevant summaries which has influenced policy-making.

We organise the annual SDRN conference and are continuously engaged with key users of research across the research and policy spectrum. In addition, staff appear before parliamentary committees and regularly speak at a wide variety of conferences and seminars.

The next five years

A great strength is the Environment Research Group's ability to respond rapidly to changing policy agendas and priorities. We seek to balance this responsiveness with a more strategic perspective of what we think is of longer term importance and with how we might develop our resources and capabilities. Our funding is derived almost totally from research grants and contracts and so we also have to balance our income and expenditure and this creates tensions between strategic aims and short-term financial considerations. We also contribute to policy at a number of levels, namely policy development and formulation, policy evaluation and policy critique. This requires us to obtain funding from a variety of sponsors offering opportunities for authoritative intervention in these different ways.

Within this context, the Environment Research Group will further develop its positioning as a broadly based research group with a distinctive portfolio of environmental policy and sustainable development research themes, and utilizing a variety of methodological approaches.

Our key areas for development for the next five years are as follows:

- Environmental tax reform
- Energy policy and climate change
- Environmental policy instruments
- Governance of science and technology
- Conceptions and measures of quality of life

The geographical scope of the Group's activities will be enhanced during this period in two ways: (1) opportunities will be pursued at the regional and local level within the United Kingdom – with a mix of academically oriented work and consultancy projects for local authorities and the Regional Assemblies; and (2) we will apply our expertise outside Europe through consultancy projects, particularly in Asia.

A PhD programme in the Environment Research Group within the University of Westminster's new Graduate School is also being developed. Our programme will be supported by colleagues in the School of Architecture and the Built Environment, the Centre for the Study of Democracy (CSD) and the School of Biosciences, especially the new Water Science cluster. We view this as an essential step in capacity building and in ensuring our future as a leading environmental institute. We are already engaged in supervisory support for CSD students and our researchers participate in relevant training provided by the School of Architecture and the Built Environment. The University has committed funding initially for two PhD students in the Environment Research Group.

Over the next two years we are planning to develop short courses aimed at public sector policy-makers and influencers and policy researchers covering a range of topics such as:

Understanding the policy context for research

Policy development

Policy and programme evaluation tools and techniques

Scenario building

Understanding and evaluating evidence

These will be supported by appropriate training packages for the staff involved and will also include the deployment of external speakers from government, NGOs and other relevant bodies.

Esteem Indicators

Ekins

Professor Paul Ekins was a Founder and Associate Director of the sustainable development charity Forum for the Future. He is a specialist adviser to the Environmental Audit Committee of the House of Commons, a Member of the Royal Commission on Environmental Pollution. He is the chair of the judging panel for the UK Sustainable Energy Awards and chair of the DEFRA-funded National Industrial Symbiosis Programme (NISP). In 1994 Paul received a Global 500 Award 'for outstanding environmental achievement' from the United Nations Environment Programme. In 2006 he was cited in a special survey by the Environment Agency as among 'The 100 greatest eco-heroes of all time'. He has over 200 publications to his name and regularly appears in the media commenting on environmental issues.

Skea

Professor Jim Skea OBE is currently Research Director of the Research Council-funded UK Energy Research Centre, a collaboration between eight major research institutions. His research has covered energy technology and modelling, business and the environment, and technological change and the environment. His high-level public roles include membership of the Commission on Environmental Markets and Economic Performance led by the Secretaries of State of Environment and Industry. Internationally, he represents the UK on the EU FP7 Energy Committee.

Agnolucci

Paolo Agnolucci has developed a growing academic reputation in a number of areas of environmental policy, including renewable electricity and development of hydrogen energy. He has published extensively in these areas in the period 2001-2007. Paolo referees for several academic journals (e.g. Energy Policy, International Journal of Hydrogen Energy) and has contributed to a number of academic conferences.

Strachan

Dr Neil Strachan's research focuses on energy systems modelling, climate change mitigation policy, and new energy infrastructures. He has published in all of these areas in the period 2001-2007. He is a participant in several international energy modelling projects as well as serving on the review panel of two international energy journals. He is actively engaged in high-level policy advice, including leading on energy-economic modelling for DTI and DEFRA which is underpinning the 2007 Energy White Paper.

Dresner

Dr Simon Dresner's main research interests are the theory of sustainability and sustainable development, public understanding of environmental issues and policies, and the social impacts of green taxes and charges. He has published in all these areas in the period 2001-2007. He has coordinated an EC research project on social responses to ecological tax reform policies (PETRAS) and guest edited a special issue of the journal Energy Policy on it. He is guest editing a special issue of European Environment. He has refereed papers for Energy Policy and Ecological Economics. His book, The Principles of Sustainability, is widely used in universities in the UK and internationally as the textbook on sustainable development.

Kannan

Ramachandran Kannan is an interdisciplinary researcher with expertise in energy-environment-economic interactions, life cycle assessment, renewable energy, energy efficiency/conservation and energy system modelling. He has published and reviews international journal papers in these areas. He coordinated Asian-regional climate change research project and was a member of the Singapore Government commissioned Kyoto Protocol study. He is currently contributing to the analysis of the UK Government's Energy White Paper 2007.

Balta-Ozkan

Dr Nazmiye Balta-Ozkan is a member of the energy-economic modelling team and has provided analytical inputs to the government's Energy Review process. Her research publications include integration of environment, economy and energy models; quantitative analysis and modelling of environmental problems; and analysis of regional energy systems and regional development and policies.

RA5b Staff circumstances

Dr Nazmiye Balta-Ozkan

Nazmiye Balta-Ozkan has recently returned from maternity leave after a six month absence. Nazmiye is an Early Career Researcher who began her research career in 2005 following the completion of her PhD.