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**PROGRAMME
DIRECTOR'S
ANNUAL REPORT
FORM**

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PROGRAMME DIRECTOR'S ANNUAL REPORT 2009

Programme name: RURAL ECONOMY AND LAND USE PROGRAMME

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Reporting period: from 1 January 2009 to 31 December 2009

Number of Projects funded under the Programme: 85 projects

Total budget for Programme: £25,268,000
(ESRC, NERC, BBSRC, Defra and Scottish Government)

Total amount of Director's Awards including any supplements: £2,510,649

Additional co-funding to projects and Director's Office (2004-2008): £2,205,000

Additional co-funding in 2009 to projects and Director's Office: £2,038,272

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Executive Summary

Most of the Relu projects funded under the second wave of funding on rural land use concluded their work in 2009. The third wave projects on the management of animal and plant disease started to produce results and a call for proposals for a fourth wave of funding on *Adapting Rural Living and Land Use to Environmental Change* was designed in conjunction with the LWEC programme. The great volume of research results and our strategic influencing created a large public and scientific profile, influencing policy and scientific agendas in land use and disease management. Interest in learning procedural lessons from the programme has been intense, specifically in relation to knowledge management and exchange and the assessment of impact.

1. Introduction

Aims and objectives of the Programme: The Rural Economy and Land Use Programme (Relu) aims to advance a holistic understanding of the major social, economic, environmental and technological challenges facing rural areas. Its specific objectives are:

- to deliver integrative, interdisciplinary research of high quality that will advance understanding of the social, economic, environmental and technological challenges faced by rural areas and the relationship between them;
- to enhance capabilities for interdisciplinary research on rural issues, between social, environmental and biological sciences;
- to enhance the impact of research on rural policy and practice by involving stakeholders in all stages, including programme development, research and communication of outcomes.

Summary of Key Performance Indicators: A set of KPIs has been agreed for the Director's Office. The broad categories are: scientific quality; interdisciplinarity; user engagement, knowledge transfer and impact; research capacity and training; data collection and management; programme management; and added value (see Section 6).

Start and end dates of phases within the Programme: The reporting period covers projects funded under all three of its main waves of funding.

Number of researcher and related posts: There have been 450 researcher and related posts in the programme to date in 85 projects (Table 1). The Programme Director's Office comprises: *Director*: Professor Philip Lowe (80% FTE); *Assistant Director*: Jeremy Phillipson (70% FTE); and *Communications Manager*: Anne Liddon (100% FTE). The Office employed additional research assistance during 2009 to provide support on knowledge transfer (20% FTE).

Table 1: Number of projects started before, during and after the reporting period

Type of project	Total awarded	Started Prior to Reporting Period	Started During Reporting Period	Completed Prior to Reporting Period
First Call Seedcorn projects	34	34	0	34
First Call Research Projects	8	8	0	7
Second Call Research Projects	11	11	0	0
Third Call Research Projects	11	11	0	0
Interdisciplinary Fellowships	5	5	0	0
Interdisciplinary PhDs	16	16	0	1

Year of the Programme: Year 6 (2009)

Co-funding and collaboration during the year: The programme is a collaboration between the ESRC, BBSRC and the NERC. It has a budget of £25,268,000, including initial co-funding of £750k from the Scottish Government and £1m from the Department for Environment, Food and Rural Affairs. A further £2,038,272 has been brought in during the year from a number of organisations (see Section 8).

PLEASE NOTE THAT THE REPORT IS STRUCTURED ACCORDING TO GUIDANCE AND EVALUATION CRITERIA SPECIFIC TO RELU

2. Overview of Year

Most of the Relu projects funded under the second wave of funding on rural land use concluded their work in 2009. The third wave projects on the management of animal and plant disease started to produce results and a call for proposals for a fourth wave of funding on *Adapting Rural Living and Land Use to Environmental Change* was designed in conjunction with the LWEC programme. The great volume of research results and our strategic influencing created a large public and scientific profile, influencing policy and scientific agendas in land use and disease management. Interest in learning procedural lessons from the programme has been intense, specifically in relation to knowledge management and exchange and the assessment of impact. The well-received Relu Policy and Practice notes provide succinct and focused outcomes from each project, and the series reached number 13 in December 2009. Coverage of Relu research in national, local and trade media, has also continued to grow, with over 150 items recorded during the course of the year. Scientific output has continued to expand with 79 journal articles published in 2009, including a Relu Special Profile of *Journal of Applied Ecology*.

Delivering Results and Impact

Key strategic findings from projects that came to a close in 2009 relate to: social and environmental inequalities in rural areas; the sustainability of hill farming; integrated uses of floodplains; collaborative deer management; the impacts of energy crops; adaptive management in the uplands; management options for biodiverse farming; angling in the rural environment; and alternative pest management in arable systems. Follow-on funding to take forward the results of the research came from such diverse sources as Defra, Yorkshire Water, the Commission for Rural Communities, United Utilities, Premier Waste plc, the Environment Agency, Forestry Commission, the Local Authority Research Council Initiative and the ESRC. Another indication of the impact of this wave of results is the prominence of the key expert and advisory positions that Relu PIs and CoIs have been swept into, including, for example: Ian Bateman, Head of Economics to the National Ecosystem Assessment; Michael Winter, Vice Chair of the Commission for Rural Communities' Inquiry into the Future for England's Upland Communities; Bill Sutherland, Royal Society working group on the Sustainable Intensification of Global Agriculture; Angela Karp, Director of the Centre for Bioenergy and Climate Change; Joe Morris, Lead Expert Group, Foresight Land Use Futures project; Mark Reed, Lead researcher, IUCN's Commission of Inquiry into Peatlands.

Strategic Influencing - Land Use Policy

2009 was a crucial year for policy development on land use, and the Relu Programme can claim considerable credit for that, having launched its 'Great Land Use Debate' the previous year. Organisations conducting major inquiries into land use policy during 2009 included: the Government's Foresight Programme (Foresight Land Use Futures project); the Scottish Government (Rural Land Use Study); Natural England ('Vital Uplands' Uplands Vision, and 'Mapping Values'); Commission for Rural Communities (Inquiry into the Future for England's Upland Communities); and Defra and LWEC (National Ecosystem Assessment). With at least 22 Relu projects on stream or concluding their research on various aspects of land use, the Programme was ideally positioned to provide evidence and analysis. A key focussing event of the year was the major national conference held in June to consider the implications of Relu research for land use policy and practice, which was attended by national and regional policy makers, planners and

land managers. Behind the scenes, Relu advised the various inquiries on their scope, relevant expertise and the evidence base. All of the inquiries therefore drew extensively on Relu researchers as expert advisors, consultants and peer reviewers. The Director's Office also prepared and circulated syntheses of Relu research and its implications for land use policy, issuing in January, the reports of two Relu appointed consultant land use policy analysts; and in October, the Landmarks report presenting the results of our conference; while in November, a major book *What is Land For?* was published. The Programme responded to numerous specific enquiries for information and advice, ranging from expert nominations and peer review requests to technical and evidential queries and sponsoring joint seminars (for example, with Foresight, on the valuation of ecosystem services). We also sought to sensitise public and policy debate to the regional context of land use – a crucial dimension largely missing from these various national inquiries. The Programme therefore appointed as Relu Visiting Fellow, Frances Rowe of ONE North East RDA to visit Relu projects to extract lessons for the regional land use agenda, which was also the subject of our Science Week events held across the UK.

The pervasive influence of the Relu Programme can be seen in some of the substantive topics being covered by the land use inquiries (such as ecosystem services, the sustainability of hill farming, the regulatory functions of floodplains, the climate mitigating potential of rural land, the environmental impacts of energy crops, etc), but also in the broad analytical perspectives that Relu has been pursuing and which the inquiries have now taken up, including:

- the strategic significance of rural land and the crucial importance of forward-looking adaptive strategies to its use in the future.
- the imperative for an integrated approach to the land system, transcending and coordinating action across rural and urban divides and local, regional, national and international scales.
- encouragement of multifunctionality to accommodate the many and varied demands on the land base and the corresponding importance of an interdisciplinary approach to understanding and valuing the operation of the diverse functions land performs.
- encouragement of cooperation between landowners, managers and stakeholders to deliver efficiently an optimal mix of public and private benefits from land.

The influence of the programme is clearly recognised by those responsible for the various land use inquiries:

“The Relu Programme had a significant influence over the approach to Foresight's Land Use Futures Project. Their multidisciplinary approach to exploring the impact of land use and management change is crucial to helping to create a more sustainable land system. This type of research is highlighted in the Land Use Report as being central to building a more integrated evidence-base and creating institutional capacity and "boundary-spanning" skills amongst the land use research community. Relu's work was also influential in showcasing the importance of working with communities and drawing on local knowledge, understanding the diversity of motivations amongst land managers when trying to influence change, and bringing ecosystems thinking more systematically into analysis on the value of land and decision-making. We are grateful for the contribution made by members of the programme, including those who produced papers, as well as those who provided advice and attended workshops. Whilst the final report could not cover the content of each of these papers in detail, they are there in the report and very much influenced the discussions with the Project's lead expert group. The Relu Programme is very well respected in the land use community and the Foresight project team ...”.

Nicola O'Connor, Project Leader,
Foresight Land Use Futures project, Government Office for Science

Overall the contribution of the Programme has not just been about the pertinence, timeliness and weight of its evidence, and the range and depth of its accumulated expertise, but has also been about broader consciousness raising, agenda setting and informing public debate about the issues (through, for example, the Great Land Use Debate, national and regional conferences and seminars and a sustained flow of articles in the technical and professional press).

Shaping Agendas – Animal and Plant Disease Management

The field of animal and plant disease management – the focus of our third wave of funding – holds its own particular challenges for scientific influencing. Whereas our efforts to configure and sensitise policy customers for emerging Relu findings in the land use field could rely largely on existing policy communities, in the animal and plant disease field we have had to be more pro-active in building a potential users community for the research. This is because the field is more technical, fragmented and subject to systemic change (newer organisations such as Animal Health and the Food and Environment Research Agency, new concepts such as the Animal Health and Welfare Strategy and Responsibility and Cost Sharing, and new disease threats such as *Phytophthora ramorum* and Avian Flu). We have therefore been actively building links between researchers, stakeholders from the public and commercial sectors and senior policy makers, and making novel connections. This is enabling an exchange of varied expertise and experience and setting a new agenda for debate. For the first time, researchers are bringing social sciences as well as natural sciences into the investigation of animal and plant disease.

Elements of the agenda-shaping approach have included: the establishment of a new national stakeholder forum to advise the disease projects and Programme (it has held two meetings during the year); the creation of a wider, virtual and evolving community of practice comprising those interested in engaging with the Programme (receiving information, attending events, becoming visiting fellows to the projects); a series of seminars introducing the individual projects to national policy makers; an interactive workshop exploring the implications of Relu research for the Responsibility and Cost Sharing agenda; drafting a scene-setting Policy and Practice Note on “Policy-making for animal and plant disease: a changing landscape?”; promotion of the work shadowing scheme to place Relu researchers with relevant policy and practice organisations; and a proposal for a special journal issue reviewing the field of interdisciplinary analysis of animal and plant disease management. A related development has been a major review conducted by the Relu Director of the future role of veterinarians in farming and food production which focused on the knowledge exchange activities of practising vets – crucial knowledge brokers in animal health/disease management. That report has had a major impact in veterinary and animal health circles. A sign that the Relu approach has impacted the field of plant health too was the commissioning of one of the projects by Defra to review previous disease management actions in the run up to a major emergency programme to contain and eradicate *Phytophthora ramorum* and *Phytophthora kernoviae*.

Breaking New Ground – Adapting Rural Living and Land Use to Environmental Change

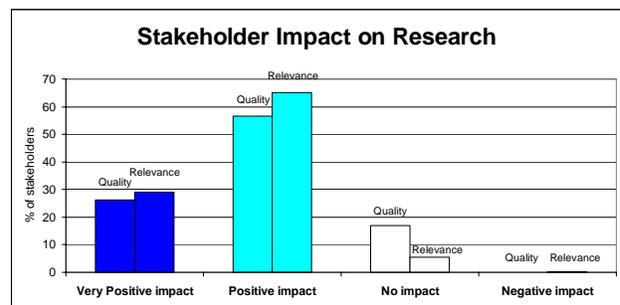
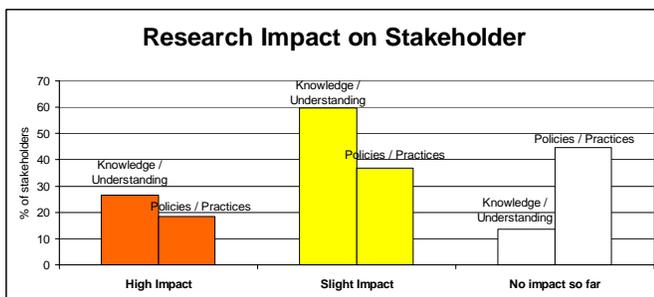
The Relu Programme’s fourth and final major call pushes its radical philosophy of knowledge exchange and interdisciplinarity into novel terrain. The call, designed in 2009 after a major public consultation, has been given additional funding from the Natural

Environment Research Council, and is to be a part of the new Living with Environmental Change (LWEC) Programme. The intention is not only to introduce the wider Relu research community to LWEC research themes but also to inject into the LWEC Programme the important procedural innovations made by Relu in knowledge exchange, stakeholder engagement and interdisciplinary working. The theme of the call is "Adapting rural living and land use to environmental change". It has two objectives. The first is to build networks and capacity for creative knowledge exchange and learning between researchers and policy makers, businesses, practitioners, local communities and the wider public, with a view to strengthening adaptive capacities. The second objective is to explore and promote novel approaches and partnerships for interdisciplinary research and analysis on living with environmental change in rural contexts. The selection of projects under the call is due to take place in April 2010.

Innovation in Knowledge Exchange - Accounting for Impact

Relu has taken a novel approach to stakeholder involvement that recognises the myriad ways in which research findings ripple outwards into policy and practice. The programme aims to engage a wide range of stakeholders at all stages and levels of the programme and this has led it to adopt a philosophy of knowledge exchange and collaborative knowledge production throughout the research process. A new tool called the Stakeholder Impact Analysis Matrix (SIAM) seeks to capture this. Data are collected via the routine annual report that each project's principal investigator is required to complete. We ask them to tell us about the impact of the research on the stakeholders, as well as the impact that the stakeholders have had on the research.

There are nearly 4000 individual stakeholders involved in Relu projects from the public, private and third sectors, and members of public. Most of the stakeholders are involved as research subjects, for example as interviewees, survey respondents or members of focus groups. Many have also contributed as partners, or hosted researchers on Relu's work shadowing scheme or were visiting fellows to projects. The SIAM data show that stakeholders from different sectors seem to be contributing differently. The public sector is more involved in framing research objectives and project design, while the private sector is more prominent in supporting data collection and in providing access to facilities and study sites. In most instances, Relu researchers were able to report a positive impact of stakeholders on the quality and relevance of the research. SIAM also shows the researchers' perceptions of the impact their project is having on stakeholders, in terms of their practices and understanding. As we would expect, impacts on stakeholder knowledge outstrips impact on policies and practices, but this may be laying the foundations for future change. The data can be used to identify areas where the programme may be leading to high impacts, thereby providing a starting point for developing case studies or focusing of longer term impact analysis.



SIAM is a powerful tool for analysing research impact. For example, by linking together the engagement and the impact parts of the SIAM dataset we can explore what encourages successful knowledge exchange and what kinds of relationships are associated with what kinds of effect. Throughout 2009 we held detailed discussions with Knowledge Exchange chiefs in the research councils on the development and wider application of SIAM. Presentations of the tool were also made to workshops organised by RCUK, NERC, BBSRC, the Scottish Government, the LINK Programme, HEFCE Beacon North East, and the Govnet Conference on Science and Innovation. A submission based on SIAM was also made to HEFCE's consultation on the Research Excellence Framework.

Science highlight 1: Relu provides vital information for energy crops strategy

In the project "Assessing the social, environmental and economic impacts of increasing rural land use under energy crops" researchers have investigated the holistic implications of large scale planting of *Miscanthus* grass and short rotation coppice (SRC) willow, crops that are new to the UK. These are fast growing, produce large yields from low inputs of fertilisers and pesticides, and show high energy gains and greenhouse gas reductions in life-cycle analyses but are quite different from conventional arable crops and have prompted concerns in some quarters. A constraints mapping exercise identified circa 4.7 million hectares of land suitable for growing biomass crops without conflicting with nine environmental constraints. When further restricted to Grade 3 or 4 land, which is not the most productive for food, this reduced to just over 3 million hectares (23.9% of England). When combined with yield mapping, the results indicated that areas with the highest biomass yields co-located with important food producing areas. Nevertheless, investigation of a scenario involving energy crop planting on 350,000 ha (a UK Biomass Strategy aspiration for 2020) suggested that this could be achieved without requiring higher grade land, and so would not necessarily greatly impact on UK food security. The team found that the water use of biomass crops in the UK is likely to be higher than that of permanent grass and winter wheat. The water use of *Miscanthus* is higher than that of SRC willow, approaching that of some deciduous woodlands, but less than evergreen woodlands. Counts of biodiversity plant indicators were generally significantly higher in SRC willows compared with *Miscanthus*, and significantly greater in both biomass crops than in cereals. Field margins of both crops had more butterflies of conservation interest than conventional crops, and pest species of butterfly were less abundant. SRC willow is likely to have a positive impact on the abundance of both farmland and woodland birds, although certain scarce or declining species may be negatively affected. Results are being used: by Natural England to revise the Energy Crops Scheme; by DECC/Defra to advise policy on energy crop plantings; and by the NFU as evidence in the Campaign for the Farmed Environment. The low returns of biomass mean it is unlikely to be the dominant enterprise on most farms, except in special circumstances such as where the farmer is looking for a reduced commitment of time and effort. However, the predictability of returns may be very attractive as part of a risk management strategy in an era of greater market volatility.

Science highlight 2: New way of doing science points to new solutions on flooding

Relu researchers on the *Understanding Environmental Knowledge Controversies* project have been developing a new way of doing science that brings together experts and local residents as equal partners in "competency groups" to consider problems. Instead of using standard computer models to address the flooding issue in Ryedale, North

Yorkshire and Uckfield, East Sussex the groups developed their own bespoke models, specific to flood risk management in the two locations. These models were spatially explicit, time dependent flood risk models that allowed active exploration of possible interventions by all group members. The Ryedale group developed a proposal for using bunds to mitigate the flooding problem and this is now being taken forward as a Defra demonstration scheme.

Dissemination highlight: Chief Scientific Adviser launches ground-breaking new book

Chief Scientific Adviser Professor John Beddington spoke at the launch of "What is land for? The food, fuel and climate change debate" on 19 November in London, attended by key policymakers, academics and politicians. The book, published by Earthscan, has been edited by Relu researchers Michael Winter and Matt Lobley and includes contributions from across the Relu programme. Professor Beddington said: "We are going to face a number of major global problems in the next two decades, including increasing population, urbanisation, demand for food, water and energy, and climate change...The changes we need to make are not just technical or scientific, they are to do with behavioural change, social change and economic change. I welcome the publication of this book, as the latest essay in the ongoing and crucial debate about the future of UK land."

3. Capacity Building and the Research Environment

3.1 Scientific Output

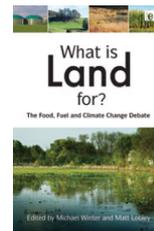
175 presentations and papers were given by Relu researchers at conferences and workshops and 79 journal articles were published in 2009 (Annex B). Most of this work is appearing in high status disciplinary journals. There have also been a number of groundbreaking programme-level publications.

At the programme level we have continued to concentrate on drawing together interdisciplinary special issues of high impact disciplinary journals devoted to synthesised findings from Relu research. A major output for the year was publication of 11 articles in a Relu special profile of the Journal of Applied Ecology on *Integrating Ecology and the Social Sciences* (edited by Jeremy Phillipson, Philip Lowe and James Bullock), one of the highest ranking ecology journals internationally. The profile explores for the first time how ecology relates to the social sciences and includes contributions from across the breadth of Relu's land and water research:



1. Navigating the social sciences: interdisciplinarity and ecology
2. Contrasting approaches to statistical regression in ecology and economics
3. Integrating socio-economics and ecology: a taxonomy of quantitative methods and a review of their use in agro-ecology
4. Modelling the coupled dynamics of moorland management and upland vegetation
5. Valuing nature-conservation interests on agricultural floodplains
6. Ecology and the social sciences
7. Geographical variation in carbon dioxide fluxes from soils in agro-ecosystems and its implications for life-cycle assessment
8. A novel, integrated approach to assessing social, economic and environmental implications of changing rural land-use: a case study of perennial biomass crops
9. The spatial aggregation of organic farming in England and its underlying environmental correlates
10. 100 years of change: examining agricultural trends, habitat change and stakeholder perceptions through the 20th century
11. Can managers inform models? Integrating local knowledge into models of red deer habitat use

2009 also saw the publication of two influential books by Relu researchers. “What is land for? The food, fuel and climate change debate” published by Earthscan (edited by Michael Winter and Matt Lobley) includes contributions from across the Relu programme. The programme organised a launch for the book with a guest address from Government Chief Scientific Adviser Professor John Beddington (see 4.2). “Drivers of Environmental Change in Uplands” was published by Routledge and is edited by Aletta Bonn, Tim Allott, Klaus Hubacek and Jon Stewart.



Finally, the programme initiated early development of another Journal Special Issue around Relu's wave of research on the management of animal and plant diseases. An editorial team has been assembled and a proposal for a Theme Issue made to *Philosophical Transactions of the Royal Society*.

3.2 Interdisciplinary Reach

40 disciplines are represented in the Relu Programme, with every project including natural and social scientists. During the year Relu's experience of interdisciplinary working and cross-council collaboration has been drawn upon by various research funders and Research Council programmes (see 3.7). A Relu call for proposals was specifically co-designed in 2009 with the Living With Environmental Change (LWEC) Programme on the theme of *Adapting rural living and land use to environmental change* (see 3.6). One of the call's objectives is to explore and promote novel approaches and partnerships for interdisciplinary research and analysis. It is intended that projects funded under the call will help to demonstrate how the LWEC Programme might meet some of its major challenges regarding interdisciplinary working.

The Relu special profile of the *Journal of Applied Ecology* was the first to concentrate on the topic of *Integrating Ecology and the Social Sciences* (see 3.1). The papers explore the development of common analytical methods and approaches for collaboration between social scientists and ecologists. Although applied ecology aims ultimately to design human interventions in ecological systems and produce outcomes of both environmental and social value, collaboration with the social sciences has been limited until recently. Increasingly, through the demands of studying complex environmental problems or the exigencies of funding, ecologists are having to work with social scientists on the social and human dimensions of environmental management. Indeed, ecologists are the largest grouping of scientists in Relu, and the special profile presents a survey of Relu ecologists and their experience of interdisciplinary working with social scientists.

Relu researchers are taking the programme's interdisciplinary insights and outlook into strategic positions in research and practice and helping to shape new organisational approaches and perspectives. During the year some notable appointments included Michael Winter and Susana Mourato to the Defra Science Advisory Council, Bruce Traill and Gareth Edwards-Jones to Defra's Council of Food Policy Advisors, Les Firbank and James Bullock to the Advisory Committee on Releases to the Environment, Vicki Swales to Head of land use policy for RSPB Scotland and Isobel Tomlinson to Policy and Campaigns Officer at the Soil Association. There is evidence that Relu has helped to catalyse a cultural change in interdisciplinary outlook among key stakeholders, who are increasingly recognising the need to develop their "use of the social sciences and take a multidisciplinary approach, bringing together expertise and evidence across different disciplines" (*Bite*, The Food Standards Agency Magazine, Spring 2010, page 28).

There have been various strategic research appointments. For example, Jeff Waage is now leading the new London International Development Centre, a combined research effort of 6 colleges and 400 scientists, building interdisciplinary research, which has been influenced in its development by the Relu model. Angela Karp who has been leading the Relu project *Impacts of Increasing Land Use Under Energy Crops* has been appointed

Scientific Director of the £27 million Centre for Bioenergy and Climate Change at Rothamsted Research.

Relu researchers are playing a key role in the interdisciplinary UK National Ecosystem Assessment (NEA). The Expert Panel includes Chris Quine, Michael Winter, Ian Bateman and Louise Heathwaite as well as a number of Relu stakeholders. Relu researcher Susana Mourato is a member of the economic assessment team with particular responsibility for the assessment of cultural services. Several researchers are also contributing as lead authors and writers on the assessment including James Bullock and Mark Reed. This is the first analysis of the UK's natural environment in terms of the benefits it provides to society and continuing economic prosperity. Part of the Living With Environmental Change (LWEC) initiative, the NEA began in mid-2009 and will be reporting in early 2011.

Relu's interdisciplinary approach has also been promoted internationally. For example, Brian Ilbery and Damian Maye from the *Assessing the Potential Rural Impact of Plant Disease* project presented at the Annual Conference of the Agri-Food Research Network in Sydney, Australia lessons from the wider Relu research programme for Australian and New Zealand researchers. Relu researchers were also especially prominent in organising sessions and presenting papers at the XXIII Congress of the European Society for Rural Sociology, held in Vaasa, Finland in August (see 3.7 and Annex A).

3.3 Programme Wide Events and Networking

Programme-wide events organised by the Director's Office included the conference *Rural Land Use in the North of England: Future Challenges* (March) (see 4.2), a major national conference on *The Future of Rural Land Use* (June) (see 4.2), a Book Launch *What is land for? The food, fuel and climate change debate* (November) (see 4.2) and three meetings of stakeholder forums (see 4.3).

3.4 Research Capacity and Training

One of Relu's primary objectives is to enhance and expand capabilities for integrative, interdisciplinary research on rural issues between the social, biological and environmental science communities. Relu projects offer fertile ground for ongoing on-the-job training and work experience for research staff and the programme's 15 PhD students, of whom 3 (Stephen Emery, Gareth Clay and Alan Poots) completed in 2009 and 1 (Paul Cross) prior to the reporting period. There are also 5 Relu Interdisciplinary Early Career Fellows. The aim of the fellowship scheme is to support outstanding early career researchers interested in pursuing interdisciplinary research and careers, and at the same time to foster the development of interdisciplinary research capacity in selected priority areas. Relu researchers are proving attractive in academic appointments. For example, Paul Cross who was a Relu PhD student on *Comparative Merits of Vegetables Produced Locally and Overseas*, and went on to become a Post-doc on *Reducing E coli Risk in Rural Communities*, has been appointed to a research lecturer post in Socio-economics of disease management at Bangor University.

Three hands-on data managing and sharing training workshops were held during 2009 in London and Manchester, organised by the Relu Data Support Service. The workshops

were opened up to researchers in and outside the Relu Programme and attracted 77 attendees in all.

The experience of Relu researchers has continued to be drawn upon in generic training and best practice guides for interdisciplinary research. The programme has regularly featured for example in a series of guides funded by ESRC and produced at Edinburgh University. The latest of these is a *Guide to Developing Interdisciplinary Strategies for Research Groups*: see <https://www.wiki.ed.ac.uk/display/ISSTIInterdisciplinary/ID+Short+Notes+and+other+reference+materials>

3.5 Data Collection and Management

The Relu Data Support Service made significant progress in 2009 in archiving datasets from Relu research in order to make such data available to the wider research community. A data processor was appointed for Relu at the UK Data Archive (UKDA). The archive's data processing and cataloguing guidelines were revised for the task of processing and preserving large and varied cross-disciplinary data collections. At the same time procedures were put in place with NERC's Environmental Information Data Centre in Lancaster for the archiving of environmental Relu data, with linkages, where appropriate, to UKDA data collections.

Data collections from twelve Relu projects have been deposited so far. Eight of these collections have been processed and archived, with user guides prepared, and are available to researchers via the UKDA catalogue and the Relu knowledge portal.

Three training workshops on data management were held (see 3.4). In addition five Relu project teams were visited by the Relu Data Support Service in 2009 to review datasets created and their project-specific data management and sharing needs. A printed copy of the *Best Practice Guide to Managing and Sharing Data* was sent to all Relu researchers. A revised edition of the guide was published, funded by the Joint Information Systems Committee (JISC).

The Relu Knowledge Portal was further expanded and its functionality further improved. The portal harvests research outputs from ESRC Society Today on a weekly basis, as they are notified by projects. To date, there are 590 Relu research outputs accessible via the portal. The portal also provides access to the archived data collections.

The Relu Data Support Service has continued to promote the innovative Relu model of pro-active data management, data sharing and linking data archive with research outputs. The Relu Knowledge Portal was showcased at the 2009 IASSIST/IFDO conference (International Association of Social Science Information Service & Technology; and the International Federation of Data Organisations for the Social Science) in Tampere, Finland, in May 2009. At a European Knowledge Exchange Workshop 'Main Drivers for Successful Re-use of Research Data' (Berlin, 23-24 September 2009), the Relu Data Support Service and Meg Huby (University of York, PI for two Relu projects) presented the Relu approach to data sharing. At the 'Data management for ESRC Research Centres and Programmes' seminar in London, 3 November 2009, the Relu Data Support Service showcased the data management planning approach in the Relu programme, with Piran

White (University of York, researcher on three Relu projects) presenting the researchers' experience.

The Relu model is being taken up more broadly. Relu data management planning was used as an exemplar by the Digital Curation Centre when developing its [Data Management Plan Content Checklist](#). The UK Data Archive, when establishing a new Research Data Management Support Services section in 2009, drew on the Relu experience and applied it on a wider scale, to provide pro-active data management support and promote the use of data management planning to a wide range of researchers.

The Relu Data Support Service carried out a review for the Commission for Rural Communities of all national social survey datasets held at UKDA that contain rural variables or have the potential to be coded with rural variables. The identified datasets have considerable potential for rural analyses, e.g. for the preparation of the State of the Countryside report.

3.6 Programme Management

Programme management and project oversight

Project Communication and Data Management Plans provide a basis for quality assurance within the Programme. The plans form a basis for monitoring progress as well as discussion at project visits. All plans have been signed off by the Director's Office and Relu Data Support Service.

A group planning meeting was held in London with researchers and Principal Investigators from 7 Relu projects funded under the third call. In addition, meetings and individual site visits were conducted with 2 Second Call and 4 Third Call projects, at which inter-project links and synergies were discussed. Four planning meetings were held with Relu's Interdisciplinary Early Career Fellows. Seven cross-project events were also supported by the programme (Section 3.7).

Advisory committee meetings

The Strategic Advisory Committee met twice and the Director's Office provided briefing, advice and background analysis on both occasions. Papers were prepared by the Director's Office on the following themes: Animal and Plant Disease Projects Communication Plan (2 papers); Scoping Document for Relu-LWEC Joint Call; Relu and Strategic Land Use; Relu Stakeholder Impact Analysis Matrix (2 papers); The Future of Rural Land Use Conference; and Analysis of Fourth Call Consultation. The Director's Office took part in three Programme Management Group (PMG) meetings and a joint planning meeting in Newcastle with the Relu Data Support Service. Two meetings of Relu's newly established Local Authority Sounding Board also took place in Newcastle.

Assessment and commissioning activity

During the year the Director's Office co-designed two funding calls. The first included the joint Relu-LWEC call on *Adapting Rural Living and Land Use to Environmental Change*. A major consultation initiative was organised with stakeholders and the scientific community to seek advice on suitable topics and priorities, to help shape the specification for Relu's Fourth call. This included a web based consultation in June 2009 as well as written invitations to comment to key Relu stakeholders. Over 80 consultation

responses were received with half from non-academic respondents. 38 Universities and Institutes contributed. The responses were used to refine and develop the call specification. The deadline for the call was October 2009, with 25 applications received.

A smaller call for proposals was also designed which focused on enabling the transfer and exchange of expertise and knowledge from research funded by the Relu programme, with non-academic rural-oriented organisations (public bodies, business or third sector organisations). The deadline for the call was in September 2009. It generated some interest, but in the end only 2 applications were submitted due to difficulties experienced among proposers in securing partner funding in the adverse financial climate.

3.7 Added Value

Promoting synergy between research projects

As well as programme-wide events (see Sections 4.2 and 4.3) and group planning meetings (Section 3.6), there was active encouragement of inter-project synergies. Facilitation of inter-project linkages is leading to significant added value, including published outputs in the form of special journal issues and books (see 3.1). There have been numerous joint articles. Researchers from four Relu projects, for example, have published a cross-programme paper in the Journal of Environmental Management, that pools expertise and experience from across the programme about methods for stakeholder analysis.

Seven cross-project activities were sponsored by the Programme during the year:

- Relu sponsored workshop on *Expert Systems for Natural Resources Management* organised by Tobias Krueger, Laurence Smith and Kevin Hiscock in January. The workshop drew on expertise across 5 Relu projects, covering approaches ranging from Bayesian Networks, participatory modelling to science studies perspectives on local expert knowledge. Following the workshop plans have been made for a special journal issue on expert systems.
- Relu sponsored workshop in collaboration with Land Use Futures Foresight on *Land Valuation and Decision Making*. Nine Relu projects took part in the workshop which was organised by Joe Morris and Anil Graves in July. The workshop addressed the following question: How can the value of land, as a stock of assets and a provider of flows of benefits to people and communities, be assessed and incorporated into decision-making processes for a range of applications, scales and time frames? Their report fed into the national Foresight programme.
- Relu sponsored workshop on *Regulating Infectious Disease in the 21st Century: The Role of Government and Stakeholders* in September. The workshop, organised by Graham Medley and Peter Mills explored the regulation of infectious disease of plants and animals. In the case of animal disease, there is an on-going shift from central government control to wider responsibility and cost sharing. In the case of plant disease, central government's role has always been part of a more diffuse network, with stakeholders having more input. The overall aim was to learn how government's role is changing, and how the other stakeholders interact with government and with each other to shape disease control. There were 23 attendees, including key stakeholders such as Animal Health, Defra Exotic Disease Programme, NFU, Countryside Council for Wales and the Horticulture Trades Association.

- Relu sponsored conference on *Human-Wildlife Conflict Resolution*, hosted by the Mammal Society at London Zoo in November 2009, organised by Piran White. The session involved several Relu speakers.
- Two Relu sponsored series of briefings for policy makers. Arranged for Defra and the Food Standards Agency, involving 8 projects (see 4.5).
- Relu sponsored session of the national conference of the Farming and Wildlife Advisory Group involving 3 projects (see 4.5).

There were numerous other informal and bilateral project synergies in 2009. Examples include:

- Multiple joint-publications, for example on multifunctional landscapes (Res227-25-0028 and Res227-25-0024), ecosystem assessment (Res227-25-0001, Res 227-25-0028 and Res227-25-0014) and future of the uplands (Res227-25-0001, Res229-25-0005 and Res229-25-0007)
- Knowledge exchange on sustainable energy production, rural inequality and fuel poverty (Res229-25-0004, Res227-25-0020, Res227-25-0024), on disease modelling and management (Res229-25-0015 and Res229-25-0016) and on risk perception (Res229-25-002007 and Res229-25-0012)
- Joint workshop on stakeholder analysis methods (Res227-25-0017 and Res227-25-0025)
- Data exchange and joint-modelling of impact of land use change on faecal indicator organisms (Res227-25-0024 and Res224-25-0073)
- Joint meetings and informal exchanges on water catchment modelling and management (Res229-25-0009 and Res229-25-0008)
- Exchange of research questionnaires and scenarios (Res229-25-0007 and Res227-25-0014)
- Numerous projects have collaborated in joint-proposals for further funding, including Relu's fourth call, and in the joint planning of events for 2010

Making international connections

It is crucial that Relu research is of international standard, addresses global challenges and learns from experience from outside the UK. The Director's Office has sought to help Relu projects make appropriate international connections:

- Relu made another successful application to the competitive ESRC-SSRC Visiting Fellowship Scheme. The fellowship has been awarded to David Benson, from the Relu project *Catchment Management for Protection of Water Resources*. It will enable the Relu team to engage in comparative analysis of EU/US water governance and will also bring benefits to the wider programme, as David Benson is tasked with fostering comparative understandings amongst other Relu water governance projects.
- The Relu programme made a major contribution to the XXIII Congress of the European Society for Rural Sociology, held in Vaasa, Finland in August, helping to extend Relu's interdisciplinary insights onto the world stage (see 3.2). The theme of the Congress was 'Re-inventing the Rural: Between the Social and the Natural'. Five hundred rural scientists attended from across the world. Relu Director, Philip Lowe, was the Scientific Chair of the Congress. His opening keynote address was entitled 'Enacting rural sociology: or what are the creativity claims of the engaged sciences?'
- The Relu Director took part in a Beijing meeting of Defra's China-UK Sustainable Agriculture Innovation Network, which is providing a platform for the development

and implementation of China-UK collaboration on sustainable agriculture. Three teams that have had Relu funding are part of the network.

Influencing Research Council policy and practice

The Relu Programme is a conduit for learning between the Research Councils and other research funders. Highlights from the year include:

- Co-design of a joint call for proposals with the Living with Environmental Change (LWEC) programme, with a major objective being to demonstrate how the LWEC Programme might meet some of its major challenges regarding interdisciplinary working, stakeholder engagement and knowledge exchange.
- Meetings were held during the year with the heads of knowledge exchange of ESRC, BBSRC and NERC to consider how best the experience of knowledge exchange within the Relu programme might be built upon within the research councils. One outcome of the discussions was initiation of a sounding board involving the three councils to help shape Relu's Stakeholder Impact Analysis Matrix (SIAM) and to jointly plan an RCUK workshop on *Metrics and Narratives of Knowledge Exchange*. This was held in October in Swindon and involved representation from across the Research Councils. A main part of the workshop focused on Relu's experience of encouraging and accounting for knowledge exchange and stakeholder engagement.
- During the year the programme developed and promoted widely the new analytical and evaluatory tool, SIAM. The tool holds data – collected from projects as part of their annual reporting – on all their stakeholder contacts, how they are involved with projects and to what effect. SIAM's defining characteristics include: its focus upon short term, real time impacts, during knowledge production; its consideration of the modalities of stakeholder engagement as well as impact; its potential role in helping to scope long term impact analysis; and its focus on *Impact on Research* as well as *Impact on Stakeholder*.
- Relu's approach to knowledge exchange and stakeholder impact analysis attracted much attention within the councils and among other research funders during the year. Presentations on Relu's approach were given to a NERC Economic Impact Workshop, to the Scottish Government Knowledge Exchange group and to the Sustainable Livestock Production LINK programme. Two seminars were delivered at the Govnet Conference on Science and Innovation at the QEII Conference Centre, London as part of the RCUK event on "*Excellence with Impact: Benefitting from collaboration*". The Director's Office also hosted a 3 day visit of Murray Gardner, NERC, to discuss how knowledge exchange and stakeholder engagement within the new LWEC Programme could build on Relu.
- Relu's interdisciplinary approach attracted ongoing interest. The Director's Office was invited to give a presentation on the interdisciplinary lessons from Relu to the BBSRC "Combating Endemic Diseases of Farmed Animals for Sustainability" Workshop, Wellesbourne. A presentation was also given to a workshop organised to explore the science needs of the new Marine Management Organisation.
- Relu's experience in cross-council data management and support continued to drive research council innovation in data management and archiving (see 3.5).

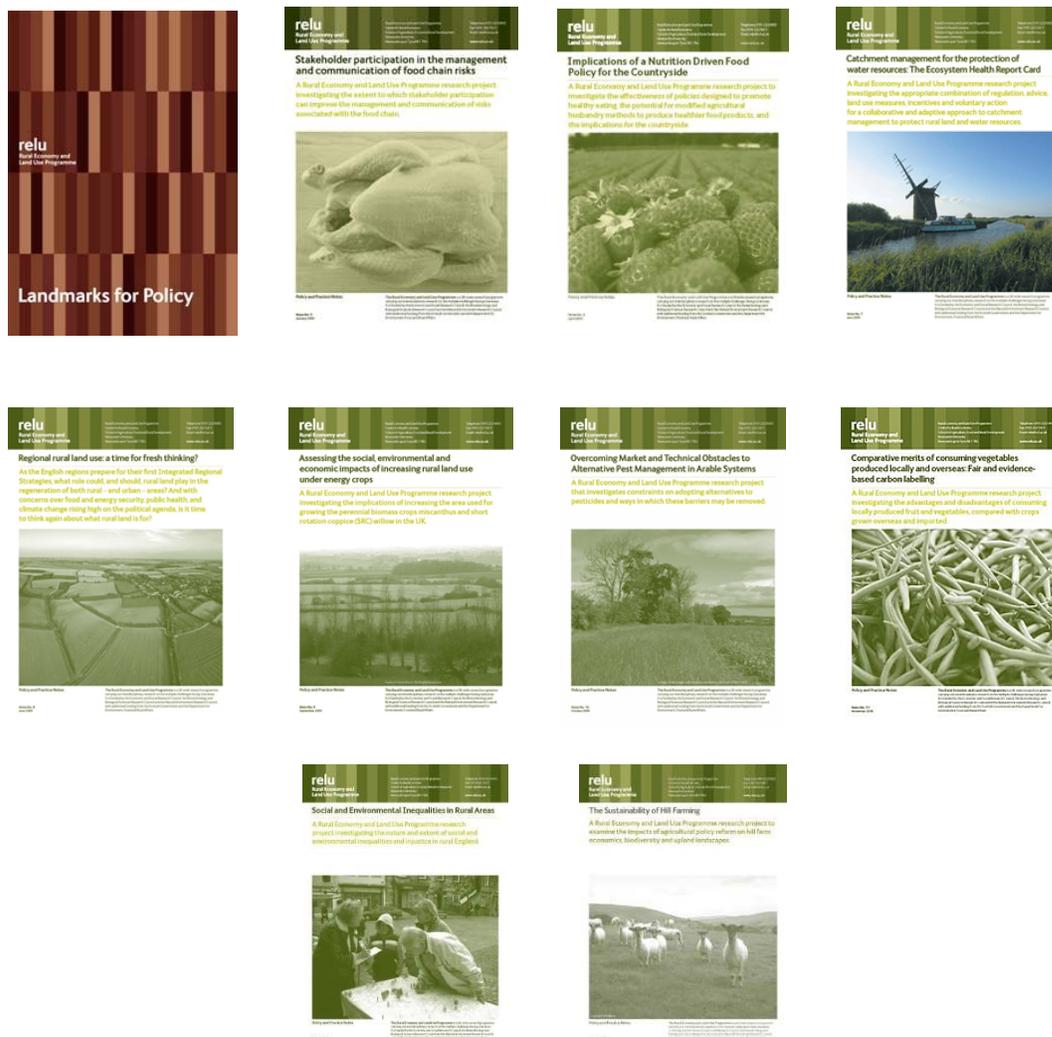
3.8 Key Items of Expenditure

Key items of expenditure include: £5.8k on sponsoring synergies between research projects; £3.7k on attending Research Council meetings; £2.7k on project visits and planning meetings; and £7k on the *Journal of Applied Ecology* Special Profile.

4. External Communication

4.1 Programme Level Publications

In 2009 Relu published its 9th Programme-level briefing document *Landmarks for Policy* and nine Policy and Practice Notes drawing out the main highlights of project's findings and their policy and practice implications. These were distributed to approximately 2100 stakeholders on the Relu mailing list including Civil Servants, think tanks, academics, NGOs, politicians and commercial and professional interests, as well as being available electronically. Four newsletters were also prepared and distributed to the Relu mailbase, which comprises over 2000 researchers and stakeholders. Relu publications are well-received, with the newsletters, briefing papers and policy and practice notes all receiving favourable comments. They complement other activities which include stakeholder involvement throughout the research at programme and project level, targeted seminars for key interest groups and organisations (as well as the more traditional conference events) and use of mainstream, professional and trade media.



Briefing Paper No 9 *Landmarks for Policy* provides an overview of the key findings of 18 Relu projects, and draws on contributions of key stakeholders, in relation to strategic land

use. The report was fed into the Government's Land Use Futures Foresight Exercise and other national land use inquiries.

The Policy and Practice Note series evolved during the year in response to feedback and as part of Relu's knowledge transfer strategy. The series expanded at a rapid rate, with nos. 5-13 appearing during the year. The original concept for the notes was that each project should produce at least one, drawing out policy and practical implications from the research. They aren't necessarily intended to be a summary of all the findings but usually take a specific angle and target a particular audience. For example, no 11 "Comparative merits of consuming vegetables produced locally and overseas: Fair and evidence-based carbon labelling" examined specifically the implications for developing countries of wider use of carbon labelling, drawing on the findings from the project. This will be of interest to NGOs and commercial organisations promoting fairtrade and to policymakers.

More recently we have begun to widen the brief and have commissioned some notes that draw on research across groups of projects. Our Visiting Fellowship scheme is a key component in this development. Note no 8 "Regional Rural Land Use: A time for fresh thinking?" was authored for us by Frances Rowe at One North East Regional Development Agency as part of her visiting fellowship with Relu and which considered the potential for harnessing Regional Integrated Strategies for land use planning, in the light of results from Relu land use projects (see 4.4). Late in 2009 we also initiated further notes targeted at local authority audiences and we have a group of visiting fellows from local authorities who are helping us to plan and produce these. Another audience for whom we will be tailoring notes consists of organisations with an interest in flooding and water, such as the Environment Agency, again through visiting fellows from this sector. We are finding that the policy and practice note series is generally very popular and we are pleased with how the brand has evolved for a range of audiences. They are also covered regularly in a number of rural, farming and planning newsletters, with links to the Relu website.

We continue to achieve coverage for articles and comment from the research in key outlets that reach specialist groups. Farmers' Weekly, Farmers' Guardian and the Royal Agricultural Society of England's magazine have each published several articles relating to Relu projects during the year.

The Relu website has been adapted to new functions as the programme progresses and we look towards its legacy. We have incorporated more discussion and blogging functions to encourage feedback and the "latest news" has become a more prominent feature, with a rapid turnover of items. In addition, Relu has featured frequently in other web discussion forums, including those used by farmers, vets and the food trade. The Relu Director provided an opinion piece for the launch of a new BBSRC Food Security website blog.

A Relu journal special issue was also completed and published in 2009, and another special issue progressed (see Section 3.1).

4.2 Significant Engagement Events

Rural Land Use in the Regions: Future Challenges, March 2009, National Science and Engineering Week/Festival of Social Science events

The regional land use agenda was the subject of our Science Week events which were held across the UK. This included a major conference *Rural Land Use in the North of England: Future Challenges, York 12 March 2009* held in partnership with Northern Rural Network. The conference was planned in conjunction with Northern Way (which coordinates the strategic thinking and analysis of the three northern RDAs) and Chaired by Sir Don Curry. Four Relu projects presented the potential applications of their research to rural land use policy. The conference included contributions from key stakeholders including Tim Frenneaux (Yorkshire Forward RDA), John Gorst of United Utilities, Nick Dales of Natural England, Andrew Black (Savilles, Land Agents), Frances Rowe (One North East RDA), John Goddard (Land Use Foresight adviser) and Jonathan Mogford (Defra). There were 118 delegates of whom 75% were non-academic stakeholders. A parallel seminar on *The Future of Rural Land Use* was also held in Exeter on 9 March, focusing on the land use agenda in the South West. Here 7 Relu projects discussed their research with key regional and national stakeholders. Of the 44 delegates 50% were stakeholders, such as Natural England, National Trust, RSPB, Forestry Commission, Environment Agency, National Farmers Union, and various regional development agencies, national parks and local authorities.

Activity at project level was also sponsored by the programme and took place during Science Week across the UK, involving scientists, policymakers, schoolchildren, and the public:

- *Food for the Future – What is the Role of Organics?* Seminar organised by the Effects of Scale in Organic Agriculture project.
- *How will Bioenergy Crops Affect our Landscapes?* Short talks and interactive displays with posters and handouts at Rothamsted Research on 10 March hosted by the Impacts of Increasing Land Use Under Energy Crops project.
- *Making Deer Choices: Public Preferences for Deer Management* Two events in Monmouth on Tuesday 10 March and Ullapool on Thursday 12 March that used choice experiments to explore public preferences in relation to deer and their impacts, organised by the Relu Collaborative Deer Management project.
- Two events organised by the Reducing E coli Risk in Rural Communities project: *Food Bugs me to Death – Exploring E coli Risk* events for schoolchildren and *Political Pathogen* – a film for schoolchildren and communities made by the project and shown during Science Week in Aberdeen.

The Future of Rural Land Use, 4 June 2009, Congress House, London

The Future of Rural Land Use conference was held on Thursday 4 June 2009 at Congress House, Great Russell St, London. It took place as strategic land use was being driven up the political agenda by public concerns over climate change, flood risk, food security and sustainable energy supplies. In responding to these challenges, the Relu programme could draw on the largest pool of academic expertise on land and water in the UK. Introducing the conference, Baroness Young of Old Scone commended the “great wealth” of research the Relu programme had produced, the “truly interdisciplinary” nature of the projects and the strong integration of stakeholders in the production of science. Eight Relu research projects presented strategic findings of their work, covering the future of energy crops,

food producing landscapes, the uplands and water quality and cross cutting themes of ecosystem services, governance of natural resources, flooding and agricultural biodiversity. These were complemented by interactive ‘hands-on’ demonstrations and workshops showcasing cutting edge interdisciplinary and participatory methods from 10 Relu projects. Some of these workshops led to follow up activity. For example, 11 individuals /organisations requested software and guidance on a stakeholder analysis tool that had been demonstrated.

High level panel debates were held on the *Priorities for Land Use* (Mark Avery, RSPB Director of Conservation; Maggie Gill, Scottish Government Chief Science Adviser Rural and Environment Research Analyst Directorate; Tony Burton, National Trust Director of Strategy and External Affairs; and Mark Tinsley, Land Manager) and the *Governance and Management of Land Resources* (Frances Rowe, ONE North East Rural Policy and Partnerships Manager; Chris Lea, Welsh Assembly Government Head of Technical Services Division; John Varley, Director Devon Estates; and Julian Dennis, Wessex Water Director of Compliance and Sustainability). Tom Tew, Chief Scientist of Natural England, provided a summary of the conference. The conference was well-attended, with 242 delegates from policy making, commercial and third sector organisations as well as academia (57% were non-academics). In the feedback from the conference, everyone who responded thought the presentations were either “good” or “excellent”, with more than two thirds giving “excellent” as their overall verdict. Regarding panel discussions and workshops 75% found the discussions either “good” or “excellent” and 79% of those who attended workshops also gave the same verdict on these interactive sessions. Overall, 97% deemed the conference as a whole “good” or “excellent”. The programme put out three press releases in advance of the conference, drawing on research results from the presentations and workshops. They gained high profile publicity in local, national and specialist media, including peak time BBC coverage. Philip Lowe was also quoted as Relu Director on land use policy in a Guardian editorial. Two BBC journalists, from Radio 4 Costing the Earth and the BBC Science programmes development unit, also attended the conference in order to research future programmes.

Book Launch “What is land for? The food, fuel and climate change debate”, 19 November 2009, The Atrium, Westminster, London

Chief Scientific Adviser Professor John Beddington spoke at the launch of “What is land for? The food, fuel and climate change debate”. The book, published by Earthscan, has been edited by Relu researchers Michael Winter and Matt Lobley and includes contributions from across the Relu programme (see 3.1). Over 67 delegates attended the launch. 67% were non-academic stakeholders including senior staff of NFU, Commission for Rural Communities, Defra, Foresight Land Use Futures, Environment Agency, Scottish Government, Forestry Commission, CPRE and Natural England. Nick Herbert MP, Shadow Secretary of State for Environment, Food and Rural Affairs, also attended. Professor Beddington said: “We are going to face a number of major global problems in the next two decades, including increasing population, urbanisation, demand for food, water and energy, and climate change. We can’t address any of these issues without addressing all of them. Increased pressures of climate change, demographic shifts and changing patterns of work and habitation will all intensify demands on land. We need a coherent national policy for energy, land, food, water and climate change. CP09 indicates potential for water shortages and water surpluses in the UK: there is likely to be

more precipitation in the winter, with drier summers (although there will be little change in the overall amount of precipitation that falls annually). Land is a potential solution: it can be used to store floodwaters as flood risk increases, regulating and slowing the flow of storm waters. The Land Use Futures Foresight project has been looking at these and other issues: carbon storage for climate change mitigation; improved governance frameworks; maintenance of best landscape and heritage sites to support biodiversity and human health and well-being. The changes we need to make are not just technical or scientific, they are to do with behavioural change, social change and economic change. I welcome the publication of this book, as the latest essay in the ongoing and crucial debate about the future of UK land.”

4.3 Programme-Level Meetings with Potential Research Users

Relu is committed to engaging stakeholders throughout the research process. This requires a new philosophy of *knowledge exchange*, not just knowledge transfer, and the sharing of knowledge between researchers and a wide range of policy makers, practitioners, businesses and other publics. Stakeholder engagement at all stages from identification of research questions, the conduct of the research to dissemination of the results, are central to meeting this objective. The programme’s up-front stakeholder engagement has helped it build extensive soft networks for knowledge exchange, facilitated in particular by the programme’s consultative forums and other novel mechanisms for building links between research and research users.

Figure 3 records the formal involvement of over 160 different stakeholder organisations at the programme level during 2009. Bilateral discussions were also held with Marine and Fisheries Agency, One North East Regional Development Agency, Northumberland County Council, East Riding of Yorkshire Council, Lincolnshire County Council, Foresight Land Use Futures and LINK (see Annex A). Around the consultation for the joint Relu-LWEC call on *Adapting Rural Living and Land Use to Environmental Change* (3.6) over 40 key stakeholder organisations responded and helped shape the call specification, including contributions from Campaign for National Parks, Commission for Rural Communities, Defra, Environment Agency, Food Ethics Council, Food Standards Agency, Forestry Commission, National Association of AONBs, Natural England, NFU, Scottish Government, Scottish Environment Protection Agency, Veterinary Laboratories Agency, as well as various national parks and regional development agencies.

Figure 3: Formal Stakeholder Engagement in Relu at the Programme Level in 2009

Stakeholder	Representation on Programme Management Group or Strategic Advisory Committee	Representation on national stakeholder forum	Attendee at Programme Workshop	Consultation Respondent
Action for Communities in Cumbria			√	
ADAS UK Ltd			√	√
Agricultural Industries Confederation			√	
Agriculture and Horticulture Development Board		√		
Albanian Association of Organic Horticulture-Bioplant			√	
Alnwick District Council			√	
Association of Rivers Trusts		√	√	
Barlavington Estate			√	
Bayer Crop Science			√	
BBC Radio 4			√	
BBC Scotland			√	
Blackmoor Estate			√	
Bradford MDC			√	
British Crop Protection Council (BCPC)			√	
British Poultry Council			√	
British Trust for Ornithology				√
Business Link North East			√	
Campaign for National Parks				√
Carbon Trust			√	
Central Science Laboratory		√		
Chemical Regulation Directorate (CRD) (HSE)			√	
Church of England			√	
Civic Society Initiative		√	√	
Clinton Devon Estates		√	√	
Commission for Rural Communities		√	√	√
Cornwall County Council			√	
Countryside			√	
County Land and Business Association			√	
Countryside Council for Wales	√	√	√	
Countryside Recreation Network				√

CPRE Peak District & South Yorkshire			√	
Craven District Council			√	
CREX Rural Land Use Consultants			√	
Dartmoor National Park Authority			√	
David Jarvis Associates				√
Deer Commission for Scotland			√	
Defence Estates			√	
Dept for Environment Food and Rural Affairs	√	√	√	√
Devon County Council			√	
Devon Wildlife Trust			√	
Dickinson Dees LLP			√	
Dillington Farms		√		
Dorset County Council			√	
Druridge Bay Partnership			√	
Durham Rural Community Council			√	
East Riding of Yorkshire Council			√	
Eastbrook Farm Organic Meat (organic farmer)		√	√	
Eco Europe			√	
Ecodyfi, Machynlleth				√
Ecoideam Ltd				√
Ecole Polytechnique			√	
Ecologist			√	
Emslie and Crocker Rural Consulting			√	
EnAgri Limited			√	
Energy and Resources Institute (TERI)				√
English Heritage			√	
Environment Agency		√	√	√
Environment and Community United Utilities			√	
Essex and Suffolk Water			√	
Exmoor National Park Authority			√	
Farm Animal Welfare Council		√	√	
Farm Energy Project			√	
Farm Woodland Forum				√
Farming and Wildlife Advisor Group (FWAG)			√	
Fields Farm		√	√	
Food and Drink Federation			√	

Food and Environment Research Agency			√	√
Food Chain Centre			√	
Food Climate Research Network			√	
Food Ethics Council		√	√	√
Food Standards Agency			√	√
Footprint Ecology			√	
Forest Research			√	√
Forestry Commission			√	√
French Embassy			√	
Game and Wildlife Conservation Trust			√	
Garden Organic (HDRA)			√	
Government Office for North West			√	
Government Office for Yorkshire and the Humber			√	
Gravesham Borough Council			√	
Greater Morpeth Development Trust			√	
GWP Consultants				√
Harnham Water Meadows Trust				√
High Weald AONB			√	√
Horticultural Trades Association		√		
Ian Brown (diversified tenant farmer)		√	√	
Imperial College London		√	√	
Institute for European Environmental Policy		√	√	
Institute of Food Research			√	
Island 2000			√	
Jacky York Consulting			√	
Joint Nature Conservation Committee	√	√		
Lake District National Park Authority			√	
Lancashire County Council			√	
Lancashire Wildlife Trust			√	
Land Use Foresight			√	
Lantra			√	
LDA Design			√	
London International Development Centre	√	√		
Marine and Fisheries Agency			√	
Milburn Consulting			√	
Mulgrave Estate			√	

National Association of AONBs				√
National Farmers' Union		√	√	√
National Non-Foods Crop Centre (NNFCC)			√	
National Office of Animal Health		√		
National Trust			√	
Natural England		√	√	√
North East Regional Affairs Forum			√	
North Kesteven District Council			√	
North Pennines AONB Partnership			√	
North West Development Agency			√	
North West Research			√	
North York Moors National Park			√	
North Yorkshire County Council			√	
Northamptonshire County Council				√
Northern Ireland Environment Agency			√	
Northumberland Development Plan Officers' Forum			√	
Northumberland National Park Authority			√	
One North East Regional Development Agency		√	√	√
P.C. Tinsley Ltd (cereal/vegetable farmer)		√	√	√
Quantech Solutions			√	
Quantera Ltd			√	
Richmondshire District Council			√	
Rolle Estate Office			√	√
Royal Horticultural Society			√	
Royal Institution of Chartered Surveyors		√		
Royal Society for the Protection of Birds		√	√	
Rural Research and Strategy Partnership			√	
Rural Sector Solutions			√	
Scottish Environment Protection Agency				√
Scottish Government	√	√	√	√
Scottish Natural Heritage			√	
Small Farms Association			√	
Smiths Gore			√	
Soil Association			√	
South East Protected Landscapes			√	
South West Regional Development Agency			√	√

Stockbridge Technology Centre		√	√	
Sustainable Development Commission			√	
TAH Ltd			√	
Taunton Dean Borough Council			√	
Teesdale Community Network			√	
Transition Stroud			√	
Transport Operations Research Group			√	
Tubney Charitable Trust			√	
UK Water Industry Research		√		
United Utilities			√	
Vegan Society			√	
Vegan-Organic Network				√
Veterinary Laboratories Agency				√
Water Meadows Trust			√	
Welsh Assembly Government		√	√	
Welsh Water			√	
Wessex Water Company		√	√	
West Sussex County Council			√	
Wildworks Ecology			√	
Woodland Services				√
Woodland Trust		√	√	
Yorkshire and Humber Rural Affairs Forum			√	
Yorkshire Dales National Park Authority				√
Yorkshire Forward			√	
Yorkshire Futures			√	

Relu is advised by a Strategic Advisory Committee (SAC), chaired by Sir Howard Newby, which includes representatives from Defra, Countryside Council for Wales, Commission for Rural Communities, Scottish Government and the Joint Nature Conservation Committee. The Director of the programme is also a member of Defra's Science Advisory Council, has chaired the Vets and Veterinary Services Working Group, and is a member of Natural England's Science Advisory Committee.

Since its inception, Relu has also engaged with stakeholders via several thematic forums. The forums are used as sounding boards on research programme and project development. They include key stakeholders from the public, private and voluntary sectors who can represent their organisations and also act as conduits for knowledge transfer.

As Relu's land use projects were drawing to a close, the eighth and final meeting of the *People and the Rural Environment Forum* was held in October 2009. Membership of the PRE Forum had grown steadily since its first meeting in 2006 and its members represented an impressive grouping of leading experts and figures in land use research and development. The group was chaired initially by James Curran Head of Strategic Planning, Scottish Environment Protection Agency, and latterly by Chris Lea, Head of Technical Services Division, Welsh Assembly Government, with Roger Clarke of the Woodland Trust as alternate chair. Other members included: Mark Avery, Head of Conservation, RSPB; Helen Baker, Research Co-ordinator, Joint Nature Conservation Committee; Katherine Bass, Manager, Climate and Agriculture Programme, Defra; Ian Brown, Tenant Farmer/Director Fresh Element/Member North East Regional Environment Protection Advisory Committee; Tony Burton, Director, The Civic Society Initiative; Lord Cameron of Dillington, Dillington Farms; Tamsin Cooper, Institute for European Environmental Policy; Julian Dennis, Director of Quality, Environment and Sustainability, Wessex Water/UKWIR Board member; Mike Farrimond, Director, UKWater Industry Research; Tony Hams, Board Member, Natural England; David Macdonald, University of Oxford/Council Member of Natural England; Frances Rowe, Rural and Environment Manager, One North East; Archie Ruggles-Brise, Association of Rivers Trusts; Susan Steer, Organic farmer/Chair of RICS Countryside Policy Panel; Mark Tinsley, Managing Director, P.C. Tinsley Ltd; John Varley, Clinton Devon Estates; and Paul Woodcock, Regional Director, Environment Agency (East of England).

In all members heard presentations from 19 Relu projects. One of the group's main achievements was in stimulating and taking part in Relu's land use initiative (see section 2):

- taking part in the advisory group guiding the work of the land use policy analysts and giving feedback on their reports
- contributing actively to Relu's on-line *Great Land Use Debate*
- advising on the format of programme events such as the major conference *The Future of Rural Land Use* in June 2009, and making main contributions as panel discussants
- becoming visiting fellows to the programme. Forum member Frances Rowe from One North East RDA, became a Relu Visiting Fellow (see 4.4)
- hosting work shadows from the programme.

Feedback from members on the forum was positive. 100% of members found the format - a mixture of presentations and discussions over dinner - to be useful. 78% saw that the forum had led to follow-up activity or links with Relu researchers. 86% reported it had improved their own knowledge and understanding, while 78% considered it had improved the policies/practices of their organisations. Members contributed many positive comments. Paul Woodcock of the Environment Agency said he “was keen to contribute to a programme directed at development of solutions to problems, Relu fits the bill on this”. Julian Dennis of Wessex Water commented it had “helped crystallize our thinking on how we approached catchment management”. Tenant farmer Ian Brown said “I am directly involved with a food and renewable energy business as well as my Environment Agency/ Regional Development Agency roles. My thinking is intrinsically along the lines of [the forum] and it has helped me become more knowledgeable around the topics covered.”

During 2009 we held two meetings of a newly established forum which is concerned with Animal and Plant Disease. Membership includes: Jeremy Blackburn, Commission for Rural Communities; David Brown, Policy Adviser, Horticultural Trades Association; Helen Browning, Director, Eastbrook Farm Organic Meat; Robert Burns, Scientific Adviser, the Scottish Government; Ian Crute, Chief Scientist, Agriculture and Horticulture Development Board; Helen Ferrier, Chief Science and Regulatory Affairs Adviser, NFU; David Gregory, ex-Technical Director, Marks and Spencer; Brian Harris, BBSRC; Stephen Hunter, Head of Marine Management Organisation Transition Programme, Defra Marine and Fisheries Agency; Chris Lewis, Fields Farm; John Lloyd-Jones, Countryside Council for Wales; Jeff Waage, Director, London International Development Centre; Robbie McDonald, Head Wildlife Disease Ecology, Food and Environment Research Agency; Tom Macmillan, Executive Director, Food Ethics Council; Martin McPherson, Director, Stockbridge Technology Centre; Bill Parish, Exotic Diseases Policy Programme, Defra; Howard Petch, Board Member, Commission for Rural Communities; Philip Sketchley, Chief Executive Officer, National Office of Animal Health; Christopher Wathes, Chairman, Farm Animal Welfare Council; Abigail Woods, Imperial College London.

4.4 Work Shadowing and Visiting Fellowship Schemes

Seven Relu researchers took part in Relu’s work shadowing scheme during the year which aims to introduce Relu research staff to the action-contexts in which their research may be used. There were also three Relu Visiting Fellows – a scheme that enables policy makers and practitioners from the commercial, voluntary or public sector to visit Relu research teams with a view to exploring the implications of the research for their work and developing bespoke dissemination activities. For example, Relu Visiting Fellow Frances Rowe from One North East Regional Development Agency visited Relu projects to extract messages for the regional land use agenda. These were written up by the Fellow as a Relu Policy and Practice Note which she then promoted across the RDA network, as well as publishing articles in *Town and Country Planning* and the *RICS Land Journal*. We see this a potential model of how well placed Visiting Fellows attached to the Programme can act as knowledge brokers informing their own stakeholder constituencies of what lessons they have drawn from their involvement in Relu research.

Figure 4: Work shadowing and visiting fellowships in 2009

Work Shadowing		
<i>Host</i>	<i>Shadower</i>	<i>Project</i>
Forestry Commission	Darren Moseley and Mariella Marzano	Assessing and Communicating Animal Disease Risks and Countryside Users
Environment Agency Wales	Catharina Landstrom	Understanding Environmental Knowledge Controversies
Defra	Wyn Grant	The Governance of Livestock Disease
Commission for Rural Communities	Annemarieke De Bruin	Social and Environmental Inequalities in Rural Areas
Defra	Abigail Woods	Reinventing the Wheel? Farm health planning 1942-2006
Food Standards Agency (Scotland) and New Zealand Food Safety Authority	Norval Strachan	Reducing E Coli 0157 Risk in Rural Communities
Visiting Fellowships		
<i>Fellow Organisation</i>	<i>Fellow</i>	<i>Host Research Project</i>
Environment Agency Wales	Kathryn Monk	Understanding Environmental Knowledge Controversies
North East Rural Affairs Forum	David Stewart	Angling and the Rural Environment
One North East Regional Development Agency	Frances Rowe	Land Use Projects

Work shadowing has provided many tangible contributions to policy and practice. At the Commission for Rural Communities it led to “Improved analytical capabilities within the Strategic Analysis team in relation to GIS network analysis” and helped to improve the framing of the content of the Commission’s State of the Countryside report and the “organizations’ understanding of rural inequalities” (Justin Martin, CRC). For Alick Simmons, DCVO Defra, hosting work shadowing had provided a “Challenge to the accepted ways of working from an alternative perspective, objective analysis of current policies ... [and] an opportunity to explain the rationale and ways of working in an evidence based department”. Liz Kelly, also of Defra, highlighted how hosting work shadowing had provided “invaluable” insight into the workings of their own animal welfare team and portfolio of policy objectives. Specific inputs were made into the Department’s thinking on stakeholder engagement and animal welfare labelling, with the work shadower providing a “third pair of eyes” that “will be most helpful as our thoughts on this subject develop further”. Finally, Jacqui McEwhiney, Food Standards Agency Scotland, explained how work shadowing had “made a valuable contribution to the development of our forthcoming strategy for reducing *Campylobacter* in the Scottish population” and to the Agency’s aim of learning from international experience. The work shadowing “has therefore been timely and by strengthening the research base in Scotland, will improve the resources available to the FSA in Scotland to make progress in this area”.

The visiting fellowship scheme is also proving beneficial. The fellowship of Kathryn Monk of Environment Agency Wales with the Relu “Understanding Environmental Knowledge Controversies” project helped increase her “awareness and understanding of these areas of current science developments”, providing a stronger basis for her to draw on when advising Agency colleagues. Frances Rowe of One North East Regional Development Agency describes how material generated by the Fellowship “is contributing to the development of policy thinking in RDAs towards rural land use in relation to Integrated Regional Strategies. ... The Fellowship has enabled me to have a clearer understanding of the role of rural economies to regional development from a land use perspective and brought new knowledge into One North East that will enhance my role as Strategic Policy Manager”.

4.5 Project-Level Meetings with Potential Research Users

During the year the projects engaged in several thousand stakeholder contacts in the public, private and third sectors. Over 119 presentations were given specifically by projects to stakeholders in 2009 (Annex B). Individual research projects ran over 35 stakeholder workshops which engaged a wide range of organisations (see Table 3). The programme also initiated a number of targeted internal policy briefings for key stakeholders. This included setting up internal seminars in the Food Standards Agency (where 4 first call projects gave internal seminars), Defra (where 3 projects gave seminars) and the Farming and Wildlife Advisory Group (where 3 projects took part in its annual CPD conference).

Table 3: Project-Level Stakeholder Workshops in 2009

<i>Project</i>	<i>Workshop</i>
RES-227-25-0018 Whatmore	Participatory modelling of upstream storage flood solutions, June, London. Session demonstrating the team’s interactive computer model enabling participants to experiment with different land management solutions to reduce river flow during high flood-risk events. Project Conference, St Anne’s College Oxford, 10 –11 December. Project team members gave presentations and practical demonstrations to an audience of approximately 50 invited delegates, including Competency Group members and stakeholders.
RES-227-25-0028 Armsworth	Workshop activities with hill farmers, 7 July, Hathersage. Title: The sustainability of hill farming.
RES-229-25-0004 Huby	<i>Rural inequalities: Participatory mapping</i> workshop, June, London. This workshop, involving researchers and stakeholders provided hands-on experience of a newly developed methodology which combines participatory mapping and vignettes. End of project event, University of York, 22-23 July. The event involved 32 guests working at different administrative levels of social and environmental policy and practice (for example staff of the Commission for Rural Communities and Environment Agency) as well as people from non-governmental organisations. Interactive sessions illustrated the techniques used in the research, including participatory mapping and the use of vignettes. The workshop concluded with a discussion about how policy makers, practitioners and researchers may be best able to work with information concerning inequality and injustice in rural areas.

<p>RES-227-25-0001 Hubacek</p>	<p>Stakeholder Advisory Panel meeting, Castleton, Peak District National Park (October): discussing priorities for final year with stakeholders from Natural England, Moorland Association and Peak District National Park Authority</p> <p><i>Battle of the experts: understanding effects of future land use policy</i>, June, London. How could different policies affect land use and the provision of ecosystem services? The uplands was used as a case study to look at these hot topics, providing some insights into the complex and unpredictable effects of future land use policy decisions, and the role that stakeholder participation and modelling can play. Delegates included researchers and key stakeholders.</p>
<p>RES-229-25-0007 Quine</p>	<p>Meeting of project advisory board - Expert panel – 22nd July, London</p> <p>Meeting of project practitioner panel - Managers and users of countryside – 28th October, Birmingham</p>
<p>RES-229-25-0015 Wynne/Heathwaite</p>	<p>1st meeting of External Advisory Group (EAG) was held at the Foresight Centre in Liverpool on 15th April. Following a brief project description by the researchers and specific advice and input given by the EAG on our interview design and strategy, a wide ranging discussion involving the whole project team and EAG members followed.</p>
<p>RES-227-25-0024 Bateman</p>	<p>Bringing the real world into decision making, June, London. A workshop on bringing together natural science with economic analysis using techniques which allow for the spatial variability of the real world using a case study based upon implementing the EU Water Framework Directive and its impacts on rural land use, farm incomes and the water environment.</p> <p>Interactive display at Norfolk Show, 1st-2nd July 2009, forming part of a larger display by the Norwich Research Park, with the overall theme “How might farming change in the future?” Attended by farmers and members of the general public.</p>
<p>RES-229-25-0009 Smith</p>	<p>Demonstrating an Ecosystem Health Report Card: the example of the Upper Thurne Catchment, June, London. This workshop involved a demonstration to stakeholders and researchers of the Ecosystem Health Report Card, a tool that provides an easily understood ‘snapshot’ of the health of a catchment’s freshwater environment.</p> <p>Upper Thurne Catchment Stakeholder Workshop, Hickling Community Hall, Hickling, Norfolk, December 7, discussion of catchment modelling and use of a modelling tool with user-friendly interface to explore water-pollution-reducing land management scenarios with stakeholders. Audience of local stakeholders.</p>
<p>RES-229-25-0013 Mills</p>	<p>Workshop on <i>Regulating infectious disease in the 21st Century: The role of Government and stakeholders</i>; September 29, Reading Innovation Centre. The workshop explored the regulation of infectious disease of plants and animals. The overall aim was to learn how government’s role is currently being shaped, and how the other stakeholders interact with government and with each other. The 25 attendees included stakeholders with an interest in either plant or animal diseases.</p>
<p>RES-229-25-0008 Waterton</p>	<p>5 Loweswater Care Project workshops involving local community, stakeholders, and researchers.</p>
<p>RES-227-25-0002 Oughton</p>	<p>Dissemination meeting York May, involving individuals and representatives of the Angling Development Board, Angling Trust, Environment Agency, FWAG, NERFERAC, North York Moors National Park Authority, Northallerton Council Owners of fisheries lakes, hotel and accommodation businesses offering angling, River Esk Salmon and Pearl Mussel Advisory Body, River Swale Preservation Society, Social and Community Benefits of Angling Research Project – Substance, Manchester, Swaledale and Wensleydale Salmon and Trout Association, Wild Trout Trust</p>

<p>RES-227-25-0017 Morris</p>	<p>Joint delivery of Workshop with Farming and Biodiversity project on Stakeholder Analysis, June, London. Presentation of stakeholder mapping methods and software - about 25 conference attendees.</p> <p>Joint Foresight Land Use / Relu Workshop on Valuation , July 22nd, London. Shared understanding of valuation methods used in Relu projects. Report available: Posthumus, H., Morris, J., Angus, A., Graves, A. (2009). <i>Land Valuation and Decision Making</i>.</p>
<p>RES 227-25-0006 Stagl</p>	<p><i>Appraising and choosing more sustainable futures</i>, June, London. The workshop engaged researchers and stakeholders in appraising a set of more sustainable rural futures and explores choices for rural actors and policy makers. The futures used focussed on organic farming.</p>
<p>RES 227-25-0014 Irvine</p>	<p>Choice experiment held with deer managers and landowners, Kingussie, Cairngorms - 12 deer managers, January.</p> <p>West Sutherland Participatory GIS workshop. Can Managers inform models? Deer managers and local government agency staff, February.</p> <p>Public choice experiment pilot, Wheldrake, Yorkshire – 20 members of the public, February.</p> <p>Public choice experiment (part of ESRC Social Science festival), Monmouth – 20 members of the public, March.</p> <p>Public choice experiment (part of ESRC Social Science festival), Ullapool – 20 members of the public, March</p> <p><i>Participatory methods using pGIS</i>, June, London. A session introducing stakeholders and researchers to the principles, scope and potential of participatory geographic information systems for rural management and research, using real maps and models.</p>
<p>RES 227-25-0020 Karp</p>	<p>Growers meeting, January. Discussion of results with SRC willow and Miscanthus growers.</p> <p><i>Visualising rural land use futures: A demonstration of landscape visualisation techniques to display different possible land use futures</i>, June, London. This session included computer displays, posters and staff on hand to answer questions about land use futures and the effects of changing scenarios such as novel crops, e.g biofuels, and tourism.</p>
<p>RES-229-25-0025 Phillipson</p>	<p>Vets and Social Sciences Research Collaboratory, a strategic venture led by Andrew Donaldson to develop a new collaborative research agenda and projects between the Veterinary profession and social researchers. Two meetings held in May in Newcastle and November at the Royal Veterinary College in London. Audience included invited researchers, veterinary professionals and those involved in veterinary research, education and training.</p>
<p>RES-229-25-0016 Medley</p>	<p><i>Governance of Livestock Disease</i> workshop, 1st April, Imperial College, London. Members of the project presented and discussed their research with ~50 academics and policy makers interested in livestock disease.</p> <p><i>Animal Welfare workshop</i>, 6th May, Warwick HRI. This was to discuss what animal welfare entails, especially in the context of infectious disease control. The audience consisted of ~40 academics and stakeholders.</p> <p>Workshop on <i>Regulating infectious disease in the 21st Century: The role of Government and stakeholders</i>; September 29, Reading Innovation Centre. See entry for RES-229-25-0013</p>

4.6 Relevance of Research and Potential Impact

The projects are providing insights of relevance to key policy and practice domains. Over 220 new stakeholder links were established in 2009. There were 13 submissions to government consultations or inquiries, 131 occasions where advice and information was provided to businesses, 60 events focused on public participation, 103 occasions where stakeholders were visiting or attached to projects, and 11 new decision support tools, methods or protocols (see Table 4).

Table 4: Contributions to Policy and Practice in 2009

Strengthening of existing stakeholder-research links or networks	220
Establishment of new stakeholder-research links or networks	27
Submissions to government consultations or inquiries	13
Meetings/occasions where advice, data, or information was provided to policy makers	65
Meetings/occasions where advice, data, or information was provided to businesses	131
Businesses trained or advised	18
Policy makers trained or advised	24
Memberships of stakeholder boards or advisory groups	27
New decision support tools, methods or protocols	11
New material or technological advances (efficiency improvements, new technologies or materials, new processes)	1
Commercialisation: Spin-outs, licences, patents etc.	1
Number of stakeholders temporarily visiting or attached with project	103
Number of researchers work shadowing/placed with stakeholders	16
Number of interactions/events focused on public participation and engagement	60
Number of publications aimed at policy makers	16

94% of projects thought their research had the potential to improve public policies or public services, of which 75% judged their actual contribution in 2009 to have been moderate or high. While 65% of projects thought their research had the potential to improve the performance of existing businesses, of which 27% judged their actual contribution to this in 2009 to have been moderate or high. Finally, 59% thought the research had potential to deliver highly skilled people to the labour market, of which 60% judged their contribution in 2009 to have been moderate or high.

As well as the strategic influencing activity around the land use agenda and the management of animal and plant diseases (see Section 2), other examples of research impact during the year include:

Researcher scoops ESRC award to connect UK uplands and Kalahari drylands

Mark Reed, researcher on Relu's *Sustainable Uplands: Learning to Manage Future Change* project was joint winner of the ESRC Michael Young Prize, "rewarding the very best early career social scientists whose research has the potential to make a positive and far-reaching impact beyond academia". He has looked into the impact of changing environments on the people that live and work in the UK uplands and Kalahari drylands. The findings are important for semi-arid zones as land degradation and climate change are threatening future global food security, biodiversity and carbon stores. By focusing on anticipating, monitoring and adapting to future change in these different environments, the research can enable the residents to adapt effectively, to protect not only their livelihoods but also ecosystems that they often depend on.

Defra progresses flooding solutions proposed by local research group

The proposal for using bunds to mitigate flooding developed by the Ryedale Flood Research Group that brings together local residents and Relu researchers in the *Understanding Environmental Knowledge Controversies* project is now being taken forward as a Defra demonstration scheme. Defra will be testing the Flood Research Group's conclusions, and implementing them, subject to practical issues being resolved. The demonstration project is also exploring other opportunities in Ryedale, making use of the models developed by the group.

What's fair about the countryside?

Rural parts of Redcar and Cleveland could be the worst place to live in the English countryside, in environmental terms, according to researchers at the University of York. But it depends on exactly where you are, because Redcar and Cleveland also comes out as the most environmentally unequal, with some groups enjoying much more desirable surroundings than others. Relu researchers discussed their work on inequalities and fairness in rural areas with stakeholders from local government and other organisations at a Social and Environmental Inequalities in Rural England seminar in Northallerton, organised by Relu researcher Meg Huby and team. The project has identified and disseminated recommendations for policymakers who are aiming to address problems of disadvantage in the countryside.

Relu research supports uplands inquiry

The Commission for Rural Communities is conducting a major enquiry into the future for England's upland communities, and Relu researchers provided it with detailed evidence. The inquiry is jointly chaired by Stuart Burgess, the Prime Minister's Rural Advocate and Relu researcher Professor Michael Winter who is a CRC Commissioner. Four Relu projects were involved in a series of thematic seminars to inform the inquiry: *The Sustainability of Hill Farming*; *Social and Environmental Inequalities in Rural Areas*; *Sustainable Uplands - Learning to Manage Future Change*; and *Implications of a Nutrition Driven Food Policy*

for the Countryside. “Developing the English Uplands” a synthesis report for the Commission for Rural Communities draws on the work of several Relu projects.

Regional development agencies could play key role in rural land use

During the year Relu focused on the implications of its research for regional land use, a level of analysis largely missing from the ongoing national strategic review. Two major events with a regional focus took place during National Science and Engineering Week/Festival of Social Science. “Rural Land Use in the North” a joint Relu/Northern Rural Network seminar in York was chaired by Sir Don Curry and “Land for the Future” an equivalent event for the south west. Regional strategies could be the key to fresh thinking on rural land use, suggests One North East’s Rural Policy and Partnerships Manager Frances Rowe in the latest Relu Policy and Practice Note. All regional development agencies will be required to produce such plans by 2011 and they will set out a framework for the next 15-20 years. The Policy and Practice note was disseminated widely and is proving influential across the RDA network.

Researchers in forefront of Phytophthora fightback

Defra commissioned a review from Relu researchers in the lead into a major emergency programme to contain and eradicate *Phytophthora ramorum* and *Phytophthora kernoviae*. The funding was allocated to Clive Potter from Imperial College and team, who are working on the Relu project '*Lessons from Dutch Elm Disease in assessing the threat from Sudden Oak Death*'. This initiative looked at previous disease management actions in the run up to the interdepartmental eradication programme.

Tiny things matter in E coli research

Researchers Helen Gordon and Colette Jones on the Reducing *Escherichia coli* O157 risk in rural communities project produced a short film "Tiny things matter" which was shown at a Discovery Day at Satrosphere Science Centre in Aberdeen and is now available on YouTube. It was seen by 743 visitors from all over Aberdeenshire, including families with children who had experienced E coli and who shared their own stories with the researchers. Making the film became a research question in itself: how is E. coli O157 risk communicated using visual media? And became a practical tool to answer another of the projects research questions: who are the key stakeholder groups in relation to E. coli O157 risk?

A thousand schoolchildren spread the word on food hygiene

Researchers from Bangor University, working on the Relu project *Reducing E coli Risk in Rural Communities* took their research out to year 9-11 school students as part of a knowledge transfer programme co-founded by Relu and the Local Authority Research Council Initiative. Pupils from 15 schools in North Wales attended workshops that explore the biology of food-borne pathogens, the level of risk they pose to health and how we can manage our behaviour to reduce that risk. Over a thousand young people attended over the course of the autumn term.

Researchers contribute to long-term thinking on agricultural land use change

The land use model and valuation work being undertaken as part of the Relu *Modelling the Impacts of the Water Framework Directive* project is exciting policymakers at Defra. After an initial meeting in December Ian Bateman and Carlo Fezzi were asked to give a two day series of presentations and meetings in January which identified areas where the research could help decision making, including revision of agricultural policy and climate change and land use. Ian Bateman was a lead author on Defra's Guidelines for Benefits Transfer. The UK Government's Foresight Programme also visited the project and asked them to contribute to forthcoming work.

Scottish Government contributes E coli funding

Dr Colin Hunter and colleagues from the Relu *Reducing E coli 0157 Risk in Rural Communities* project were able to extend their research into mitigating the risk of gastrointestinal pathogens in private water supplies after securing £44,000 from the Scottish Government. The additional research "*Evaluation of Private Water Supplies (Scotland) Regulations 2006*" will investigate why there is a poor take up of government grants to protect private water supplies, using a synthesis of social and natural science approaches.

Audit report cites carbon offsetting initiative

A report from the National Audit Office on Natural England's role in improving Sites of Special Scientific Interest mentions the proposal from Relu's *Sustainable Uplands: Learning to Manage Future Change* project to use carbon offsetting to pay for upland regeneration that could improve the carbon storage capacity of the uplands. This is cited as a positive example of public-private partnerships.

History lessons for MPs

Research carried out by Relu Interdisciplinary Fellow Abigail Woods on the history and policies relating to foot and mouth disease, and the Relu project *Lessons from Dutch elm disease in assessing the lessons for sudden oak death*, led by Clive Potter, are both cited in the parliamentary POSTnote 323 *Lessons from History*.

Relu down under

On a two day visit to the Department of Primary Industries in Orange, New South Wales, Wyn Grant was asked to give an impromptu seminar to departmental staff on Relu and the *Governance of Livestock Diseases* project. He has been touring Australia to learn from Commonwealth and state experience of animal disease management strategies and animal welfare.

Would healthy eating be bad news for farmers?

The Relu project *Implications of a Nutrition Driven Food Policy for the Countryside* set out to examine how the UK could produce healthy foods that consumers wish to buy at prices they are willing to pay and to assess the impact on land use and the rural environment and economy. Their research shows that, if we assume that the percentage of imports will remain constant, many more acres of intensive production under polythene tunnels would be needed in order to produce the quantity of fruit and vegetables for the recommended healthy diet. At the same time, areas which are most suited to grazing animals rather than

growing crops would suffer a severe decline. This could mean unemployment and abandonment of upland areas. Smaller farms would disappear and be absorbed into larger land holdings. Upstream industries would suffer, particularly feed suppliers.

Landmarks for policy

As demands on rural land increase and we are all having to deal with the effects of climate change, we may need to take a fresh look at our priorities, according to Relu researchers at The Future of Rural Land Use conference, organised by Relu on 4 June and chaired by Baroness Young of Old Scone. Around 250 delegates from policymaking, commercial and third sector and academic organisations attended the conference at Congress House in London. A programme briefing paper “Landmarks for Policy” drew on the discussion and comments from this major conference and was distributed widely across policy and practice.

Food Standards Agency staff digest Relu research

The Food Standards Agency hosted a very successful and popular series of seminars for staff, focusing on Relu research. Researchers from *Managing Food Chain Risk; Reducing E coli Risk in Rural Communities; Comparative Merits of Consuming Vegetables Produced Locally and Overseas; and Sustainable and Safe Recycling of Livestock Waste* have all presented research results and forged some useful links with policy teams at the FSA. Senior Scientific Officer in the Chief Scientist Team PK Khaira who organised the seminars said: “I am really pleased to say that they have been great, we have had some really good attendance and colleagues have been really interested in keeping informed about the projects. There have been some good links made with policy teams ... It was clear that staff are keen to hear about relevant research that is going on in areas of interest.”

Can farmers afford to invest in animal welfare?

In his opening presentation, practising vet Martin Green from the University of Nottingham, told participants at a workshop on animal welfare on 6 May, that the requirement for cheap food had increased the demand on each cow, increasing the metabolic load five times for a high yielding cow, pushing them to the edge of what is sustainable. The workshop was organised by Relu’s *Governance of Livestock Diseases* project at Warwick HRI, with a range of presentations from leading authorities on the topic. Around fifty participants from the livestock industry, stakeholder organisations, government and academia attended the event.

Upland communities look ahead

Researchers from the Relu *Sustainable Uplands: Learning to Manage Future Change* project and project partners Moors for the Future were awarded £100,000 follow-on funding from ESRC to disseminate findings to people who live in and work in upland landscapes over the next year. The team will be developing workshops, video and written information materials and media engagement to get their messages across. Results from the project also fed into the Scottish Government’s “Realising the potential contributions of Scotland’s rural land to delivering sustainable economic growth” report to the Scottish Government’s Land Use Summit.

'Street View' takes to the hills

As part of a new Rural Digital Economy Hub at the University of Aberdeen funded by four research councils (EPSRC, ESRC, AHRC and MRC), Mark Reed and Steve Redpath from Relu's *Sustainable Uplands: Learning to Manage Future Change* project will be directing the development of a £1.5m online upland ecosystem service atlas that continuously updates in real-time from sensors sending data through mobile phone networks. Building on the success of Google Street View the team plans to develop 'Hill View' in their case study area, where users can click on maps to see 360 degree landscape views, rate views and add their own photos.

Lessons from Loweswater

Loweswater looks set to inform other local/institutional catchment management initiatives as well as national institutions' approaches to farmer-agency dialogue and exchange. The Relu project *Testing a Community Approach to Catchment Management* and the Loweswater Care Project – a new group created by researchers, locals and institutions as a result of the project - attracted attention from Ennerdale Water, Crummock Water and Buttermere and the South Cumbria Rivers Trust among others. In May, the project facilitated a workshop on the role of the community in lake management within the International 'Lakes for Living' conference at Windermere.

How healthy is your river?

How do you know how healthy your local river is, and whether it is improving? Relu researchers on the Relu project *Catchment Management for Protection of Water Resources* think they have come up with the answer - a simple report card, like the one a child brings home at the end of the school year. Consumers are paying for improving our rivers through their water bills, and water companies are gathering a mass of data from monitoring the physical, chemical and biological quality of the water in catchments. The report card draws this information together with simple graphics to indicate the overall ecological health of the river.

Work shadowing shines a light on policymaking

Wyn Grant from the *Governance of Livestock Diseases* project at Warwick University spent May working in the animal welfare team at Defra as part of the Relu work shadowing scheme. He was able to attend a wide range of meetings and was asked to write a paper on the topic of animal welfare labelling. "I would like to thank the Animal Welfare Team for their inclusive and welcoming approach," he said. "The experience was invaluable for me and for our project. This is the second time I have used the work shadowing scheme and I would strongly recommend it to other Relu researchers."

Relu project influences agri-environment policy

Relu's *Improving the Success of Agri-environment Schemes* has started to show how social and ecological factors interact in determining the effectiveness of agri-environment schemes, leading to great variation in ecological outcomes among farms. The researchers have held discussions with Natural England on possible implications for the advice and information it gives to farmers.

Rural data evidence for policy makers

The Relu Data Support Service carried out a review of holdings of the UK Data Archive for the Commission for Rural Communities (CRC), to identify datasets that have potential for use in rural analysis. The CRC is keen to develop its evidence base by using existing national scale survey data. Analyses of urban and rural data enable the CRC to provide advice and information for local, regional and national level policy makers on the needs of people living and working in rural England. One of their major outputs from this work is the biennial State of the Countryside report.

Research contributes to Foresight on future land use

Researchers from across the Relu programme are contributing to the Government's Foresight project on land use futures, and the land use challenges that the UK will face over the next 50 years. A paper compiled by Relu's land use analyst which draws on results from across the programme, finds that better communications with stakeholders and understanding of land managers motivation, and an appreciation of the variable scale for effective implementation of policies, could help to achieve multi functional land use.

Relu provides model for the science of marine spatial planning

Relu Assistant Director, Jeremy Phillipson, has given advice to the new Marine Management Organisation that is to be set up under the Marine Bill. There is interest in learning from Relu's integrated approach to research and analysis of rural land use, and possible parallels for marine spatial planning.

Regulating infectious disease in the 21st Century: who is responsible?

Animal and plant diseases are high in public consciousness and this is a critical time in the development of policy on disease management. A number of Relu projects are exploring this topic, and Relu PIs Graham Medley and Peter Mills arranged a joint workshop at Defra's Innovation Centre in Reading in September to explore the regulation and management of infectious diseases of plants and animals, posing the question who is responsible and why. A feature of the workshop was to encourage animal and plant disease researchers and stakeholders to learn from each other. The overall aim was to understand how roles and responsibilities are changing and with what potential consequences for disease incidence, control and costs.

Does rural living equal deprivation for lower income families?

Rural inhabitants are positive about their environments, but there are perceptions of inequality around problems such as affordable housing or accessibility for people on low incomes. But dependency on others, for example, relying on lifts to access services, can also be interpreted as fostering community spirit, much valued by local people. These topics were all discussed at an event in York, marking the culmination of Relu's Social and Environmental Inequalities in Rural Areas project.

Rethinking the role of farm veterinarians

The veterinary profession needs to rethink its relationship with farmers and with the government, and play a more positive role in ensuring food safety, according to an independent report to the UK government, the veterinary profession and the farming

industry, authored by Relu Director Professor Philip Lowe. “Unlocking potential, a report on veterinary expertise in food animal production” draws on the deliberations of a working group that brought together Defra, the Scottish Government, the Welsh Assembly Government, the Royal College of Veterinary Surgeons, the British Veterinary Association and the Royal Veterinary College. The report, which drew on insights from the Relu project *Science in the Field: Understanding the Changing Role of Expertise in the Rural Economy* has attracted a lot of attention in the veterinary and farming media and is already stimulating discussions within the profession.

Lessons from UK uplands for UN efforts to counter desertification

Lessons learned by the team working on the *Sustainable Uplands: Learning to Manage Future Change* project fed into the implementation of the United Nations Convention to Combat Desertification. The aim is to develop a knowledge management system for land degradation monitoring and assessment. The methodological framework developed within the project has been refined with follow-on funding from the EU.

Food production for healthier eating

Relu researchers took part in a workshop organised by the Food Standards Agency, "Future food production for healthier eating - opportunities and challenges". Christine Williams and Richard Tiffin (*Implications of a Nutrition Driven Food Policy for the Countryside*) from Reading University gave presentations at the workshop and several other Relu team researchers contributed to the discussions.

Will energy crops change the UK landscape?

Energy crops could help the UK to achieve carbon savings and reduce greenhouse gas emissions, but could they also change familiar landscapes, and what might they mean for wildlife and for the rural economy? Research carried out by an interdisciplinary team from Rothamsted Research, the universities of Exeter and East Anglia and The Centre for Ecology and Hydrology at Wallingford on the project *Impacts of Increasing Land Use Under Energy Crops* has investigated the wider implications of growing the biomass crops short rotation coppice willow and miscanthus grass.

Carbon accounting goes global

Gareth Edwards-Jones, who led the Relu project *Comparative Merits of Vegetables Produced Locally and Overseas* was awarded a scholarship by The Agricultural and Marketing Research and Development Trust, to spend 12 weeks in New Zealand investigating greenhouse gas emissions from horticulture and agriculture. He took the opportunity to engage in informal discussions with grower groups and the meat industry, to hold seminars with staff at the New Zealand Ministry of Agriculture and to speak at a range of national and international conferences. The World Bank has also become interested in this research and commissioned reviews on the impact of carbon labels on developing countries and a report on the footprints of some tropical commodities, which includes formulating some ‘development friendly rules for carbon accounting’.

Getting research results to farm advisors

The National Conference of the Farming and Wildlife Advisory Group held a session on the Relu Programme. Presentations were made from Relu's *Catchment Management for Protection of Water Resources, Sustainability of Hill Farming and Improving the Success of Agri-environment Schemes* projects. Workshops then explored the translation of the research results into practical advice for farmers.

Valuing ecosystem services

How can we put a value on all the benefits of land and ecosystem services? It's a problem that government and researchers struggle with every day. Nine Relu projects took part in a wide-ranging joint Relu/Foresight workshop on Land Valuation and Decision Making, organised by the *Integrated Management of Floodplains* project team in July. Their report fed into the national Foresight programme.

Chief Scientist welcomes contribution on land debate

Government Chief Scientific Adviser John Beddington welcomed the publication of "What is Land For? The Food, Fuel and Climate Change Debate" as the latest contribution to ongoing and crucial debate when he launched it at the Atrium, Westminster, in November. Professor Beddington said; "The changes we need to make are not just technical or scientific, they are to do with behavioural change, social change and economic change." The book includes contributions from researchers across the Relu Programme.

How could agri-environment schemes better promote upland biodiversity?

Agri-environment payments could be better designed to promote biodiversity, according to *The Sustainability of Hill Farming* project. The research findings suggest allowing payments to vary geographically, or with the amount of biodiversity benefit provided, and advocates improving ecological effectiveness by encouraging farmers to cooperate across land holdings.

Relu presents results to Chinese visitors

Relu's project *Modelling the Impacts of the Water Framework Directive* was invited to present findings to the Communist Party of China's Central Committee and the Chinese Ministry of Environmental Protection during their recent visit to the UK. The audience included Baolong Xia (tipped by many to become the next Chinese Premier), and Vice Minister of Environmental Protection Jian Zhou, as well as 28 provincial governors and mayors.

Researcher presents findings to Godstone Farm enquiry

In December Colette Jones from Relu's *Reducing E coli Risk in Rural Communities* project presented findings on farmer's and visitors' understanding of risk to the independent investigation of the Godstone Farm E coli O157 outbreak. The investigation will make recommendations for reducing risks of farm visitors contracting the disease, as well as improving the health protection response to outbreaks.

Deer project finds evidence on how stakeholders communicate

Research from Relu's *Collaborative Deer Management* project confirms that despite the wealth of scientific and policy related literature, face to face meetings and word of mouth remain the most common conduits for knowledge exchange across stakeholder groups at national, regional and local levels. Public agencies have a particularly important role in delivering practical guidance. This understanding of how information is exchanged needs to be incorporated into strategies for communication among policy makers, practitioners and researchers, say project researchers.

Would “greener” pest management benefit farmers and the environment?

For many years chemical controls have been the first line of defence against weeds, pests and diseases, and have proved very effective. But overuse can encourage resistance and affect biodiversity and water quality. EU regulations are also leading to the withdrawal of many pesticide products. Could Integrated Pest Management Programmes that encourage complementary use of chemical and biocontrols be the way forward? Relu project *Overcoming Market and Technical Obstacles to Alternative Pest Management in Arable Systems* has explored this question and made recommendations for policy that could encourage such an approach which have been widely disseminated.

Sustainable intensification

Bill Sutherland from Relu's project *Management Options for Biodiverse Farming* was among the members of the working group that produced the Royal Society report “Reaping the Benefits: Science and the sustainable intensification of global agriculture”.

Researchers contribute to Scottish debates on land use

Relu researchers took part in Scotland's Rural Land Use Summit and in the production of technical reports to feed into the Scottish Government's Land Use Project. Relu Director Philip Lowe and Assistant Director Jeremy Phillipson and PI Gareth Edwards-Jones served as Expert Reviewers of the background Rural Land Use Study reports that the Scottish Government commissioned and advised the Scottish Government on key cross-cutting findings from these reports for its synthesis report. The background reports drew on the findings of the Relu programme (a number of the authors had worked on Relu projects, including Vicki Swales, Mark Reed, David Miller, Kirsty Blackstock, Keith Matthews and Luiza Toma).

4.7 Press and publicity

Media coverage has continued to increase steadily during 2009 (see Annex B). Relu's research and activities have been covered regularly in professional, trade, and mainstream print and broadcast media, at both national and local level and there has also been a growth in coverage on internet news sites, discussion forums and blogs. A press release issued in May about the “Implications of a Nutrition-Driven Food Policy for the Countryside” was widely covered, making it onto BBC Radio 4's peak time news programme “Today”, as well as featuring on “Farming Today”. Publication in August of the “Unlocking potential” report on farm vet services, authored by Relu Director Philip Lowe, also attracted particular attention, tying in well with the current crop of animal and plant disease research projects.

4.8 Key Items of Expenditure

Key items of expenditure include: £5.5k on the workshop *Rural Land Use in the North of England: Future Challenges*; £49k on the conference *The Future of Rural Land Use*; £19k on Briefing Papers/Policy and Practice Notes; £5.6k on work shadowing and visiting fellowships; £5.4k on national stakeholder forums; and £3.2k on UK networking/liaison meetings.

5. Progress of Projects

64 projects (including 34 small seed corn projects and 30 large research projects), 16 PhD studentships and 5 interdisciplinary research fellows started prior to the reporting period. Of these all seed corn projects, 7 large research projects and 1 studentship were completed prior to the reporting period. 9 research projects funded under the first, second and third calls completed their work in 2009 as well as 3 studentships.

A group planning meeting was held with researchers and Principal Investigators from 7 Relu projects funded under the third call. In addition, meetings and individual site visits were conducted with 2 Second Call and 4 Third Call projects and interdisciplinary research fellows. Expenditure on individual project visits and planning meetings amounted to £2.7k.

5.1 First Call Projects on Sustainable Food Chains

RES-224-25-0041, Prof H Buller, University of Exeter

01 Jan 05 - 30 Dec 07

Eating Biodiversity: An Investigation of the Links between Quality Food Production and Biodiversity Protection

This project investigated the links between quality food production and biodiversity protection by looking at the benefits of grazing farm animals on natural grasslands to farm businesses, product quality, ecological management and human health.

The project's findings were summarised in the 2008 Programme Annual Report.

RES-224-25-0044, Prof G Edwards-Jones, University of Wales, Bangor

01 Dec 04 – Mar 08

Comparative Merits of Consuming Vegetables Produced Locally and Overseas

The project posed the question 'Which is best; to produce fruit and vegetables in the UK, or to import produce from overseas?' Researchers investigated different aspects of growing local food, including the environmental impact, the emission of greenhouse gases (GHGs) and compared these with importing produce from Spain, Kenya and Uganda. They also sought to understand how important the localness of vegetables was to consumers.

The project's findings were summarised in the 2008 Programme Annual Report.

RES-224-25-0048, Prof WP Grant, University of Warwick

01 Nov 04 – 31 Oct 07

The Role of Regulation in Developing Biological Alternatives to Pesticides

Fungi that kill insects are naturally widespread in the environment and can be used to control insect pests of crop plants. Fungal bio-pesticides have been produced in the past, but little work has been done on their environmental sustainability. The project looked at the potential for these and examined the rules governing the introduction of bio-pesticides

in the UK, Europe and the USA to assess whether changes in regulations might encourage a move towards bio-pesticide use.

The project's findings were summarised in the 2008 Programme Annual Report.

RES-224-25-0066, Dr DC Little, Stirling University

03 Jan 05 – 31 Jan 08

Warmwater Fish Production as a Diversification Strategy for Arable Farmers

This project aimed to develop technical guidelines for a sustainable system for tilapia culture as a potential diversification strategy for farmers in the UK. It involved a comprehensive analysis of the practicality, sustainability and viability of the system through laboratory and on-site investigations, as well as trials with commercial partners.

The project's findings were summarised in the 2008 Programme Annual Report.

RES-224-25-0073, Prof B Traill, University of Reading

01 Apr 05 - 30 Apr 08

Implications of a Nutrition Driven Food Policy for the Countryside

This project drew on economics, psychology, ecology, crop science, animal science and human nutrition to assess the potential for improvements in the nutritional quality of soft fruit, lettuce, and meat and milk, and the possible implications for both human health and the countryside.

The project's findings were summarised in the 2008 Programme Annual Report.

RES-224-25-0086, Dr D Chadwick, IGER, North Wyke

01 Feb 05 - 30 Jun 08

Sustainable and Safe Recycling of Livestock Waste

This project evaluated the changes needed in management practices to limit the risk of pathogen transfers from grazing livestock, manures and other farm wastes to water courses. The effect of these changes on the economics and practicalities of farming were investigated as well as the 'knock-on' effects for local communities and industries reliant on clean water supplies.

The project's findings were summarised in the 2008 Programme Annual Report.

RES-224-25-0090, Prof R Shepherd, University of Surrey

01 Feb 05 – 31 Jul 08

Managing Food Chain Risks

Too often in recent crises in food and agriculture (e.g. BSE, E. coli, Foot and Mouth Disease) a narrowly technical perspective has been taken: the social, political and economic issues have been addressed too late in the process with the result that many

people lose confidence in the authorities' management of the situation. The project therefore developed and tested method to incorporate the thinking and values of stakeholders into the scientific modelling of food chain risks.

The project's findings were summarised in the 2008 Programme Annual Report.

RES-224-25-0093, Dr AS Bailey, Imperial College London

01 Feb 05 – 31 Jan 09

Overcoming Market and Technical Obstacles to Alternative Pest Management in Arable Systems

This project investigated both the efficacy of alternatives to chemical pesticides and issues for producers in switching to them. Two alternatives were explored: habitat manipulations to encourage predators and parasites and semiochemical odours (natural smells) to manipulate predator distribution.

Much research in the recent past has demonstrated the potential viability of biologically based measures farmers can use to help control insect pests which could reduce pesticide use in commercial agriculture. Likewise, work across a range of scientific disciplines has drawn attention to the potential harm that pesticides can do, while environmental economists have shown that the public are willing to pay to see threats reduced. This research investigated reasons why much of the UK field crop agricultural sector still relies heavily on conventional toxic pesticides for pest management. Two alternative approaches to the control of cereal aphids, a herbivorous pest of wheat crops, were used as a case study of how to conduct Integrated Pest Management Research at a complementary range of scales. Numbers of cereal aphids have been low in recent years but they are still a target of much insecticide use. Previous research has suggested that both conservation biological control (CBC) to promote predation and parasitism of pest populations and the deployment of nontoxic signalling chemicals (semiochemicals) can be used by farmers to boost the effect of natural population control mechanisms and limit aphid pest infestations. The techniques work in differing ways, CBC is said to boost populations of beneficial control organisms in the farmed landscape, while semiochemicals have been shown to help farmers direct naturally occurring beneficial organisms toward infested cropped areas. The project showed that CBC can, and is, providing background control of cereal aphids but this function can be improved by manipulating the environment. Semiochemicals can attract natural enemies into crops and reduce pest populations but these effects were difficult to measure in this study because of the very low levels of aphids present. A valuable new finding is that certain wheat varieties respond better to plant activator treatments than others.

Work to address the economic barriers to commercial use of these, and other, pest management techniques has highlighted the importance of government policy in the adoption process. The research reacted to concurrent policy changes in the UK which saw farmers implement a wide range of landscape changes on their farms. While these Agri-environment Scheme (AES) programmes are not specifically aimed to promote biocontrol of pests, AES options can produce habitats conducive to the promotion of biocontrol,

although the removal of explicit reference to crop management with the withdrawal of Crop Protection Management Plans (CPMPs) is a setback. Researchers discovered that farmers do appear to be implementing a high proportion of practices and land uses which can be beneficial for biocontrol. They also found that farmers appeared to be combining these practices in coherent ways which could be considered as functioning IPM portfolios, including one that does appear to be associated with lower rates of insecticide use. One important outcome of the joint work and improved understanding of biocontrol processes and functions, and farmer adoption incentives is that we are now better placed to help reshape AES so that it explicitly promotes IPM.

5.2 Second Call Projects on People and the Rural Environment

RES-227-25-0001 Dr K Hubacek, University of Leeds

01 Mar 06 – 31 Oct 09

Sustainable Uplands: Learning to Manage Future Change

The aim of this project was to combine knowledge from local stakeholders, policy-makers and social and natural scientists to develop approaches to anticipate, monitor and sustainably manage rural change in UK uplands. The project started by identifying the current needs and aspirations of policy-makers and those who work, live and play in three large and very different upland case study areas (Peak District National Park; Nidderdale AONB and several catchments in Galloway, Scotland).

Information about drivers of change and their potential effects on system dynamics was obtained from stakeholders and researchers, and used to develop qualitative scenarios, while subsequent modelling work provided depth, detail and feedbacks to enhance accuracy and utility of the scenarios. By using model outputs as heuristics to support stakeholder learning and decision-making, this work helps us devise and explore adaptation strategies for coping with rural change in UK uplands.

As well as large numbers of publications and reports to government, researchers are engaged in major knowledge exchange projects that follow on from and build on the work. Contributions to the policymaking process included commissions from the Commission for Rural Communities to feed into their Inquiry into the Future of England's Uplands, a review on The Future of the Uplands for the Foresight Land Futures project, submissions to the Scottish Government's Pack Inquiry and to Natural England's Upland Futures Project, and a case study based on work in the Peak District National Park for the Scottish Government Rural Land Use Study. Responses were submitted to: the Consultation on a Soil Strategy for England; Review of the Heather & Grass Burning Code; and Scottish Government Inquiry into the Future of Agricultural Support in Scotland.

The methodological framework from the project has been used as the core of a nine million Euro EU-funded project working in degraded drylands, and this also led to two members of the team being invited to lead authorship of an IPCC-style synthesis of current research and to make recommendations to the last Conference of the Parties to the UN Convention to

Combat Desertification. A team member is also a contributing author to the Mountains, Moors and Heath chapter of the National Ecosystem Assessment.

Their work with other stakeholders has involved inputs to numerous strategies and reviews carried out by the third sector, a commission from Yorkshire Water to carry out research in Nidderdale on land management impact on water treatment costs and working with them on carbon mapping, working with Premier Waste plc and United Utilities to devise more effective ways of reducing water colour from upland catchments and progress towards a corporate social responsibility scheme for restoring degraded upland habitats and carbon offsetting.

RES-227-25-0002 Dr E Oughton, Newcastle University
01 Mar 06 – 31 May 09
Angling in the Rural Environment

Angling is increasingly important as the rural economy moves from being dominated by production (agriculture, forestry), to being dominated by consumption (leisure, tourism). But rivers are under further pressure from other human activities, so their ability to sustain flora and fauna may be at risk. This project looked at the case studies of the Rivers Esk, Ure and Swale and analysed the complex relationships between river, fishing, biodiversity and institutions of governance and practice. Results of the research are relevant to policy on integrated development of the rural river environment.

The organisation of fishing involves clubs, societies and commercial still waters. The research has found that planning of club activities tends to be carried out by a limited number of people through personal relationships. Fiscal probity and legitimacy is maintained but ‘things get done’ and even within national organisations the most effective forms of communication are still found to be informal. There is government pressure for a single body to represent angling interests and after much negotiation the Angling Trust was launched in January 2009. Angling is, however, an intensely individual activity and in the absence of a perceived threat very few anglers have joined. The official position of the Environment Agency requires that local officers spend time and effort interpreting national plans in local circumstances. Although the Environment Agency consults with anglers there was no clear evidence that the results of public consultation are made widely available through the organisation, and greater consideration needs to be given to consultation.

The research found that it is difficult to count, or even identify anglers and looked at how different organisations do this. There is great diversity in understandings of the river environment and little attention being paid to “lay knowledge” even though this has later confirmed new scientific findings in some instances. Anglers’ understandings are formed primarily through ‘watercraft’, that is, the practices of learning of how to fish. Their experience influences how they think about environmental change, especially climate change and prey-predator relationships and therefore their support for initiatives to react to these changes. This source of information should be more valued. Researchers considered how anglers put their environmental understandings to work. Management of rivers for angling is highly fragmented with uncertain consequences, often taking place outside

official scrutiny and scientific debates. Such water management requires more extensive negotiation across a wide range of partnerships.

The project also considered whether angling is commercially important for rural areas. There have been developments of new, commercial still waters that provide out of season angling at lower costs in both money and organisational time and more potential profit for entrepreneurs. But overall, for many small businesses, angling makes up only one part of income and in the Swale and Ure catchments the average spend on fishing is small. So there are no large financial gains to be made comparable to the salmon fisheries, but income from angling business may be important when other household income falls. It is important also to note that there are additional social gains: many of these very small businesses offer social well being and environmental benefits. Because angling business incomes are relatively small, however, angling seems to be invisible in the planning and economic development in this area. In order to realise all of the benefits, angling businesses will have to co-operate and work together to gain support from local development agencies.

But care does need to be taken to avoid the more negative environmental impacts of any growth in angling. The increase in numbers of still waters brings risks to freshwater catchments from stocking (including non-native species), fish movements and disease. Eighty percent of still waters surveyed (n=404) contained non-native species. Researchers found lack of due care and some cases wilful neglect of regulations. The high frequency of sites with stocked fish close to watercourses suggests that escape during floods is a significant potential problem. Wider education and more effective implementation is needed with regard to non-native species and disease.

RES-227-25-0006 Dr S Stagl, University of Sussex

01 Jan 06 – 30 May 10

The Effects of Scale in Organic Agriculture

This project investigates what causes organic farms to be arranged in clusters at local, regional and national scales and assesses how the ecological, hydrological, socio-economic and cultural impacts of organic farming may vary due to neighbourhood effects at a variety of scales. It will map out some alternative scenarios for future growth of the organic sector in the UK, and evaluate the potential positive and negative effects that different patterns of organic cultivation might have, at a variety of scales, in the future.

No annual report received

RES-227-25-0010 Dr J Bullock, CEH Dorset

01 Oct 06 - 31 Sep 11

Improving the Success of Agri-Environment Schemes

The study is considering how well wildlife habitats are created under agri-environment schemes. So far these schemes have had limited effects, possibly because of a combination of less than optimal management by landowners and the inability of plants and animals to colonise new habitats, either because they are already so rare, or because of obstacles in

the landscape. Researchers will examine the effects of training on farmers as well as the availability of different species and habitat types in the wider landscape, to enhance the biodiversity benefits of agri-environment schemes.

Winter bird surveys for the last baseline survey were completed in February and all ecological field data from the previous years entered onto the Oracle database. The social scientists transcribed and carried out preliminary analyses on the first interviews and the farm visits.

The project has started to show how social and ecological factors interact to determine agri-environmental success. The researchers have begun to establish typologies of the farmers in terms of perception of difficulty in carrying out management, experience in environmental management and their motivations in taking on agri-environmental management. Strong structuring according to these factors is emerging and great variation in the ecological outcomes among farms. Thus the existing data will, in the next stage of analysis, provide insights into the causes of social and ecological variation.

The researchers have met with the Natural England Evidence Team, who have concerns about delivery of improved information to farmers undertaking agri-environment schemes. The great tension emerging is between effectiveness and cost, and a follow up will be held in 2010.

RES-227-25-0014 Dr J Irvine, Macaulay Institute
01 Feb 06 - 31 Dec 09
Collaborative Deer Management

The management of deer provides a useful case study for the use of ecological resources in the countryside, because there are so many associated costs and benefits. This project investigated how well people involved in deer management work together and how this can be improved so that the costs of managing deer are minimised and the benefits maximised.

Deer illustrate problems around ownership of environmental resources because they offer both societal benefits and drawbacks. Wild deer are not owned though the land they occupy is. As deer move around, they usually cross ownership boundaries and thus provoke potential conflicts between neighbouring owners who have differing management goals. The project offered three key advances. First, the team developed a choice experiment, where people are offered choices between sets of rival scenarios. Carrying out these experiments in sites across Britain allowed the team to make systematic comparisons of deer managers' views and to understand the extent of obstacles to collaboration. Collaboration was usually resisted on grounds that managers valued their independence and financial incentives towards collaboration were generally seen as too unreliable to compensate for the perceived loss of independence. Secondly, they developed new techniques for collaborative mapping. Managers' problems with collaboration are often worsened because of conflicting interpretations of evidence. The team developed techniques for using Geographical Information Systems to explore conflicts between landowners. These techniques tended to diminish the conflicting interactions among

stakeholders and had the additional benefit of helping to improve the quality of ecological models by bringing local expertise to bear on the modelling assumptions. The team also developed new techniques for widening the pool of stakeholders. The project recognised that recent attempts to stimulate collaboration between stakeholders tended to impose quite tight limits on the kinds of people assumed to have a stake. Overall, the research showed that techniques from economics can be used to give a much more precise sense of the extent of obstacles to collaboration and thus allow appropriate incentives to be developed. Collaboration can often break down because people pursue interminable arguments. Novel geographical techniques can be used to help to cut short these arguments by helping participants to agree about what they know, rather than focusing on what they don't, hence helping to build trust and understanding. Finally, the way that collaboration is conventionally structured means that insiders are often given a voice to the exclusion of outsiders. Social research techniques can be used to identify apparent outsiders who may be able to improve the quality of the collaborative process. Though these proposals were applied to deer, they are likely to be relevant in other scenarios and should be considered in other cases of disputed or rapidly changing ecological resource management.

RES-227-25-0017 Professor J Morris, Cranfield University

01 May 06 – 31 Mar 09

Integrated Management of Floodplains

This project explored changes that have occurred over the past 40 years, in areas which were 'defended' under flood defence schemes. Case studies of selected schemes, first studied by the research team in the early 1980s, show how land use has changed in the meantime and the consequences for livelihoods and the management of flooding problems. The project is helping to inform decisions about the future management of floodplains.

A comparison of the results of the farm survey carried out in this project and those carried out in the 1980s showed that although the land use changed significantly following the land drainage improvement schemes, there has been little change in land cover since the 1980s. There has, however, been a tendency towards less intensive land management, for example a shift from dairy to beef or from root crops to cereals, that reflected national trends in response to changing policies and market conditions.

Detailed ecological data from 8 sites described existing habitats and identified potential for enhancement. Seven alternative methods to assess the value of nature-conservation interest were evaluated. Some of these methods use predefined targets for biodiversity, some use preferences expressed by stakeholders, and others use monetary values. As a result, recommendations were made on which methods suit particular purposes and conservation priorities.

The costs to agriculture of the severe summer 2007 floods in England, based on loss of output, extra costs and damage to property were estimated at £50 million on 42,000 ha of agricultural land flooded.

The development of a quantitative ecosystems framework to assess the relative performance of alternative land use scenarios was an important output of the research. Analysis of 6 alternative scenarios across all study sites confirmed potential synergies and conflicts amongst different types of (ecosystem) benefits.

There is typically conflict between agricultural production and environmental outcomes, such as water quality, greenhouse gas balance, habitat and species. Other relationships, however, are less obvious and may challenge commonly held beliefs. There is for example, potential synergy between short duration flood storage (to deliver benefits to urban areas downstream) and agricultural production. Contrary to popular belief, there is potential conflict between flood storage and biodiversity, which can be extremely sensitive to flooding and yet requires high ditch and water table levels that use up potential flood storage capacity. ‘Making space for water’ - by reconnecting rivers with floodplains - may not provide the degree of control required by flood managers in some circumstances. These results can provide a basis for quantifying such relationships, recognising the importance of local conditions. They can also help inform discussion amongst key stakeholder groups that have interest in, and influence over, the management of floodplains.

It is clear that the management of lowland floodplains is a product of policy interventions and stakeholder interests that have promoted particular objectives at different times. An ecosystems framework of the type developed here can support the integrated, joined-up approach to the management of floodplain land (and natural resource management in general) which is now a dominant policy theme. It can also help to design, promote, fund and reward new forms of land management that deliver intended outcomes in the most cost effective and socially acceptable ways, making the link between the valuation of land and water services in floodplains and their governance.

RES-227-25-0018 Professor S Whatmore, Oxford University

01 Mar 07 – 30 Jun 10

Understanding Environmental Knowledge Controversies

This project studies flooding and water pollution as pressing rural land management problems that are controversial among scientists and the public, especially those directly affected. To explore these environmental ‘knowledge controversies’, the project develops cutting edge tools and approaches that pinpoint which practices result in which impacts, and account for how environmental science is produced, used and disputed. The project sets out to develop a different way of “doing science” that involves social and natural scientists working closely together, and with local people, in ‘Competency Groups’. The team is evaluating this approach and identifying lessons for other kinds of controversial areas of science (e.g. nanotechnology and climate science).

Phase 3 of the project, centred in Uckfield in Sussex which involved the project team working with a number of local residents is now complete and project team members returned to Uckfield in December 2009 to demonstrate a bespoke hydrological model to the local residents and to a wider audience of the members of the Uckfield Flood Forum and local councillors.

Work in Ryedale continued, as, during work in Phase 2 of the project, Defra issued its second call for demonstration projects concerned with the impacts of land management upon flood risk. Pickering Beck is now being developed as a Defra demonstration project that will take forward the work of the Ryedale Flood Research Group in relation to bunds, testing the Group's conclusions, and implementing them subject to practical issues being resolved. The demonstration project is also exploring other opportunities in Ryedale, making use of the models developed by the Group and also through the case-study work with local people in Uckfield.

RES-227-25-0020 Dr A Karp, Rothamsted

01 Jan 06 - 31 Sept 09

Impacts of Increasing Land Use Under Energy Crops

If more land is to be converted to energy crops, then we need to know more about the implications of climate, soil and water availability, and the possible impacts of such crops on the environment, social acceptance and rural economy. Using the East Midlands and South-West regions as study areas, this project has reviewed current knowledge and conducted new state-of-the-art social, economic, hydrological and biodiversity research to develop an integrated scientific framework for Sustainability Appraisal (SA) of the medium and long term conversion of land to energy crops.

Biomass crops, such as short rotation coppice (SRC) willow (*Salix* spp) and *Miscanthus* grass (*Miscanthus x giganteus*), have strong potential for sustainable bioenergy production. They are fast growing, produce large yields from low inputs of fertilisers and pesticides, and show high energy gains and greenhouse gas reductions in life-cycle analyses. However, they are quite different from conventional arable crops. They are grown for up to 25 years, are harvested in winter/early spring, in the case of *Miscanthus* annually and for willow, in 2-3 year cycles. They are also very tall (3-4 m), dense and may attract different wildlife. Large expansion would, thus, constitute a major land-use change and this has raised concerns over possible social, environmental and economic impacts. Two contrasting farming systems were chosen for this study: the arable cropping dominated system, represented by the East Midlands; and a grassland-dominated system, typified by the South West of England.

The constraints mapping exercise identified circa 4.7 million hectares of land suitable for growing biomass crops without conflicting with nine environmental constraints. When further restricted to Grade 3 or 4 land, which is not the most productive for food, this reduced to just over 3 million hectares (23.9% of England). When combined with yield mapping, the results indicated that areas with the highest biomass yields co-located with important food producing areas. Nevertheless, investigation of a scenario involving energy crop planting on 350,000 ha (a UK Biomass Strategy aspiration for 2020) suggested that this could be achieved without requiring higher grade land, and so would not necessarily greatly impact on UK food security. A questionnaire survey found that most respondents (>75%) felt that both *Miscanthus* and SRC would fit into the landscape 'very well' or 'reasonably well' and over 60% said they would not mind seeing the crops within the view

from their home, although this percentage halved, when a biomass power station was also shown. In the focus group meetings the most commonly expressed concerns related to increased lorry movements, loss of view and the ‘food versus fuel’ issue.

Overall, the water use of the biomass crops, when grown in the UK, is likely to be higher than permanent grass and winter wheat. The water use of *Miscanthus* is higher than that of willow SRC, approaching that of some deciduous woodlands, but less than evergreen woodlands. Counts of the biodiversity plant indicators were generally significantly higher in SRC willows compared with *Miscanthus*, and significantly greater in both biomass crops than in cereals. Biomass crop planting has taken place within a very wide range of farming systems and farmer decision-making has been driven by diverse factors. The low returns of biomass mean it is unlikely to be the dominant enterprise on most farms, except in special circumstances such as where the farmer is looking for a reduced commitment of time and effort. However, the predictability of returns may be very attractive as part of a risk management strategy in an era of greater market volatility.

Early indications from analysis of the SA framework based on environmental indicators suggest that sustainability implications are enhanced where small scale CHP is the biomass end use in both the East Midlands and South West regions. Preliminary results also suggest that small-scale planting is preferable in the East Midlands, whereas large-scale planting can be better accommodated in the South West. Results are being used by Natural England to revise the Energy Crops Scheme and by DECC/Defra to advise policy on energy crop plantings and were used by the NFU as evidence in the Campaign for the Farmed Environment.

RES-227-25-0024 Professor I Bateman, UEA

01 Jan 06 - 30 Apr 10

Modelling the Impacts of the Water Framework Directive

The project is developing a hydrological-economic model to assess the costs and benefits of changing farming practices in the Humber catchment area in order to produce a healthy river environment with good amenity value in line with the European Water Framework Directive.

A key achievement of the year was the completion of linkages between all of the various modelling strands in the project. This links the land use module (which predicts changes in the pattern of land use and consequent farm gross margin in £/ha as a result of changes in environmental, market and/or policy drivers) with diffuse pollution impacts upon the water environment (including nutrients and faecal matter) through to the consequences for water ecology (e.g. changes in Chlorophyll) and on to the impacts upon water recreation demand and associated values.

Among the most important findings has been the production of estimates of the financial cost to farms of a variety of measures for implementing the Water Framework Directive (WFD). These were supplemented by cost-effectiveness measures for reducing phosphate and nitrate leaching. Subsequent work significantly extended this methodology to allow for

the in-stream processes which determine nitrate load and concentration levels within rivers. Work into predicting land use and policy response for England and Wales has been highly praised by the target policy community, leading to considerable additional funding from Defra to facilitate work of common interest concerning fertiliser usage by different agricultural enterprises. Models have been developed to predict spatial variations in concentrations of Faecal Indicator Organisms (FIOs) and within-catchment fluxes at low and high flow under present conditions, and to investigate the likely effects of land use change, including measures directly aimed at reducing FIO concentrations. Extensive data collections have been assembled to undertake highly detailed, spatially referenced modelling of the multiple factors that drive land use change in Britain. These data include over 50,000 farm years of records from individual farms and a 35 year time span of the pattern of land use across the country. These were complemented by detailed data on environmental and agro-climatic factors such as soil characteristics, temperature, rainfall, etc. Full time series of how prices and subsidies have changed over that period have also been assembled.

The project has produced some striking methodological innovations. The researchers developed the first multinomial logit application to modelling land use in the UK, combining time series and cross sectional data and climatic variability data to simulate the effects of climate change upon land use. This is highly relevant to WFD implementation and reform of the Common Agricultural Policy. New survey techniques have been designed for conveying environmental and use opportunity in the form of a 'water quality ladder'. A novel approach was used to disentangle use and non-use values from a mixture of revealed and stated preference data regarding improvements in the quality of open access water. The spatially explicit methodology gives the decision-maker the unique ability to see where the most social benefits would be achieved from spending public money.

Impact from the research has been considerable and this year has seen extensive and ongoing collaborations with Defra and the Environment Agency. The project delivered major reports to both Defra and the Government Office for Science/Foresight Land Use Futures project. The work also led to the appointment of PI Prof. Ian Bateman as Head of Economics to the National Ecosystem Assessment (NEA).

RES-227-25-0025 Professor W Sutherland, University of Cambridge

1 Feb 06 - 31 Dec 09

Management Options for Biodiverse Farming

The variation in management of farms is a key determinant of differences in biodiversity. This study is linking together models of the dynamics of weed and bird populations and farm management decision-making. These will then be applied to help us to understand how the variability in arable farming practices, and intensity affect biodiversity and farm livelihoods. The work will be used to determine the most effective ways of targeting agri-environment schemes.

End of Award report due soon.

RES-227-25-0028 Professor P Armsworth, University of Sheffield
01 Jan 06 - 31 August 09
The Sustainability of Hill Farming

Taking the Peak District as a case study, the project examined how hill farmers are likely to respond to major changes in the Common Agricultural Policy and the consequences for upland landscapes and bird biodiversity.

A range of coupled farm-scale ecological and economic models have been constructed within the same parameters as socioeconomic and ecological survey data on a panel of Peak District hill farms. These models have been used to examine the effects of particular policy shifts on hill farms.

The project has used choice experiments and valuation workshop methodologies to assess what people wanted from the hills and whether they would be willing to pay to achieve that vision. Key findings show that visitors to the Peak District National Park would be willing to pay an additional parking fee to support conservation of key habitats, especially for moorlands, but residents of towns surrounding the National Park would not be willing for local taxes to increase in order to support further conservation efforts. Estimates of people's willingness to pay for environmental goods are affected when respondents are taken to visit exemplar sites, given time to reflect on their choices, or provided with expert witness testimony.

The ecological economic models enabled researchers to examine how agricultural subsidy schemes can be designed more effectively to provide environmental benefits. They have been able to derive an estimate of the "true" private costs of providing environmental benefits and from it of the most cost effective policy design for delivering particular conservation benefits. Ecological survey results for moorland fringe habitats demonstrate an important role for socioeconomic characteristics of farms in influencing species richness patterns for birds across properties. An analysis of historical data sources for the Peak District relates the history of intensification and specialisation of agriculture in the region to very dynamic patterns of habitat change and to stakeholder perceptions of historical changes.

The farm models, ecological and economic data all demonstrate strong subregional environmental signals. The research has shown that, as a consequence, policy impacts will be different in different areas and the team has been analysing how policies can be designed to reflect heterogeneous conditions experienced by farms.

5.3 Third Call Projects on the Management of Animal and Plant Diseases and on Sustainable Rural Planning

RES-229-25-0004 Dr M Huby, University of York

01 Aug 07 – 31 Jul 09

Social and Environmental Inequalities in Rural Areas

This project examined patterns of social and environmental inequalities in the distribution of social, economic and environmental goods and services. Having identified inequalities, researchers considered whether they can be regarded as unfair or unjust including the judgements of local residents.

The project has investigated the nature and extent of social and environmental inequalities and injustice in rural England addressing the questions:

- How can we measure rural spatial inequalities in (a) socio-economic and (b) environmental-ecological characteristics of small-scale areas of England?
- How can inequality measures inform our understanding of the distributions of social and environmental deprivation in rural England?
- How do rural residents experience the kinds of inequality identified by the research, and what types of inequalities do they perceive as inequitable?
- Are there identifiable areas of rural England where the potential for environmental and social inequity suggests a need for policy intervention?

The project worked closely with the Environment Agency and the Commission for Rural Communities, with meetings and seminars to discuss datasets, and researchers spending time with the CRC on work shadowing. Inequality in social, economic and environmental conditions has important implications for individuals or groups of people experiencing its negative effects, but also for society as a whole. In urban areas, poor environments are associated frequently with deprivation and social exclusion. Where the unequal distribution of social and environmental goods is considered unfair, it constitutes social or environmental injustice. This project has quantified inequalities in social and environmental conditions and identified those areas where inequalities are greatest. It has also enhanced understanding of perceptions of inequality and injustice in rural areas. The work shows how rural policy can be refined and targeted to tackle these multi-faceted problems in the most appropriate way for the benefit of society. Researchers have developed a major dataset that encompasses 32 variables relating to economic activity, income and wealth, health and wellbeing and ecology, land and environment.

Interviews with rural residents revealed that people recognise that rural areas offer limited opportunities for recreation and local services, and a lack of affordable housing. These disadvantages can be offset by aesthetic benefits and a strong sense of community but the heavy burden on local communities to provide essential services on a voluntary basis is perceived as unfair. Inequalities become unfair when people have no choice or when political decisions are made without taking account of local concerns. Market forces are often seen to exacerbate local problems. Information on the absolute level of social and environmental factors, together with consideration of the inequalities in distribution, can

inform the direction of policy, as well as the appropriate scale and type of intervention needed. For example, in addressing problems of disadvantage:

- High priority rural areas are those areas with high levels of disadvantage and high inequality in disadvantage, such as the north-east and the south-west
- In such areas, a focus on specific pockets of disadvantage would be the most efficient approach

Where there is a high level of disadvantage and high inequality in inaccessibility, policy must be designed to take account of varying levels of accessibility to services.

RES-229-25-0005 Dr C Potter, Imperial College London

03 Sep 07 – 30 Aug 10

Lessons from Dutch Elm Disease in Assessing the Threat from Sudden Oak Death

The aim of this research is to examine the threat to trees and woodlands in the rural landscape from Sudden Oak Death (SOD) in the light of experience of the Dutch Elm Disease (DED) outbreak of the 1970s. The work brings together historical research methods to investigate memories of DED amongst experts and members of the public, with modelling tools to map the likely spread and impact of SOD.

This work has generated extensive and very rich data sets. Researchers have substantially scoped the nature of the current outbreak, mapped relevant stakeholders and completed a wide range of semi-structured interviews with key actors plus a 400 visitor survey in 7 National Trust woodland gardens in the SW of England already infected with ramorum blight. This has enabled the first ever integrated analysis of the DED outbreak, bringing together modelling work with a multi-dimensional historical analysis of the main players, their decision trails and the institutional context. Defra commissioned the team to undertake an overview of the government's Emergency Programme and the report submitted in November 2009 for subsequent publication, making a significant contribution to the current policy debate. The work has also involved one of the first monetary valuations of the public's willingness to pay for disease management strategies in the UK.

RES-229-25-0007 Dr C Quine, Forest Research

01 Sep 07 – 30 Nov 10

Assessing and Communicating Animal Disease Risks for Countryside Users

Many people take pleasure from outdoor leisure activities but surprisingly little is known about how best to warn countryside users about the potential for problems such as Lyme Disease without scaring them away or spoiling their enjoyment. This research will help those involved in the countryside to better understand how to deal with diseases such as Lyme Disease, how to effectively communicate the degree of risk, and how to encourage preventative action such that the countryside continues to be a source of pleasure and well-being for its users.

A prototype framework for risk communication has been developed, building on the content analysis of warning leaflets, and organisational views of actions and

responsibilities. The framework first considers the choice of communication as one aspect of risk management, and then elaborates the point of intervention. Scenarios have been developed to consider the impact of either a new disease or of media frenzy over an existing disease.

Fine-scale measurements of tick abundance have been taken at three-weekly intervals over 18 months in plots at the New Forest, Exmoor and Richmond Park, London. This novel sampling has yielded new insights into changing patterns of tick abundance through the year, depending on vegetation and environmental conditions such as soil moisture. The tick population model is now able to predict the seasonal dynamics and abundance of all three stages of ticks under different conditions of climate and host availability. This will be used to reveal the drivers of tick population change, and contribute to forecasts of potential hazards under variable scenarios of forest management.

To understand the perspectives of people with Lyme disease, 146 Lyme disease patients have been recruited to date for a questionnaire survey, and of these 37 were also interviewed. Sources of information on Lyme disease were typically medical websites (other than NHS and HPA), friends and family, and someone with experience of Lyme disease. Preliminary analyses indicate that taking precautions *after* the visit to the countryside (e.g. checking exposed skin for ticks) were preferred by this group to taking precautions *before* the visit (e.g. covering exposed skin). These findings may have implications for the timing and content of the communication of precautionary information.

An understanding of the perspectives of publics has been obtained through 66 interviews with visitors and 6 focus groups with residents at study sites (Richmond Park, New Forest, and Exmoor National Park). A large proportion of visitors and residents were unaware of Lyme disease and knew little about how to protect themselves against tick bites. Interviews with Forest District managers from the Forestry Commission and focus groups with forest/park staff at the three study sites have been conducted examining their perceptions of risk from Lyme disease and their views on risk communication to the public. To evaluate communication a pilot study has explored through a think aloud methodology how people interpret one of the information leaflets on ticks and Lyme disease most commonly used within the UK (New Forest and Exmoor National Park). Further work will build on this, e.g. designing a set of interpretive panels suitable for either an exhibition or on a forest/countryside trail to inform the public about Lyme disease.

RES-229-25-0008, Dr C Waterton, Lancaster University

01 Jun 07 – 31 Dec 10

Testing a Community Approach to Catchment Management

The aim of this research is to carry out an interdisciplinary study aimed at sustainable catchment management in Loweswater, Cumbria and to assess the transferability of the approach to other places and problems. The research is shaped by a new institutional mechanism or 'new knowledge collective' set up by the local community, stakeholders, and researchers.

The first aim of the project (to create a new institutional mechanism – now known as the Loweswater Care Project), has been achieved. Participants have embraced the philosophy of bringing together all sorts of different facts, knowledge and concerns about Loweswater and are playing an active part in the generation of ideas, of research and of possible ways in which they can contribute to a more sustainable (economic, social, ecological) catchment.

Land use data, all farm level data, all social/economic data from resident and farm families (interviews), and all institutional interviews have been carried out and collated for the second aim of the project (to create a catchment knowledge-base). Regular monthly and daily lake (water quality) data have been collected and this will continue until the end of the project. Different aspects of this overall data collection are used to kick-start discussion within the Loweswater Care Project about what it might mean for Loweswater. Organisations such as the Environment Agency and Natural England are offering flexible schemes if the land managers can work together. The third aim of the project is to assess the transferability of the approach to other places and problems and the researchers have already been sharing ideas with other groups and have contributed to the Government's Commission for Rural Communities report on the Future of the Uplands.

RES-229-25-0009 Mr L Smith, SOAS, University of London
01 Jun 07 – 31 Dec 10
Catchment Management for Protection of Water Resources

This project is investigating how to extend the scientific and social accomplishments of innovative catchment management programmes in the USA, and other European countries to the UK. A catchment management 'template' will be derived which compiles and assimilates scientific understanding and governance procedures as tested in actual decision making and management practice in case study catchments. This will provide a framework to integrate interdisciplinary assessment of methods to protect water resources.

Researchers have designed an Ecosystem Health Report Card for communicating catchment status information to stakeholders, and disseminated this via a Relu Policy and Practice Note and presentations at stakeholder engagement events. The project has also developed catchment modelling to assess pollutant sources and loadings in the Thurne and Tamar catchments (focusing on nitrogen and phosphorous) and are using it to explore management scenarios with stakeholders.

Preliminary findings show that environmental and public health criteria must be integrated with the economic and social goals of those affected, necessitating a 'twin-track' and holistic (cross-sector and discipline) approach of deliberative stakeholder engagement and sound scientific research. Stakeholders are capable of participating in catchment management but require high quality, accessible information and experienced facilitators. The problems are complex and agencies and different levels of government have to collaborate. Informal partnerships with effective leadership can be a useful starting point in creating the polycentric and multi-level governance arrangements necessary for catchment management.

RES-229-25-0012 Dr Norval Strachan, University of Aberdeen
01 Oct 07 – 30 Dec 10
Reducing Escherichia coli O157 risk in rural communities

E.coli is a very serious threat to human health. It can be devastating and sometimes fatal, and children and elderly people are at particular risk. But we still know little about how it is spread in rural environments. This project is investigating how stakeholders perceive the risks of E.coli and how we can reduce the risks of people becoming infected.

Researchers have found naivety about *E. coli* O157 in visitors to rural areas and limited awareness in farmers in low-infection areas. This evidence was shared with the Independent Investigation into Godstone Farm *E. coli* O157 outbreak to inform recommendations to reduce infection on farm attractions. Based on the antibody results researchers have identified the major risk factors associated with *E. coli* O157 infection in rural communities. In particular different soil types are of importance for the survival of O157 in Scotland and Wales. The research has also confirmed the importance of contact with farm animals as a pathway of human infection and the effectiveness of handwashing as being both practical and effective in reducing *E. coli* O157.

As part of science week 2009 the project developed a programme for secondary schools called 'Food bugs me to death'. Based on the success of this project LARCI (Local Authority Research Councils Initiative) provided further funding to expand the programme to students of all abilities from 15 schools in north Wales. Most were year 10 and 11 students studying for either BTEC or GCSEs in hospitality and catering. There was very positive feedback on the sessions.

RES-229-25-0013 Professor P Mills, University of Warwick
01 Sep 07 – 31 Aug 10
Assessing the Potential Rural Impact of Plant Disease

UK crop production is vulnerable to a plethora of pathogens some of which directly affect crop yields, disrupt the food chain and impact on land use and wider society. The aim of this project is to develop a critical, inter-disciplinary appraisal of the potential impacts of plant diseases (food and non-food) on land use and the UK rural economy.

Key issues relating to the potential impact of plant disease were identified during an Advisory Board focus group meeting which included representatives from industry, research and development, and food/rural policy. These issues informed the content of an email questionnaire that was completed by 47 stakeholders with an immediate or associated interest in plant disease management. Preliminary findings were discussed in stage three at a Futures Workshop and according to stakeholders, plant diseases ranked fourth highest out of 12 potential risks to the supply chain in 2008. Stakeholders identified a number of plant diseases that pose a future threat to the UK supply chain including potato blight, *Septoria* and *Fusarium*, mildews and rusts in wheat crops and *Phytophthora ramorum* in the ornamental sector. In the event of any serious outbreak, it was felt that primary producers and growers would suffer the greatest financial losses, bearing the consequences of the decline in marketable yield and increased spending on disease eradication.

Consumer choice surveys have been used to elucidate public willingness to pay for reductions in pesticide applications to wheat, potatoes, and ornamental rose bushes. Variation in the results obtained with the different payment vehicles provides interesting insight into the influence which choice of payment vehicle may exert over willingness to pay values.

Interviews with the actors within the supply chain show that sectors adopt quite different approaches to assessing and managing risks. For example, the cereal sector relies on the use of consultants to both assess disease risk and to determine the response in terms of fungicide application. Building on this information, an interdisciplinary approach has been taken to modelling both the long-term yield and financial losses due to consultant incorrect disease pressure estimation and sub-optimal fungicide treatment and also to compare those losses for a range of consultants' abilities and attitudes to risk.

**RES-229-25-0015 Professor B Wynne, Professor L Heathwaite, Lancaster University
01 Jul 08 – 01 Jul 11**

Assessment of Knowledge Resources in Animal Disease Control

Containment is a controversial issue in animal disease outbreaks. Strategies often come under the spotlight, particularly when human health may be at risk or when animal and farm welfare issues are promoted in the media. This project is building more integrated strategies of containment by bringing together expertise in public health, sociology, microbiology, epidemiology and veterinary science, environmental science, human geography and medical statistics.

As the major part of our project data collection, an interview framework was devised by the research associates bringing together a plan of scientific, technological and management (social and political) questions with which to consult with key personnel identified in each of the three disease case study areas (Foot and Mouth Disease, Cryptosporidiosis and Avian Influenza). In addition, a disease conceptual framework has been drawn together entitled: Strategies for containment of livestock disease: an interdisciplinary framework for the analysis of uncertainties in science-policy with specific reference to the case of *Cryptosporidium*. In order to draw on the existing expertise within the project team, a two-day data clinic was held at the University of Liverpool in May 2009 to examine a sample of indicative data sources from each of the three disease case study areas. Researchers have conducted interviews with a variety of different stakeholders and this process is continuing.

**RES-229-25-0016 Professor G Medley, University of Warwick
01 Nov 07 – 31 Oct 10**

The Governance of Livestock Disease

We know that sick animals produce less meat and milk, and provide less profit, so it is not just their welfare that suffers. Animal disease can also seriously affect consumer demand at home and abroad. This project is considering a range of issues around several different

cattle diseases, how policy on one disease affects others and how different organisational levels interact in tackling disease outbreaks.

Epidemiological research has focussed first on understanding how infection with endemic disease influences the fate of cattle on 114 farms. There appears to be no strong relationship, i.e. whether an animal is kept, sold or slaughtered is not influenced by endemic disease status, and whilst this is counter-intuitive, it does explain why these diseases persist. The team has also been conducting data analysis of 30,000 sera samples to investigate the relationships between endemic diseases. The preliminary results indicate different effects at the individual animal level and the farm level. The researchers have begun combining these results into a mathematical modelling framework that will allow them to investigate the effect of policy changes on multiple endemic diseases. They are investigating the place of animal welfare within animal health policy, where the focus is on animal production and have been working with stakeholders (particularly Defra) to understand better how policy is framed and developed. This has led to development of a “political disease model”.

Regarding the economics, the project has been considering the influence of insurance against endemic disease, taken out by farmers, and government compensation, on risks and attitude to risks, in particular focussing on the problem of “moral hazard” and how it might influence endemic disease epidemiology. They have continued to develop their understanding of how farmers (and other stakeholders) interact, both in terms of disease control and also information. They have also been researching legal frameworks, focussing on the EU and French approaches to Animal Health and Welfare, resulting in two responses to government consultations.

RES-229-25-0022 Professor C Banks, Southampton University

01 Oct 07 – 30 Sep 10

Energy Production on Farms through Anaerobic Digestion

This project examines the potential for development of anaerobic digestion on farms, and the contribution this could make to rural development and agricultural diversification. Policy issues are addressed through analysis of regulatory measures within the EU and those specific to the UK, identifying drivers and obstacles that could stimulate or inhibit the development of on-farm digestion as part of a wider strategy for rural development, while meeting the cross compliance criteria included in the reformed Common Agricultural Policy.

The researchers have constructed a suite of farm level optimisation models for economic analysis, representing the major farm types in UK agriculture, to test the economic viability of AD under a range of farm system and policy/market settings. These suggest that AD is economically viable under current market conditions (i.e. current electricity prices, ROCS and food commodity prices), and would remain viable even at much higher commodity prices. Preliminary scenario modelling suggests that the traditional strong emphasis placed on forage maize as the primary source of AD feedstock may be misplaced, with whole-crop wheat and field-scale vegetables offering higher returns on a per hectare basis. These

findings will need further investigation. In terms of energy usage and resultant GHG emissions, AD is able to make significant reductions in the requirements for fossil fuel based energy. The use of waste materials also enables a reduction in dependence on fossil fuel based fertiliser whilst reducing the potential emissions of GHGs through disposal in landfill.

Provisional findings from the postal survey of farmers in England reveal that around one third have some interest in adopting AD as a diversification activity on their farm. The primary motivation for doing this is the improvement of farm profit, but the technology is also believed to address secondary concerns, such as reducing pollution and the farm's carbon footprint. Two thirds of the sample expressed no interest in AD, citing as reasons the high establishment costs, perceived low returns and possible difficulties in obtaining planning permission.

RES-229-25-0025 Jeremy Phillipson, Newcastle University

01 Jun 08 – 18 Jul 11

Science in the Field: Understanding the Changing Role of Expertise in the Rural Economy

This project explores the current and potential role of field-level advisers as knowledge brokers between scientific research and land management practice, with a focus on how their knowledge and expertise are constructed and disseminated. The research looks specifically at knowledge transfer practices within three case study professions (rural vets, wildlife ecologists and land agents/surveyors) using a mixed-methods approach which includes interviews, work shadowing and observation of continuing professional development activities.

A review of concepts of knowledge exchange and literature review have been completed and internal discussion papers have been produced. Interviews have been carried out with representatives of professional associations and relevant academics and fieldwork has so far been completed with applied ecologists and is underway with surveyors and land agents, while initial fieldwork has been undertaken with veterinarians. The team has developed SIAM (Stakeholder Impact Analysis Matrix), an analytical tool for exploring how Relu research is influencing policy and practice and how stakeholders engage in research and to what effect. This is progressing understanding of the nature and impact of knowledge exchange processes.

Key initial findings show a disjuncture between the conventional understandings of knowledge exchange and brokerage and the actual experience of encounters between field advisors and land managers. The project is drawing attention to a lack of effective links between the knowledge system of the professions and academic research but also the importance of knowledge creation by the professions themselves in the field. There is a marked lack of attention in the literature to the ways in which such encounters construct the land manager (either constraining or facilitating action) and result in new co-produced knowledge or more socio-materially embedded structures (such as legal agreements). The consequences for the case-study professions and for the state's relationship with those professions will be explored with the project advisory panel.

A project advisory group has been set up and is helping to steer the research. Philip Lowe produced a report to the UK government, the veterinary profession and the farming industry entitled 'Unlocking potential, a report on veterinary expertise in food animal production' which attracted significant media attention and is stimulating discussion within the profession. The research team has also led the Vets and Social Sciences Research Collaboratory, a strategic venture to develop a new collaborative research agenda and projects between the veterinary profession and social researchers. The team has presented findings and engaged with advisers directly at conferences organised by the case study professions including a FWAG annual conference and at a RICS annual conference. The findings from Science in the Field are guiding the Relu programme's knowledge brokerage initiatives with the professions (e.g. through work shadowing and visiting fellowship schemes) and more broadly the programme's thinking on knowledge exchange and stakeholder engagement which it is feeding to the Research Councils.

5.4 Interdisciplinary Fellows

RES-229-27-0003 Althea Davies, University of Stirling

01 Mar 07 - 29 Feb 10

Lessons from the Past for the Future of the Uplands

In this interdisciplinary fellowship, Dr Davies is exploring how knowledge about the way landscapes have been formed historically might influence how those who inhabit or visit those areas today appreciate them. She is drawing a range of different kinds of evidence, including historical records, archaeology and environmental data, such as pollen preserved in bogs, to trace changes in the upland landscapes of the Peak District and Sutherland over the past 500 years. Using techniques developed by economists to assess people's values regarding landscape change or conservation, Dr Davies is investigating how information from the past affects their preferences for the future.

Working on local scales with stakeholder communities, through environmental history case studies, and broader networking opportunities through numerous meetings have continued to inform the research thinking and approach towards communicating the relevance of longer-term ecological perspectives in upland management. It has also, however, exposed some inflexibility in ecological management, particularly in translating research evidence into practice: current statutory agency targets and objectives set by existing policy-driven frameworks appear to limit the potential for incorporating new sources of evidence, at least at the local scale. Higher level engagement is thus critical to promote changes in established frameworks, and a conference on long-term ecological records in habitat management at Stirling University, organised by Dr Davies, provided a good opportunity to debate these issues and is providing a springboard for developing these networks through further ecology and policy meetings.

RES-229-27-0002 Evan Fraser, University of Leeds

01 Sept 07 – 31 Aug 10

Integrating Economic and Land Use Models to Anticipate Rural Vulnerability to Climate Change

In this interdisciplinary fellowship, Dr Fraser is using tools from a range of disciplines to consider how climate change may affect food production and distribution, and the rural economy. His research involves a historical assessment of cases where relatively small environmental problems have had major effects on food production and distribution systems, with a view to identifying key factors that make systems vulnerable. Dr Fraser will assess the importance of these factors in a range of different circumstances and apply this knowledge to predicted changes in our climate, to see what the effects might be.

As well as numerous academic articles, Dr Fraser has published a popular book "Beef", that tells the story of cattle and represents the synthesis of a range of historic case studies. He is also editing a special issue of *Ecology and Society* that will make a substantive contribution to our understanding of adaptive capacity within these vulnerable food systems and a theoretical / methodological contribution in terms of how to model adaptive capacity.

RES-229-27-0001 Abigail Woods, Imperial College London

1 Sept 07 - 31 Aug 10

Reinventing the Wheel? Farm health planning 1942-2006

As part of this interdisciplinary fellowship, Dr Woods is exploring the history of animal disease prevention from 1942 onwards, in its economic, social, political and policy contexts, and relating her research to current policy discussions and the present-day science and practice of farm health planning. She is looking at the circumstances that gave rise to past initiatives, considering not just the science, but the social and political factors that have influenced the way we react to outbreaks of animal disease. An understanding of these past initiatives should help us to avoid "reinventing the wheel" and the work will aim to produce some definite recommendations regarding future framing, implementation and evaluation of farm health planning.

During 2009, Dr Woods developed further her analysis of veterinary preventive medicine, focussing particularly on the different trajectories of development in sheep and pig industries. This focus was inspired by the prevalent, present-day conviction that the intensive pig industry takes disease prevention seriously, while the sheep industry does not. Commentators often explain this conviction by comparing the modern enlightened attitudes of the former with the traditional outlook of the latter, and by highlighting the biological factors that made the pig body more amenable to interventions that increased its productivity. The analysis questions these assumptions and provides additional, historical explanations for the differing trajectories of preventive medicine development within the pig and sheep industries.

Dr Woods has carried out, as part of a Defra work-shadow, a small investigation into the historic control of fowl pest (Newcastle disease), 1962-72, with particular reference to

farmers' vaccination behaviours. A short piece of research was also undertaken on the regulatory history of animal welfare in Britain. This was carried out with a view to explaining – in the light of Defra's Responsibility and Cost Sharing proposals to separate the regulation of health and welfare – why these issues were brought together in the first place.

RES-229-27-0006 Dr Katy Appleton, University of East Anglia
The Development of Sustainable, Multi-Functional Landscapes in Rural Areas: A Case Study of a Norfolk Broads River Valley

In this interdisciplinary fellowship, Dr Appleton will examine the sustainability of different patterns of future recreational use of the Ant catchment of the Norfolk Broads. This research programme aims to develop and assess ways to deliver sustainable, multifunctional landscapes in rural areas, particularly those with significant pressures from tourism and recreation.

No annual report received

RES-229-27-0007 Dr Angela Cassidy, University of East Anglia
01 Oct 08 – 30 Sep 11
The Badger-TB Controversy: Expertise and Experience in Animal Disease Research

Dr Cassidy is investigating the way that science communication has structured and been structured by the controversy surrounding badgers and TB.

Qualitative and quantitative analyses of media coverage of the badger/bTB controversy have been carried out, alongside literature reviews, development of a theoretical framework, and analysis of the position and role of the badger in UK popular culture. Unlike many public scientific controversies, this debate is divided along traditional party political lines. This is strongly reflected in the differing orientations of UK national newspapers to the question of a badger cull. Media coverage suggests networks of influence and co-operation between key scientific/expert, and NGO/campaigner actors on both sides of the debate. Multiple forms of 'expertise' are seen as important in media coverage of the issue and social representations of badgers divide into dichotomous 'good badger'/'bad badger' images, which are mobilised by actors on corresponding sides.

6. Key Performance Indicators

The Tables present the Key Performance Indicators for Year 6 of the Programme. All indicators and measures were satisfactorily achieved or exceeded.

Table 5: Performance Against KPIs, 2009

KPI	Programme Target/Measure	Director's Office Target/Measure	Statement of Achievement
1. Scientific Quality			
1.1 Intellectual leadership		To play a leading role in the development of the research field	The focus of intellectual leadership in 2009 was on: (a) preparation of a special profile of <i>Journal of Applied Ecology</i> on <i>Integrating Ecology and the Social Sciences</i> (Section 3.1) and initiating another special issue proposal on the management of animal and plants diseases; (b) leading a major conference on the <i>Future of Rural Land Use</i> (Section 4.2); and (c) delivery of keynote speeches, including the opening keynote address at the XXIII Congress of the European Society for Rural Sociology, on 'Enacting rural sociology: or what are the creativity claims of the engaged sciences?'
1.2 Relu applications and awards	Over 17% EOA reports rated outstanding and less than 10% rated problematic ¹		PMG to report
1.3 Refereed journal articles	Number in 2009		79 articles were published (Annex B).
1.4 Books/book chapters authored	Number in 2009		3 books and 23 book chapters were published (Annex B).
1.5 Conference papers	Number in 2009		175 conference papers/presentations were given by Relu researchers, including 19 by the Director and Assistant Director (Annex B).
2. Interdisciplinarity			
2.1 To ensure that the Programme engages the wide range of disciplines within the	To engage under-represented disciplines.	Progress interdisciplinary journal special issues	An interdisciplinary special profile of <i>Journal of Applied Ecology</i> was published during the year and progress made in preparing a special journal issue proposal on the management of animal and plant diseases (see 3.1).

¹ These % figures reflect the current average evaluation grades under ESRC Programmes

natural and social sciences that can make important contributions to its research			
2.2 Facilitation of inter-disciplinary training and advice opportunities		No specific training opportunities planned	Three hands-on data managing and sharing training workshops were organised by the Relu Data Support Service (3.4).
2.3 Number of disciplines engaged in Relu		Commentary on range and combination of disciplines involved under each call	A discipline analysis was prepared in an earlier reporting period. The results of a survey of Relu ecologists were published in the special profile of <i>Journal of Applied Ecology</i> .
3. User Engagement, Knowledge Transfer and Impact			
3.1 Meetings or events involving stakeholders		<p>a) Conference on the Future of Rural Land Use; Regional Events on regional land use agenda;</p> <p>b) 1 meeting of People and Rural Environment Forum; 2 meetings of Animal and Plant Disease Forum</p> <p>c) Membership of forums and SAC</p> <p>d) Number of bilateral meetings with stakeholders</p> <p>e) Number conferences attended by Director or Assistant Director</p> <p>f) Number of presentations to stakeholders by Director and Assistant Director</p>	<p>a) Major conference held (June); Two regional events held (March) – see Section 4.1</p> <p>b) 1 meeting held of People and Rural Environment Forum and 2 meetings of Animal and Plant Disease Forum (Section 4.3)</p> <p>c) Forum membership steady (Section 4.3). PMG to report on SAC</p> <p>d) 15 bilateral meetings were held between the Director’s Office and stakeholders (Annex A).</p> <p>e) 24 conferences were attended by the Director or Assistant Director (Annex C).</p> <p>f) 18 presentations were given by the Director and Assistant Director (Annex A)</p>
3.2 Links created		Commentary on actions taken to	Commentary provided in Section 4. See also Section 2.

between award holders and stakeholders		engage stakeholders with award holders.	
3.3 Work shadowing and visiting fellowships		5 work shadows and 5 visiting fellowships set up and completed	7 work shadows and 3 visiting fellows set up and completed (Section 4.4).
3.4 Informing public policy	To make a substantive Programme input (eg written or oral responses) to major relevant policy reviews/ consultations during the life of the Programme	Number of responses to policy reviews/ consultations	The programme contributed actively to land use and animal and plant disease policy debates during 2009 (see Section 2 and 4). Highlights included its contribution to the national Foresight programme and a major conference on the <i>Future of Rural Land Use</i> . Individual projects made substantial inputs into several policy domains (Section 4.6). A submission based on SIAM was also made to HEFCE's consultation on the Research Excellence Framework.
3.5 Project Comms and Data Management Plans	To be completed 3 months after start of award	Oversee preparation of PCDMPs of 3rd Call projects	All PCDMPs have been prepared and signed off.
3.6 Media coverage of research and outputs		Number press releases issued	The Director's Office issued 11 press releases in 2009. Coverage of Relu research in national, local and trade media has continued to grow, with over 150 items recorded during the course of the year (see Annex B).
3.7 Reports or briefings produced for stakeholders		1 programme briefing and 6 policy and practice notes prepared and distributed	1 programme briefing paper was prepared and distributed, and 9 policy and practice notes (Section 4.1). 18 presentations were given specifically to stakeholders by the Director's Office.
3.8 Relu website		Director to maintain up to date website	The website was developed and updated regularly throughout 2009.
3.9 Relu Newsletter		4 newsletters prepared and distributed	4 newsletters were prepared and distributed to the Relu mailbase.
4. Research Capacity and Training			
4.1 Training workshop		No training workshops planned.	Three hands-on data managing and sharing training workshops were organised by the Relu Data Support Service (3.4).
5. Data Collection and Management			
5.1 Data	Progress of Data		PMG to report

Support Service	Support Service		
5.2 Deposition of Data	Project data deposited within 3 months of end of awards		PMG to report
6. Programme Management			
6.1 Commissioning	a) Prepare a fourth call for proposals on <i>Adapting Rural Living and Land Use to Environmental Change</i>	a) Organise a stakeholder consultation b) Draft a call specification	a) Large scale stakeholder consultation organised and responses analysed b) Call specification drafted and advice given to research councils on interdisciplinary application and assessment process.
6.2 Applicants and Award holders		a) Provide telephone and email advice to applicants and award holders b) Hold planning meeting with disease projects	a) Regular contact was maintained with all award holders through joint planning meetings, individual site visits and frequent e.mail correspondence advice. Meetings and individual site visits were conducted with 2 Second Call and 4 Third Call projects and interdisciplinary research fellows. b) A group planning meeting was held with researchers and Principal Investigators from 7 Relu projects.
6.3 Annual Report		Prepare annual report for 2008, to include report on progress of projects.	Submitted to ESRC by Director's Office.
6.4 SAC Meetings	Number of meetings held		PMG to report
7. Added Value			
7.1 Support effective networking between project teams		Hold one major conference on land use	2 major workshops held in March; 1 major conference organised in June. Additionally the Director's Office actively encouraged inter-project linkages (Section 3.7).

7. Forward Look

Our forward plans for 2010 are planned as follows:

1. Preparation of a special journal issue on the management of animal and plant diseases
2. Organisation of a launch event for projects funded under the Relu 4th call
3. Organising a joint lesson learning event with the EPSRC Sue Programme
4. Stimulating cross cutting communication activities and end of project events for animal and plant disease projects
5. Preparation of Relu Briefing Papers on Relu Knowledge Exchange and reporting on Relu water projects
6. Preparation of policy and practice notes for individual projects and clusters of projects
7. Arranging two meetings of the Relu Animal and Plant Disease Forum and establishing a new forum in relation to 4th call projects

Table 6: Planned and potential activities and outputs for 2009

January	Relu Newsletter
February	3rd Meeting of Relu Animal and Plant Disease Forum
March	Annual Report 2010
April	Relu Newsletter
	Relu Briefing Paper on Knowledge Exchange
	Assessment of Fourth Call proposals
July	Relu Newsletter
	Fourth Call Launch Event
	Relu Briefing paper on Water Projects
October	Relu Newsletter
	4 th meeting of Relu Animal and Plant Disease Forum
December	Submission of special journal issue on disease projects

8. Budget Matters and Co-funding

There are no matters of concern to report. The programme and projects were successful in negotiating additional co-funding during 2009, amounting to £2,038,272.

<p>RES-227-25-0001 Sustainable Uplands: Learning to Manage Future Change</p>	<ul style="list-style-type: none"> • £124,648: ESRC follow-on funding, Sustainable Uplands: Learning to manage future change • £1000: Commission for Rural Communities, Methodological guidance and preliminary evidence appraisal for CRC Uplands Inquiry • £1000: Foresight Land Use Futures, Uplands review • £55,000: Scottish Government, Realising the Potential Contributions of Scotland's Rural Land to Delivering Sustainable Economic Growth • £119,159: British Academy, Involved: what makes stakeholder participation in environmental management work? • <i>Circa</i> £1,352,000 NERC/EU Biodiversa, Ecocycles: Interacting impacts of land use and climate changes on ecosystem processes • £249,000: ESRC with BBSRC/MRC, Be-WEL: Behaviour for Well-being, Environment and Life
<p>RES-227-25-0024 Modelling the impacts of the WFD</p>	<ul style="list-style-type: none"> • £112,765: Funding to undertake design of a transferable water quality valuation study for Europe provided by the EU Aquamoney group. • £16,000: Environment Agency.
<p>RES-224-34-2003 Director's Office</p>	<ul style="list-style-type: none"> • £3,000: Sponsorship of June Conference, Natural England • £4,700: ESRC-SSRC Fellowship

ANNEX A: PROGRAMME CHRONOLOGY 2009

Month	Programme Events	Project Start/End Dates and Visits
Jan 09	Relu SAC, London	
	Relu workshop on Expert Systems for Natural Resources Management, London	
	Relu Newsletter January 2009	
Feb 09	Meeting with Frances Rowe, ONE North East, Newcastle, to discuss Relu fellowship	Meeting with Abigail Woods, Interdisciplinary Research Fellow, London
	First meeting of Relu Animal and Plant Disease Forum, London	Meeting with Relu Disease Projects Planning Group
	Meeting with Relu Land Use Analysts, London	
Mar 09	Meeting with Nicola O'Connor, Foresight Land Use Project, London	End date project RES-227-25-0017 <i>Integrated Land and Water Management in Floodplains</i> (Morris), Cranfield
	CRC Seminar, Alnwick. Presentation on " <i>The state of the uplands</i> "	Teleconference with Peter Mills and Graham Medley
	"Land for the Future", Relu Workshop, ESRC Festival of Social Science, University of Exeter	Teleconference with Relu Conference speakers
	"How will Energy Crops affect our Landscape: Results from Relu Biomass" National Science and Engineering Week/Festival of Social Science, Rothamsted. Presentation " <i>The rationale for Relu</i> ".	
	"What's Fair about the Countryside" Relu Workshop, National Science and Engineering Week/Festival of Social Science Workshop, Northallerton.	
	Relu conference: "Strategic Rural Land Use" Relu/Northern Rural Network, National Science and Engineering Week/Festival of Social Science event, York.	
	Meeting with Alan Woods, Relu Land Use Analyst, Newcastle	
	Meeting with David Guy and Owen Dowsett, to discuss knowledge exchange, ESRC, Swindon	
	Meeting with Frances Collingborn, Faith Culshaw and Simon Jackman, to discuss knowledge exchange, NERC, Swindon	
	Meeting with Celia Caulcott and Brian Harris, to discuss knowledge exchange, BBSRC, Swindon	
Apr 09	Meeting to brief Baroness Young on Relu Conference, London	Meeting with Relu Interdisciplinary Research Fellow Abigail Woods, London
	Northern Rural Network seminar on "Rural Economies: Coping with Recession", Newcastle (Chaired by Relu Director)	
	Natural Capital Initiative (NCI), London "Valuing our Life-support Systems: Securing a Healthier Natural Environment through Better Decision Making" Presentation on " <i>Strategic land use for ecosystem services</i> "	
	Meeting with Mari Williams, BBSRC, Swindon, to discuss Relu SIAM	
	Relu PMG, Swindon	
	Relu Newsletter April 2009	

	First Vets Collaboratory, Newcastle University	
May 09	Meeting with Frances Rowe, One North East, Newcastle to discuss Relu fellowship	End date project RES-224-25-0093 <i>Overcoming Market and Technical Obstacles to Alternative Pest Management</i> (Bailey), Kent
	BBSRC “Combating Endemic Diseases of Farmed Animals for Sustainability (CEDFAS)” Workshop, Wellesbourne. Presentation on “ <i>Combating endemic disease in farm animals: an interdisciplinary approach</i> ”	End date project RES-227-25-0002 <i>Angling and the Rural Environment</i> (Oughton), Newcastle
	Relu project workshop “Animal Welfare Policy”, Warwick HRI, Wellesbourne	Meeting with Relu Interdisciplinary Research Fellow Angela Cassidy, Newcastle
	Relu project workshop “Angling in the Rural Environment”, York	
	“ <i>Ecosystem services in dynamic and contested landscapes – an interdisciplinary perspective on UK uplands</i> ” Seminar given by Klaus Hubacek, Newcastle.	
	Visit of Murray Gardner, NERC, to discuss how knowledge exchange and stakeholder engagement within the Living with Environmental Change Programme can build on Relu.	
	The Relu Knowledge Portal was showcased at the 2009 IASSIST/IFDO conference (International Association of Social Science Information Service & Technology; and the International Federation of Data Organisations for the Social Science) in Tampere, Finland.	
Jun 09	Presentation to Scottish Government Knowledge Exchange group on “ <i>Relu stakeholder impact analysis matrix</i> ”	Director’s Office visit to Project 227-25-0015 “ <i>Assessment of Knowledge Sources in Animal Disease Control</i> ”, to discuss emerging findings and knowledge transfer.
	British Veterinary Association Annual Scottish Dinner, Edinburgh	
	Meeting with Frances Rowe, One North East, Newcastle to discuss Relu fellowship	
	Newcastle/University College London Foresight Workshop, Newcastle	
	“The Future of Rural Land Use” Relu Conference, London. Presentation on “ <i>The future of rural land use</i> ”.	
	Meeting with Alan Woods, Relu Land Use Analyst, Newcastle	
	Meeting with Andrea Turner, LARCI, Swindon	
	Meeting with Ian Lyne, BBSRC, Swindon, to discuss skills and training agenda	
	Meeting with Janet Allen, BBSRC, Swindon	
	Meeting with Iain Jones and Anna Billingham, ESRC, Swindon	
	SIAM Sounding Board with ESRC, NERC, BBSRC Heads of Knowledge Exchange	
	PMG teleconference	
Jul 09	Sustainable Agriculture Innovation Network Governing Board meeting, Beijing	End date project RES-229-25-0004 <i>Social and Environmental Inequalities in Rural Areas</i> (Huby), York
	“ <i>Reconciling Competing Demands on Rural Land Use</i> ” seminar, Warwick HRI	
	Relu SAC, London	

	Relu end of project conference “ <i>Social and Environmental Inequalities in Rural Areas</i> ”, York	
	Relu Newsletter July 2009	
Aug 09	Meeting with Stephen Hunter, Defra, to discuss setting up of the Marine Management Organisation.	End date project RES-227-25-0028 <i>Sustainability of Hill Farming</i> (Armsworth), Sheffield
	Science for the Marine Management Organisation workshop. Presentation on ‘ <i>Integrating the Evidence Base and Making it Socially Accountable</i> ’.	
	XXIII Congress of the European Society for Rural Sociology, Vaasa, Finland “ <i>Re-inventing the Rural: Between the Social and the Natural</i> ” Opening address by Relu Director	
	XXIII Congress of the European Society for Rural Sociology, Vaasa, Finland “ <i>Re-inventing the Rural: Between the Social and the Natural</i> ” Working Group on Sustainable Fishing Communities (Chaired by Assistant Director)	
	XXIII Congress of the European Society for Rural Sociology, Vaasa, Finland “ <i>Re-inventing the Rural: Between the Social and the Natural</i> ” Working group on Social and natural science collaboration in the (re) making of the rural: Problems, practices and cultures (Chaired by Elizabeth Oughton)	
	XXIII Congress of the European Society for Rural Sociology, Vaasa, Finland “ <i>Re-inventing the Rural: Between the Social and the Natural</i> ” Working group on Rural experts and rural expertise (Co-chaired by Andrew Donaldson)	
Sept 09	Meeting with Ray Keating, LINK	End date project RES-227-25-0020 <i>Rural Impacts of Increasing the Growth of Energy Crops</i> (Karp), Rothamsted
	Teleconference with Claire Brown (Senior Programme Officer – Ecosystem Services and Assessment, UK National Ecosystem Assessment Programme) to discuss the relevance of Relu’s findings for the Programme.	
	UK Food Group Conference for World Food Day 2009 “ <i>Rewriting the Rules ... to secure our future food</i> ”, Dragon Hall, London	
	Relu Workshop “Regulating infectious disease in the 21st Century: Who is responsible or The Changing Landscape of Responsibility”, The Innovation Centre, Reading. (Relu Director gave Opening Address)	
	Scottish Rural Land Use Study Expert Review Panel meeting, Edinburgh	
	First Relu/ Local Authorities meeting	
	Sustainable Livestock Production LINK programme (Defra) Presentation on “ <i>Livestock and social scientists: Relu’s experience of interdisciplinary research</i> ”	
	Meeting with Frances Rowe, One North East, Newcastle to discuss Relu fellowship	
	Relu-sponsored session at FWAG Annual Conference in Newport on the Relu concept and programme.	
	European Knowledge Exchange Workshop presentation	

	on 'Main drivers for successful re-use of research data' (Berlin, 23-24 September 2009). (Relu DSS)	
Oct 09	NERC KEN meeting, Lancaster.	End date project RES-227-25-0001 <i>Sustainable Uplands: Learning to Manage Future Change</i> (Hubacek), Leeds
	Filming at London Zoo for Research Councils' new promotional video on biosecurity.	Director's Office visit to Project 227-25-0001 <i>"Sustainable Uplands: Learning to Manage Future Change"</i> , Aberdeen
	Meeting with Neil Ridley, Otley College, to discuss Relu Visiting Fellowship.	Director's Office visit to 229-25-0012 <i>"Reducing EColi 0157 Risk in Rural Communities"</i> , Aberdeen
	Beacon North East "Maximising IMPACT through Public Engagement" Stadium of Light, Sunderland. Presentation on <i>"Engaging thinking: knowledge exchange narratives and metrics"</i>	Project practitioner panel meeting for the Relu project 'Assessing and communicating animal disease risks for countryside users', Birmingham
	Relu PMG teleconference	
	Meeting with Jeff Waage to discuss Relu and interdisciplinarity	
	Eighth (final) meeting of Relu People and the Rural Environment Forum, London	
	Relu Newsletter October 2009	
	SIAM/Research Councils workshop, Swindon. Presentation on <i>"Accounting for knowledge exchange: introducing SIAM"</i> , London.	
Nov 09	Data Support Service visit to Director's Office	Project meeting with 227-15-0001 <i>"Sustainable Uplands: Learning to Manage Future Change"</i> , Durham
	Govnet Conference on Science and Innovation at the QEII Conference Centre, London. RCUK seminar on <i>"Excellence with Impact: Benefitting from collaboration"</i>	
	Relu Book Launch <i>"What is Land For: The Food, Fuel and Climate Change Debate"</i> , London	
	NERC Economic Impact Workshop. Presentation on <i>"Accounting for knowledge exchange: introducing SIAM"</i> , London.	
	Webinar presentation to the Natural England Evidence Team on <i>"Natural England and the Rural Economy and Land Use Programme"</i>	
	Presentation to the Royal Veterinary College on <i>"The future of food animal veterinary practice"</i> .	
	Second Vets Collaboratory, Royal Veterinary College, Potters Bar	
	SIAM Interview with Jonathan Fisher, Environment Agency on role as RELU stakeholder	
	SIAM Interview with Dominic Mellor, Health Protection Agency on role as Relu stakeholder	
	Data management for ESRC Research Centres and Programmes' seminar in London, 3 November (Relu Data Support Service showcased the data management planning approach in the Relu programme).	
Dec 09	Relu Newsletter September-December 2009	End date project RES-227-25-0014 <i>Collaborative Deer Management</i> (Irvine), Macaulay
	End of project conference "Knowledge Controversies in	End date project RES-227-25-0025

	Rural Land Management”, Oxford. Two presentations: “ <i>Introduction to Relu</i> ” and “ <i>Knowledge exchange and Relu</i> ”	<i>Management Options for Biodiverse Farming</i> (Sutherland), UEA
	Teleconference with Jeff Waage, Laura Green, Stephen Hunter and Guy Poppy to discuss plans for the Relu special Theme Issue of the Philosophical Transactions of the Royal Society	Third Call Disease PI Planning Meeting, London
	Second Relu/ Local Authorities meeting	

Annex B: PUBLICATIONS DURING THE YEAR

Type of Publication	Number of Outputs in 2009
Journal Articles	79
Books and Special Issues	4
Book chapters	21
Briefing papers, working papers	29
Conference papers/presentations	175
Press releases	25

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PRESS AND PUBLICITY 2009

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Relu Policy and Practice Note No.5	Stakeholder participation in the management and communication of food chain risks
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March	Farmers' Weekly	<i>Farming in an age of uncertainty</i> opinion piece on use of science for farmers citing Relu projects by Anne Liddon 6 March 2009
	Planet Earth on line	<i>Organic Farms Could Form Hotspots for Biodiversity</i> 13 March Stagl project article http://planetearth.nerc.ac.uk/news/story.aspx?id=357
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	Society Now	<i>Badger TB controversy</i> in brief story on new interdisciplinary fellow's research spring 2009 p5
	Pickering on line	Pickering Flood Defence Experiment to Receive Funding 18 March http://www.pickering.uk.net/news/
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	Planet Earth	<i>Sustainable uplands: Where there's bogs there's brass</i> spring issue 2009 p30-31 article by Mark Reed on sustainable uplands project
	Rural Matters RASE Magazine	<i>Are agri-environment schemes effective?</i> Article on Bullock project, spring issue p20
April	Relu Newsletter	
	Relu Policy and Practice Note No.6	Implications of a Nutrition Driven Food Policy for the Countryside
	Imperial college news website	<i>Is the UK prepared for sudden oak death?</i> 28 April http://www3.imperial.ac.uk/newsandeventspggrp/imperialcollege/newsummary/news_28-4-2009-8-59-17
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May	The Guardian	<i>The Countryside Turf Wars</i> editorial quoting Philip Lowe and Relu on land use policy 16 May 2009 http://www.guardian.co.uk/commentisfree/2009/may/15/rural-policy-conservation-farmers-cpre
	Farming Today BBC Radio 4	<i>Research at the University of Reading suggests that if we all ate the recommended five portions of fruit and vegetables a day we would need to grow many more crops under plastic, leading to a marked change in the way the countryside looks</i> – lead item on Bruce Traill project 20 May 2009
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Farmers' Weekly interactive website	<i>Five a day could lead to big changes in land use</i> – Bruce Traill project http://www.fwi.co.uk/Articles/2009/05/19/115682/five-a-day-policy-could-lead-to-big-change-in-land-use.html 20 May 2009
Farmers' Weekly	<i>Meeting 5-a-day demand could hit landscapes hard</i> – Bruce Traill project 22 May 2009
BBC Radio Berkshire	<i>Interview with Philip Jones</i> from Traill project broadcast on evening news bulletins 20 May 2009
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The Guardian	Letter from Philip Lowe in Education section on need for government support for interdisciplinary research re climate change mentioning Relu projects 26 May 2009 http://www.guardian.co.uk/education/2009/may/26/education-letters
Norwegian Broadcasting Youth Channel	<i>Banden News Programme</i> interview with Philip Jones for news item on Bruce Traill research 4.15 pm 26 May 2009
WalesOnline	<i>Healthy eating could leave Welsh farming looking sick</i> article on Bruce Traill project 26 May 2009 http://www.walesonline.co.uk/countryside-farming-news/farming-news/2009/05/26/healthy-eating-could-leave-welsh-farming-looking-sick-91466-23708173/
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June	Science Daily web news	<i>How healthy is your river?</i> 1 June 2009 ecosystem report card Lawrence Smith project http://www.sciencedaily.com/releases/2009/06/090601221356.htm
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	RASE RuSource news briefing	Briefing 832: <i>Regional rural land use: a time for fresh thinking?</i> Relu policy and practice note http://www.arcresources.org.uk/projects/rusource_briefings/rus09/832.pdf
	Yorkshire Post	<i>Sir Paul chews over the facts about meat and saving the planet</i> quoting Relu interdisciplinary fellow Evan Fraser 16 June 2009 http://www.yorkshirepost.co.uk/features/Sir-Paul-chews-over-the.5368936.jp
	Farmers Weekly Interactive blogging site	http://www.fwi.co.uk/community/blogs/motley/archive/2009/06/18/the-future-of-rural-land-use.aspx 18 June 2009 Detailed comment on Future of Rural Land Use conference
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	SDRN news bulletin	<i>Relu policy and practice note no 8: ‘Regional rural land use: a time for fresh thinking?’</i> 29 June 2009 http://www.sd-research.org.uk/post.php?p=1034

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	BBC TV	<i>The One Show</i> item on sustainable agriculture mentioning Relu tilapia project 15 July 2009 http://www.bbc.co.uk/iplayer/episode/b00lplv2/The_One_Show_15_07_2009/
	Planet Earth	<i>British trees and shrubs face sudden death</i> news on Potter sudden oak death project p6 issue summer 2009
	Society Now	<i>Changing land policy</i> article on Mark Reed winner of Michael Young Prize p 16
	ESRC annual report	<i>Rural land use</i> findings from Bruce Traill research project p 16
	BBSRC annual report	<i>Advice system that helps farmers recycle manure</i> David Chadwick research project p 9
	NERC annual report	<i>Developing more nutritious food</i> Bruce Traill research project p17 <i>Kite mark for manure pollution risk</i> David Chadwick research project p17, <i>Great land use debate</i> p 27
	Ruralbiz online newsletter for E Midlands RDA	<i>Regional rural land use policy and practice note</i> http://www.ruralbiz.net/neres_news.php?ID=820 July 2009
	TCPA members' news bulletin	<i>Relu policy and practice note no 8: 'Regional rural land use: a time for fresh thinking?'</i> Regional rural land use policy and practice note July 2009
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August	BBC Radio 4	<i>Farming Today</i> lead item on Lowe report including interview with Philip Lowe 6 August 2009
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NFU Online	<i>Your farm vet and you</i> – coverage of Lowe report http://www.nfuonline.com/x41289.xml 6 August 2009
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The Cattle Site web news	<i>Call for rethink on farm veterinary service</i> http://www.thecattlesite.com/news/28098/calls-for-rethink-on-farm-veterinary-service 7 August 2009
Zambio news.com	<i>Independent report calls for rethink on farm vet services – Lowe report</i> http://www.zambio.com/news/2009/08/08/27977 8 August 2009
Silobreaker.com	<i>Call for vets to take stronger role in ensuring food safety – Lowe report</i> http://www.silobreaker.com/call-for-vets-to-take-a-stronger-role-in-ensuring-food-safety-5_2262520827297660960 8 August 2009
Wales on line	<i>Call for vets to take stronger role in ensuring food safety – Lowe report</i> http://www.walesonline.co.uk/countryside-farming-news/farming-news/2009/08/11/call-for-vets-to-take-a-stronger-role-in-ensuring-food-safety-91466-24364902/ 8 August 2009
Wikio news blog	Links to Wales on line, Medical News Today, Intute and Science Daily stories on Lowe report August 2009
RTPI members' news bulletin	<i>Regional land use planning</i> item on Relu policy and practice note no 8: 'Regional rural land use: a time for fresh thinking? Regional rural land use policy and practice note 12 August 2009
Swinecast US web news (links on StreetIQ.com, Beefcast.com, Finance6abc.com, MeFeedia.com and Farmerfeeds.com)	<i>Report on the U.K. Veterinary Practices Offers Advice For Improvement</i> , webcast interview with P Lowe on Lowe report http://www.swinecast.com/swinecast-0452-report-on-the-uk-veterinary-practices-offers-advice-for-improvement 13 August 2009

WiredGov news service	<i>Poorly developed demand for veterinary services</i> Lowe report http://www.wired-gov.net/wg/wg-content-1.nsf/vLookupNewslettersByDOCID/BD9D4A49C7CA7D9E8025760E002EB634?OpenDocument August 2009
Newstin web news	<i>Call for vets to take stronger role in ensuring food safety</i> Lowe report http://www.newstin.co.uk/tag/uk/138248191 11 August 2009
VetAdvantage	<i>Farm vet service needs rethinking, UK report says -</i> Lowe report http://www.vet-advantage.com/2009/08/weekly-news-08112009/ 11 August 2009
BBC Radio 4	<i>You and Yours</i> feature on uplands and grouse shooting including Relu researcher Mark Reed 12 noon 12 August 2009
Vetsweb.com	<i>UK key report on vet expertise in food animal production</i> http://www.vetsweb.com/news/uk-key-report-on-veterinary-expertise-in-food-animal-production-343.html - Lowe report 14 August 2009
Veterinary Record	<i>Call for a new relationship between farm vets, their clients and government</i> – news report on Lowe report <i>Renewing relationships</i> – comment on Lowe report http://veterinaryrecord.bvapublications.com/cgi/reprint/165/7/185 15 August 2009
Common Agricultural Policy blog	<i>Big Phil lays it on the line</i> report on Relu Director's interview on new productivism at ESRS Congress in Vasaa 17 August 2009 http://commonagpolicy.blogspot.com/
Lacors (Local Authorities Coordinators of Regulatory Services)	<i>Report on the future of farm veterinary services</i> Lowe report http://www.lacors.gov.uk/lacors/ContentDetails.aspx?id=22234 17 August 2009
RuSource Briefing	<i>Veterinary Expertise</i> Lowe report 19 August 2009 http://www.norbreckgenetics.com/documents/Vetexpertise.pdf
Veterinary Times	<i>Academic's large animal report receives backing</i> Lowe report 24 August 2009 p 2
World Veterinary Association news	<i>Renewing relationships</i> link to Vet Record articles on Lowe report http://www.worldvet.org/node/5288 24 August 2009
Veterinary Record	<i>BVA seeks views on the Lowe report</i> http://veterinaryrecord.bvapublications.com/cgi/reprint/165/9/248-c 29 August 2009

Sept	Planet Earth	<i>British trees and shrubs face sudden death</i> news on Potter sudden oak death project p6 issue summer 2009
	SDRN bulletin	e. RELU Briefing - 'Assessing the social, environmental and economic impacts of increasing rural land use under energy crops'.
	Science Daily web news	Perennial Energy Crops Could Be Good For Carbon Savings And For Wildlife http://www.sciencedaily.com/releases/2009/09/090916092755.htm 16 September 2009 Angela Karp project
	Greenbang clean tech and business news site	Some biofuels could benefit wildlife http://www.greenbang.com/new-research-some-biofuels-could-benefit-wildlife_11573.html 16 September 2009 Angela Karp project
	Newstin web news	Perennial energy crops could be good for carbon savings and wildlife 16 September 2009 http://www.newstin.com/tag/us/145228167 Angela Karp project
	Physorg.com news site	Perennial energy crops could be good for carbon savings and wildlife 16 September 2009 http://www.physorg.com/news172317168.html Angela Karp Project
	!eScience News	Perennial energy crops could be good for carbon savings and wildlife 16 September 2009 http://esciencenews.com/sources/physorg/2009/09/16/perennial.energy.crops.could.be.good.carbon.savings.and.wildlife Angela Karp Project
	Ecoseed	<i>Perennial ecocrops can reduce UK emissions</i> 17 September 2009 Karp project http://www.ecoseed.org/en/general-green-news/renewable-energy/biofuel/cellulosic-biofuel/4394-perennial-energy-crops-can-reduce-uks-emissions-study
	ScienceCentric News	<i>Perennial energy crops could be good for carbon savings and wildlife</i> 17 September 2009 http://www.sciencecentric.com/news/article.php?q=09091650-perennial-energy-crops-could-be-good-carbon-savings-wildlife Angela Karp project
	English Science Week webnews	<i>Perennial energy crops could be good for carbon savings and wildlife</i> 17 September 2009 http://english.scienceweek.cz/headlines/iid/140582 Angela Karp project
	Newspeg	<i>Perennial energy crops could be good for carbon savings and wildlife</i> 16 September 2009 http://en.newspeg.com/Perennial-energy-crops-could-be-good-for-carbon-savings-and-for-wildlife-44154107.html Angela Karp project

Earthstream	<i>Perennial energy crops could be good for carbon savings and wildlife</i> 16 September 2009 http://www.earth-stream.com/Earth/Nature-and-Climate/Wildlife-and-Species/Perennial-Energy-Crops-Could-Be-Good-For-Carbon-Savings-And-For-Wildlife_18_149_614_204798.html Angela Karp project
Edienet news	<i>Land use lessons of past could help in future</i> 17 September 2009 http://www.edie.net/news/news_story.asp?id=16990&channel=0&title=Land+use+lessons+of+the+past+could+help+in+future Angela Karp project
Biomass Week	<i>A recent study performed by the U.K. Research Councils Rural Economy and Land Use Program</i> Karp project 19 September 2009 http://www.biomassmagazine.com/biomass-newsletter/newsletter.jsp?newsletterId=63
SDRN newsbulletin	Relu Policy and Practice Note - ' <i>Assessing the Social, Environmental and Economic Impacts of Increasing Rural Land Use Under Energy Crops</i> '. 21 September 2009
BBC Radio 4	<i>Farming Today</i> Gareth Edwards-Jones interviewed about ethics of buying local food v developing world 22 September 2009
Farmers' Weekly	<i>Good veterinary advice leads to a better product</i> opinion piece by Philip Lowe on independent vet report p29, 25 September 2009
Scotland on Sunday	<i>Call for deer stalking for the masses</i> http://scotlandonsunday.scotsman.com/scotland/Call-for-deer-stalking-for.5681972.jp quoting Douglas Macmillan from Irvine project on deer stalking 27 September 2009
BBC Radio Scotland news	Interview with Douglas Macmillan from Irvine project on deer stalking 28 September 2009
October	
Society Now	<i>Changing land policy</i> article on Mark Reed winner of Michael Young Prize p 16
Rural Matters, RASE magazine	<i>What do we want from the uplands?</i> Article on Relu conference by Anne Liddon p 21 Autumn issue
SDRN news bulletin	<i>NEW REPORT - 'LAND VALUATION AND DECISION MAKING'</i> report of Relu workshop 19 October 2009
ESRC annual report	<i>Rural land use</i> findings from Bruce Traill research project p 16
November	
BBSRC annual report	<i>Advice system that helps farmers recycle manure</i> David Chadwick research project p 9

NERC annual report	<i>Developing more nutritious food</i> Bruce Traill research project p17 <i>Kite mark for manure pollution risk</i> David Chadwick research project p17, <i>Great land use debate</i> p 27
ESRC Britain in 2010	“ <i>Is it safe to go out in the countryside?</i> ” p13 “ <i>Who pays to clean up our water?</i> ” p18 “ <i>What’s fair about rural England?</i> ” p18
PRSD South Devon arts/environment/current affairs web news	<i>What is land for?</i> book launch 19 November 2009 http://www.peoplesrepublicofsouthdevon.co.uk/2009/11/19/what-is-land-for-you-may-be-surprised-at-the-answer-clue-its-to-do-with-food-fuel-and-climate-change/
BBC Radio 4	<i>Today Programme</i> 23 November interview with Phil Rothwell Head of Flood Risk management policy at the EA mentioned the work of Whatmore project in Pickering. http://news.bbc.co.uk/today/hi/today/newsid_8373000/8373746.stm
Phys.org news site	<i>Does carbon labelling give developing countries a bad deal?</i> 24 November 2009 Gareth Edwards Jones policy and practice note http://www.physorg.com/news178299504.html
Cricket twitter news feed	<i>Does carbon labelling give developing countries a bad deal?</i> 24 November 2009 Gareth Edwards Jones policy and practice note http://cricket.tweetmeme.com/story/300598762/does-carbon-labelling-give-developing-countries-a-bad-deal
ESRC twitter news feed	<i>Does carbon labelling give developing countries a bad deal?</i> 24 November 2009 Gareth Edwards Jones policy and practice note https://twitter.com/ESRC/status/6007563647
Environment passion news site	<i>Does carbon labelling give developing countries a bad deal?</i> 24 November 2009 Gareth Edwards Jones policy and practice note http://identi.ca/notice/15463478
Morning cup food & beverage industry news website	<i>Does carbon labelling give developing countries a bad deal?</i> 24 November 2009 Gareth Edwards Jones policy and practice note http://www.morningcup.net/corpsub/CS-1280_CAMPBELL
Ybanet news website	<i>Does carbon labelling give developing countries a bad deal?</i> 24 November 2009 Gareth Edwards Jones policy and practice note http://yubanet.com/enviro/Does-carbon-labelling-give-developing-countries-a-bad-deal.php
Innovationwatch.com web news	<i>Does carbon labelling give developing countries a bad deal?</i> 24 November 2009 Gareth Edwards Jones policy and practice note http://innovationwatch.com/?s=carbon&x=7&y=4

Christ.com science and technology news site *Does carbon labelling give developing countries a bad deal?* 24 November 2009 Gareth Edwards Jones policy and practice note <http://www.christ.com/loh-news-tech-p3.shtml>

Science Daily web news *Does carbon labelling give developing countries a bad deal?* 24 November 2009 Gareth Edwards Jones policy and practice note <http://www.sciencedaily.com/releases/2009/11/091127133424.htm>

Western Morning News *Climate change book launched by chief adviser 25 November 2009* “What is land for?” launch <http://www.thisiswesternmorningnews.co.uk/farming/Climate-change-book-launched-chief-adviser/article-1541334-detail/article.html>

Food Ethics *The herbivore’s dilemma* article by Gareth Edwards-Jones p17 winter issue 2009 vol 4 issue 4 Food Ethics Council magazine

Food Ethics *What is land for?* New book edited by M Winter and M Lobley featuring Relu researchers p 35 winter issue 2009 vol 4 issue 4 Food Ethics Council magazine

Earthstream.com *Does carbon labelling give developing countries a bad deal?* 28 November 2009 Gareth Edwards Jones policy and practice note http://www.earth-stream.com/Earth/Community-and-Politics/Does-carbon-labeling-give-developing-countries-a-bad-deal-18_193_219948.html

The Copenhagen Voice website *Does carbon labelling give developing countries a bad deal?* 25 November 2009 Gareth Edwards Jones policy and practice note <http://cphvoice.ning.com/profiles/blogs/does-carbon-labelling-give>

Political Ecology web news *Carbon Labelling Still Far From Perfect* 28 November 2009 Gareth Edwards Jones policy and practice note <http://politicalecology.xyvy.info/?p=2051>

Daylife webnews *Does carbon labelling give developing countries a bad deal?* 24 November 2009 Gareth Edwards Jones policy and practice note http://www.earth-stream.com/Earth/Continents/UK/Does-carbon-labeling-give-developing-countries-a-bad-deal-18_197_668_219948.html

eScience news *Does carbon labelling give developing countries a bad deal?* 24 November 2009 Gareth Edwards Jones policy and practice note <http://esciencenews.com/sources/physorg/2009/11/24/does.carbon.labelling.give.developing.countries.a.bad.deal>

December Relu Policy and Practice Note No.12 *Social and Environmental Inequalities in Rural Areas*

Relu Policy and Practice Note No.13	The Sustainability of Hill Farming
Food Climate Research Network	<i>Relu briefing: Does carbon labelling give developing countries a bad deal?</i> 1 December 2009 Gareth Edwards-Jones Policy and Practice note http://www.fcn.org.uk/researchLib/researchlib.php?id=12
Bangor University news	<i>Schools welcome Bangor University Bug Man</i> 3 December E coli project work with schools http://www.bangor.ac.uk/news/full.php.en?Id=1084
Garden Organic News	<i>Does carbon labelling give developing countries a bad deal?</i> 10 December 2009 Gareth Edwards-Jones Policy and Practice note http://www.gardenorganic.org.uk/organicveg/news/index.php
Farmers' Weekly	<i>E coli is an issue farmers should try to address</i> Talking point article by Colette Jones, E coli project 11 December 2009 p29
Rural Matters RASE Magazine	<i>What's the alternative?</i> Article on Alastair Bailey project Winter issue 2009 p 22
RTPI planning network bulletin	<i>Landmarks for Policy published</i> 23 December 2009 http://www.rtpi.org.uk/item/3279&ap=1
BBSRC food security website	<i>The human and technological dimension</i> Relu Director Philip Lowe on food security for the BBSRC's new blog December 2009 http://www.foodsecurity.ac.uk/blog/index.php/2009/12/the-human-and-technological-dimension/#comments
RuSource network briefing	<i>Sustainability of hill farming</i> Relu P&P note no13 15 December 2009 http://www.nationalrural.org/upload/rusource/951.pdf
Royal Agricultural Society of England Journal	<i>"Milk and honey or weeds and birds? Strategic land use in a changing climate"</i> viewpoint article by Philip Lowe Anne Liddon vol 107 2009 http://www.rase.org.uk/what-we-do/publications/journal/index.asp?ShowYear=2009
Radio 4	<i>Costing the Earth</i> Can we value ecosystem services? 17th December interview with Ian Bateman.

PRESENTATIONS TO STAKEHOLDERS

Appleton, K. (2009) *'The development of sustainable, multi-functional landscapes in rural areas: a case study of a Norfolk Broads river valley'* Relu People and the Rural Environment Forum, London.

- Armsworth, P. et al (2009) '*Sustainable hill farming*' Moors for the Future's 6th Research Day, 07/07/09, Bakewell. Moors for the Future, PDNPA, NT, NE, gamekeepers, researchers, etc.
- Armsworth, P. et al. (2009) '*The sustainability of hill farming*'. Presentation and workshop activities with local farmers, 07/07/09, Hathersage.
- Armsworth, P., Acs, S., Dallimer, M., Gaston, K., Hanley, N., Robertson, P., Tinch, D. and Wilson, P. (2009) '*The future for the uplands: a case study of agriculture and biodiversity in the Peak District*'. Future of Rural Land Use Conference, London, June.
- Bailey, A. (2009) '*Re-bugging the system - promoting adoption of alternative pest management strategies in field crop systems*' Relu Animal and Plant Disease Forum, London.
- Banks, C. (2009) '*Integrated systems for farm diversification into energy production by anaerobic digestion: implications for rural development, land use & environment*' Relu People and the Rural Environment Forum, London.
- Banks, C.J. (2009) '*Anaerobic digestion: a European perspective*'. Presentation to the Chinese Ministry of Agriculture and staff of Tsinghua University and the National Agricultural University, Beijing, China, 12th November.
- Banks, C.J. (2009) '*Anaerobic Digestion: turning organic waste into a resource*'. Sherkin Island Marine Station. 25th Annual Environmental Conference, Thursday 7th and Friday 8th May.
- Banks, C.J. (2009) '*Opportunities and potential for small scale anaerobic digestion (AD) plants in the UK*'. REG Knowledge Network event, 10th December, North Wyke Research, Okehampton, Devon.
- Banks, C.J., Walker, M., Heaven, S. (2009) '*Stability testing for the PAS110 digestate*'. WRAP, Banbury, 16th July.
- Barns, S.A., and Willoughby, B.E. (2009) '*New Zealand and English farming comparisons.*' Presented at Kirbymoorside Golf Club, 14th January. (Included discussions with farmers about in North Yorkshire. Ryedale National Farmers' Union members).
- Barns, S.A., and Willoughby, B.E. (2009) '*New Zealand and English farming comparisons*' Presented at Cresswell Arms, Appleton-le-Street, 25th February. (Included discussions farmers in north Yorkshire. Malton National Farmers' Union members).
- Bateman, I. (2009) '*Land use change: economic and water quality impacts*' Rural Land Use in the North : Future Challenges, York. Festival of Social Science/National Science and Engineering Week.
- Bateman, I. (2009) '*The future for water quality*' Relu Future of Rural Land Use Conference, London.
- Bateman, I.J. (2009) '*The ecosystem services approach to economic planning: Is there a role for economics in biodiversity conservation?*' Presented to the Communist Party of China's Central Committee (CPCCC) and the Chinese Ministry of Environmental Protection as part of the Senior Chinese Policy Maker Study Visit: "Low-carbon industrialisation and ecologically balanced environments", The Møller Centre, University of Cambridge, 22nd October.

- Bateman, I.J. and Fezzi, C. (2009) '*Decision analysis tools for joint land use and water quality management*', Presented to a Joint meeting of the Environment Agency, Defra and the Welsh Assembly, Millbank, London, 19th November 2009.
- Bateman, I.J. (2009) The Way Forward, *National Ecosystem Assessment (NEA): First Economic Analysis Meeting*, Girton College, Cambridge, 1st - 2nd October 2009. Sir Partha Dasgupta, Professor Karl-Goran Maler and more than a dozen of the top environmental economics academics in the world.
- Bateman, I.J. (2009) '*Economic analysis for ecosystem assessment*', University of East Anglia, Norwich. Presented to Kevin Andrews and a team from Defra and Natural England.
- Bateman, I.J., Binner, A., Coombes, E., Day, B.H., Ferrini, S. Fezzi, C., Hampson, D. and Posen, P. (2009) '*The ChREAM and SEER projects*', presented to HRH The Prince of Wales, University of East Anglia, Norwich.
- Bateman, I.J. (2009) '*Economic Analysis for the National Ecosystem Assessment (NEA)*', presented to Richard Price (Head of Economics, Defra), Catherine Connolly (head of Natural Environment Economics, Defra) and others, Defra, London, 16th December.
- Bond, A. (2009) Supergen Bioenergy Research Forum meeting on 'Sustainability', Tuesday 10th November, Centre for Renewable Energy, East Drayton. UK Bioenergy stakeholders, growers.
- Buller, H. (2009) '*Mobilising nature in food production*' Land for the Future, ESRC Festival of Science Seminar, University of Exeter, March.
- Bullock, J.M. (2009) '*The FarmCAT project*'. Presentation to Natural England, London, July.
- Cassidy, A. (2009) '*Human ideas about badgers: why are they important?*' *Autumn Symposium of the Mammal Society 2009: Human-Wildlife Conflict Resolution*. 21-22nd November 2009.
- Cassidy, A. (2009) '*Vermin, victims and disease: public controversy over badgers and bovine TB in the UK*' Presented at 9th *European Sociological Association Conference*, 2-9th September, Lisboa, Portugal; and at *Fourth Annual Science and the Public Conference*. University of Brighton, 13-14th June.
- Clay, G., Bonn, A., Danson, M., Dold, J., Evans, M., Hewson, W., Parnell, M., McMorrow, J. and Worrall, F. (2009), '*Kinder-Grindsbrook wildfire - a case study*', Moors for the Future Research Day. Bakewell.
- Dandy, N. (2009) '*Collaborative frameworks in land management: A Relu sponsored Research Project*' Presentation to Bournemouth University / National Trust / British Ecological Society / Deer Initiative Symposium "The Ecology and Management of Deer in Wooded Landscapes", 20th. Studland, Dorset. 100-120 Deer and land managers; NGO representatives; academics.
- Fish, R. (2009) '*The stage is set? Some observations about rural land use from the nearly-present future*' Land for the Future, ESRC Festival of Science Seminar, University of Exeter, March.
- Fish, R. and Latham, S. (2009) External Advisory Group meeting 15th April 2009 in the Foresight conference centre, Liverpool with presentations on the aims and methodology proposed for our 'Lost in Translation' project. Ruth Lysons (Defra), Gordon Nichols (Health Protection Agency), Alwyn Hart (Environment Agency), Paul Rhodes (United Utilities).

- Forbes, K, Strachan N, et al (2009) '*Geography and typing of Campylobacter in Scotland*' (Edinburgh, June 09). FSA staff, academics, food and farming industry, public health, local councils etc.
- Fraser, E.D.G. (2009) '*Global food security*'. Invited Research Seminar at the University of Guelph. May 8th. Guelph, Ontario.
- Fraser, E.D.G. (2009). "*Crop-climate impact models: where are the farmers?*" Invited Research Seminar at the Institute for Science and Society. January 22nd. University of Nottingham, UK.
- Gill, R. (2009) "*The relationship between deer population densities and their impacts*" Presentation to Bournemouth University / National Trust / British Ecological Society / Deer Initiative Symposium "*The Ecology and Management of Deer in Wooded Landscapes*", Dorset. 100-120 Deer and land managers; NGO representatives; academics.
- Gowing D.J.G. (2009) '*Water management for floodplain meadows*'. Wildlife Trusts workshop, Preston Montford Field Centre, 18th May. Wildlife Trust managers, Natural England officers, Local authority rangers.
- Gowing, D.J.G. (2009) '*Hydrological management for conservation*'. Field Studies Council, Shrewsbury. 2nd April.
- Gowing, D.J.G. (2009) '*Water management for nature conservation: conflicts and synergies*'. Public Lecture at Birkbeck College organised by the Ecology and Conservation Studies Society. 20th February. Environmental science students from Birkbeck plus members of the society and interested members of the public. Over 200 people in all.
- Grant, W. (2009) Seminar on the RELU programme to the Department of Primary Industries, Orange NSW, Australia (5th March 2009). Veterinarians and policy makers.
- Greaves, J. (2009) '*Interaction with social and economic sciences (the Relu experience)*', BBSRC 'Combating Endemic Diseases of Farmed Animals for Sustainability' (CEDFAS) workshop, De Vere Mottram Hall, Cheshire, 13th May.
- Hampson, D., Bateman, I., and Lovett, A. (2009) '*Benefits of reducing microbial river pollution.*' Poster presentation at the Environment Agency conference, 'Better Environments, Better Lives', Birmingham, 27th February.
- Hanley, N. (2009) '*Hill farming and biodiversity*' Rural Land Use in the North : Future Challenges, York. Festival of Social Science/National Science and Engineering Week. Regional policy and stakeholders.
- Hess, T.M. (2009) '*Changing land use and hydrological status of some lowland floodplains in England*'. River Restoration Centre, Conference, 2 April 2009. Conservation organisations, Environment Agency, Land owners, researchers, Local Government.
- Hubacek K. and Reed M.S. (2009) '*Participatory approaches for developing upland communities*', Commission for Rural Communities Uplands Enquiry Seminar, Penrith, May Commission for Rural Communities members.
- Huby, M. et al. (2009) '*Inequality in England's rural uplands: an overview of how social and environmental conditions in the rural uplands compare with the remaining areas of England*' presented at a Commission for Rural Communities seminar, 20 March, Alnwick, Northumberland.

- Huby, M. et al. (2009) '*Social and environmental inequalities in rural England*' Seminar presented as part of the ESRC Festival of Social Science, 11 March 2009, County Hall, Northallerton.
- Huby, M. et al. (2009) '*Integration in practice: challenges for research and policy*' presented at the Environment, Health and Development Inaugural Symposium, 15-17 June, University of East Anglia. Health practitioners.
- Irvine, R.J. White, R. et al. (2009) "*Participatory GIS for natural resource management*". Relu Future of Rural Land Use Conference, London.
- Jones, P.J. (2009) Tzanopoulos, J. , Mortimer, S. R. and Traill, B. (2009) '*The future for food-producing landscapes*' Relu Future of Rural Land Use Conference, London.
- Karp, A. (2009) '*Growing energy*' Edinburgh Science Festival 09.04.2009 Edinburgh. Public lecture.
- Karp, A. (2009) '*Impacts of biomass production – strategies for optimising the location of Bioenergy crop planting in the UK*'. Spatial Impacts of Biomass Conference; Biomass for Future Landscapes 31.03.09- 1.04.09 Berlin. International stakeholder community.
- Karp, A. (2009) '*The future for energy crops*' Relu Future of Rural Land Use Conference, London.
- Lobley, M. (2009) '*Improving the success of agri-environment initiatives: the role of farmer learning and landscape context*' Land for the Future, ESRC Festival of Science Seminar, University of Exeter, March.
- Lobley. M. (2009) '*Training and advice for agri-environmental management*'. Presentation to Natural England, London, July.
- Loder J. and Reed, M.S. (2009) '*Interacting with rural change: rural planning research at University of Aberdeen*', RICS mid-term conference, Battleby, April. RICS members.
- Lowe, P. (2009) '*Combating endemic disease in farm animals: an interdisciplinary approach*' BBSRC "Combating Endemic Diseases of Farmed Animals for Sustainability (CEDFAS)" Workshop, Wellesbourne.
- Lowe, P. (2009) '*Introduction to Relu*' and '*Knowledge exchange and Relu*' End of project conference "Knowledge Controversies in Rural Land Management", Oxford.
- Lowe, P. (2009) '*Strategic land use for ecosystem services*' Presentation at "Valuing our Life-support Systems: Securing a Healthier Natural Environment through Better Decision Making", Natural Capital Initiative (NCI), London.
- Lowe, P. (2009) '*Strategic rural land use*' Relu/Northern Rural Network, National Science and Engineering Week/Festival of Social Science event, York.
- Lowe, P. (2009) '*The future of rural land use*' Relu Future of Rural Land Use Conference, London.
- Lowe, P. (2009) '*The future of the veterinary profession*' Presentation to the Policy Group of the British Veterinary Association, Mansfield House, 5th November.
- Lowe, P. (2009) '*The rationale for Relu*' Presentation at "How will Energy Crops affect our Landscape: Results from Relu Biomass" National Science and Engineering Week/Festival of Social Science, Rothamsted.
- Lowe, P. (2009) '*The Relu programme and animal and plant disease management*' Relu Animal and Plant Disease Forum, London.
- Lowe, P. (2009) '*The state of the uplands*' CRC Seminar, Alnwick, Northumberland.

- Lowe, P. (2009) *'Unlocking potential'* Presentation to Royal Veterinary College, RVC Potters Bar Campus, 16th November.
- Lowe, P. and Phillipson, J. (2009) *'Engaging thinking: knowledge exchange narratives and metrics'* Beacon North East "Maximising IMPACT through Public Engagement" Stadium of Light, Sunderland.
- Lowe, P. (2009) *'The Rural Economy and Land Use Programme'* How will energy crops affect our landscape: result from Relu Biomass, Harpenden. Festival of Social Science/National Science and Engineering Week.
- Medley, G., Greaves, Green, L. and Weldegebriel, H. (2009) Presentations to Society for Veterinary Epidemiology and Preventive Medicine, annual conference, Imperial College.
- Medley, G., Greaves, J, Carslake, D. and Cave, J. (2009) Presentations to Defra personnel involved in Animal Health and Policy.
- Morris, J (2009) *'An integrated approach to floodplain management.'* Association of Drainage Authorities, Annual Conference, Sept 16th, Peterborough Internal Drainage Boards, Local Authorities, Drainage Commissioners, Land Owners, Defra / Environment Agency Flood Risk Managers.
- Morris, J (2009) *'Joining things up in floodplains'*, CIWEM Annual Conference, Olympia, London. Consultants, local government, regulators, policy makers, engineering institutes, environment and flood risk managers.
- Morris, J (2009) *'The case of rural floodplains'*. Rural Land Use in the North of England: Future Challenges. 2009 Festival of Social Science/National Science and Engineering Week. York, March 12th (Local government, development agencies, regulators, researchers)
- Morris, J. (2009) *'Ecosystem services – Joining things up in floodplains'* Relu Future of Rural Land Use Conference, London.
- Muskolus, A, Salter, A.M. and Jones, P.J. (2009) *'Linking economic and energy modelling with environmental assessment when modelling the on-farm implementation of anaerobic digestion'*, presented at the Modern Agriculture in Central Europe and Eastern Europe conference on Multi-Level Processes of Integration and Disintegration, Berlin, 14-15 January.
- Oughton et al (2009) *'Angling and the rural eEnvironment'*. Dissemination meeting York May 2009. Angling Development Board, Angling Trust, Environment Agency, FWAG, NERFERAC, North York Moors National Park Authority, Northallerton Council, Owners of fisheries lakes, hotel and accommodation businesses offering angling, River Esk Salmon and Pearl Mussel Advisory Body, River Swale Preservation Society, Social and Community Benefits of Angling Research Project – Substance, Manchester
- Phillipson, J. (2009) *'Accounting for knowledge exchange: Introducing SIAM'*, SIAM/Research Councils workshop, Swindon.
- Phillipson, J. (2009) *'Accounting for knowledge exchange: Introducing SIAM'* NERC Economic Impact Workshop, London, November 09. NERC staff and centres.
- Phillipson, J. (2009) *'Narratives and metrics of knowledge exchange: Stakeholder Impact Analysis Matrix'*, RCUK Workshop, Polaris House, Swindon, 20 November 09. Audience included over 20 invited research council staff from ESRC, BBSCRC, NERC and RCUK.

- Phillipson, J. (2009) '*Stakeholder Impact Analysis Matrix*', Scottish Government Knowledge Exchange Group, Edinburgh.
- Poppy, G. (2009) '*Food production versus biodiversity: How can science help us feed the world whilst minimising the environmental footprint of agriculture?*' Land for the Future, ESRC Festival of Science Seminar, University of Exeter, March.
- Posen, P. (2009) '*Catchment Hydrology, Resources, Economics and Management (ChREAM): Integrated Modelling of WFD Impacts upon Rural Land Use and Farm Income.*' Presented at Breckland Council, Dereham, Norfolk, 16th March. Members of the Breckland Council Private Water Supplies Group.
- Posen, P., Lovett, A., Hutchins, M. and Davies, H. (2009) '*Land use and water quality – how confident are our predictions under the WFD?*' Presented at the CIWEM/ASTEE/IWA conference, 'WFD: Emerging Water Management Challenges', World Trade Centre, Lille, 29th-30th September. An international audience of policymakers, academics, environmental consultants, members of the business community, etc.
- Potter, C. (2009) '*Memory and prediction in tree disease control*' Land for the Future, ESRC Festival of Science Seminar, University of Exeter, March.
- Proctor, A. (2009) '*Field level advisers as intermediaries between research and practice: approaches and perspectives from the surveying, veterinary and ecology professions*', ROOTS Royal Institution of Chartered Surveyors, Rural Research Conference, 23 March, Cambridge University. Rural Surveyors, land agents and academics.
- Proctor, A. (2009) '*The Rural Economy and Land Use Programme*'. Presentation to FWAG, Lilleshall, October.
- Pywell, R.F. (2009) '*Delivering for species at a landscape scale*'. Presentation to Defra and Natural England, September.
- Quine, C. (2009) Comprehensive set of presentations covering all 3 work packages, 22nd July, MRC, London Project Advisory Board.
- Quine, C. (2009) Comprehensive set of presentations covering all three work packages, 28th Oct, Birmingham Practitioner Panel.
- Quine, C. (2009) Presentation to Royal Park staff giving overview of project, 30th April, Richmond Park manager and senior ecologist, Royal Parks.
- Quinn, C.H., Fraser, E.D.G., Reed, M. & Hubacek, K. (2009) '*Property rights in UK uplands: the implications for management and policy*'. Commission for Rural Communities inquiry into the future for England's upland communities, evidence base, thematic seminars: the state of the uplands 1, 20 March 2009, White Swan Hotel, Alnwick. Commission for Rural Communities members.
- Reed, M. (2009) '*Sustainable uplands: learning to manage future change*' Rural Land Use in the North : Future Challenges, York. Festival of Social Science/National Science and Engineering Week.
- Reed, M.S. (2009) '*Rural planning and policy: research at University of Aberdeen*'. RTPI SPEF workshop, Linking Research and Practice, April. RTI members.
- Rouquette, J.R. (2009) '*Integrated floodplain management: An ecosystem services approach*'. The British Ecological Society Annual Meeting, the University of Hertfordshire, 8-10 September 2009. Researchers, academics, conservation organisations.

- Russell, N. (2009) '*Sustainable intensification: necessary accommodation or uneasy compromise*' Land for the Future, ESRC Festival of Science Seminar, University of Exeter, March.
- Salter, A. (2009) '*Crops as energy feedstock and the concept of energy farming*', TULES Public Seminar on Sustainable Energy, American Centre, Prague, 3rd March. British Council, various members of Czech authorities, government and researchers.
- Saratsi, E. (2009) '*Farmers' attitudes and training for agri-environmental management*'. Presentation to Peninsula Partnership for the Rural Environment, Exeter, November.
- Saratsi, E. '*Farmers' attitudes and training for agri-environmental management*'. Presentation to FWAG, Lilleshall, October.
- Smith, L. (2009) '*Developing a catchment management template for the protection of water resources: exploiting experience from the UK, Eastern USA and nearby Europe. Nov 2007- Dec 2010*' Relu People and the Rural Environment Forum, London.
- Smith, L. (2009) '*Developing a catchment management template for the protection of water resources: exploiting experience from the UK, Eastern USA and nearby Europe*', FWAG Annual Conference, 1 October 2009, Lilleshall.
- Smith, L. (2009) '*Ecosystem Health Report Card*', at Workshop on the Ecosystem Health Report Card, presented at Relu Future of Rural Land Use Conference, London.
- Smith, L. (2009) Thurne catchment workshop, 7 December 2009, Hickling Community Hall, Norfolk.
- Smith, L. (2009) Two presentations at Water Governance: Beyond Tame Solutions for 'Wicked' Problems, 10 March, 2009, London International Development Centre, London.
- Smith, L. (2009) '*Water resources planning and implementation*', STEPS Water Symposium 2-3 November 2009, Institute of Development Studies, University of Sussex.
- Strachan, N. (2009) '*Gastrointestinal pathogens in Scotland*' (Palmerston North, Nov 09) Massey University staff, public health officials.
- Strachan, N. (2009) '*Microbial subtyping and sentinel sites*', Scotland (Wellington, Oct 09) NZFSA staff, public health, food industry, academics.
- Strachan, N. (2009) '*The RELU E. coli O157 project*' (London, Dec 09) Defra.
- Strachan, N. (2009) '*The RELU E. coli O157 project*' (London, Feb 09) FSA UK and FSA, Scotland.
- Strachan, N. (2009) '*The RELU E. coli O157 project*' (Wellington, Nov 09) New Zealand Food Safety Authority.
- Sutherland, W. (2009) '*The importance and causes of farmland heterogeneity*' Relu Future of Rural Land Use Conference, London.
- Swinbank, A. (2009) '*Bioenergy*', Agra Informa's "A Practical Seminar on the Common Agricultural Policy", London, 2 December. Food industry delegates and civil servants from across Europe attending Agra Informa's annual training seminar.
- Swinbank, A. (2009) '*EU policy on renewables and biofuels, and its implementation in the UK*', at the Stakeholders' Workshop "The optimisation and impacts of expanding biogas production in the UK", North Wyke, Devon, 17 December. Dissemination workshop for stakeholders for the Defra-funded project 'The optimisation and impacts of expanding biogas production'.

- Swinbank, A. (2009) '*EU support for biofuels and bionenergy, 'environmental sustainability' criteria, and trade policy*', Workshop on "Biofuels, Trade Policy and Sustainable Development", International Centre for Trade and Sustainable Development, Geneva, 17 June. NGO representatives and members of missions to the WTO attending a dissemination workshop in Geneva.
- Termansen, M., Kirkby, M.J., Bonn, A., Burt, T.P., Chapman, D., Chapman, P.J., Cornell, S., Dougill, A.J., Fraser, E., Jin, N., Holden, J., Hubacek, K., Irvine, B., Kunin, W., Quinn, C., Prell, C., Reed, M., Worrall, F. and Beharry, N. (2009) '*Sustainable uplands: Learning to manage future change*'. Moors for the Future Annual Conference, Castleton.
- Turner, M. (2009) '*The farm business economics of biomass crops*' Land for the Future, ESRC Festival of Science Seminar, University of Exeter, March.
- Whatmore, S. (2009) '*Uckfield briefing – the flood model*' Presentation to Uckfield Flood Research Group members, Uckfield Flood Forum, Uckfield Town Council.
- Whatmore, S. (2009) '*Understanding environmental knowledge controversies – The case for flood risk management*' Project conference for Ryedale and Uckfield Flood Research Group members and stakeholders.
- Williams, P. (2009) '*E. coli O157 and immunity amongst farmers*'. NFU and FUW meetings at seven branch meetings in north Wales (Jan 09–August 09). Farmer's Union representatives and branch chairs.
- Williams, P. (2009) '*E. coli O157: the blame game*'. Walter Idris Jones Memorial Lecture, Aberystwyth University (Aberystwyth, October).
- Winter, M. (2009) '*Introduction to Relu, the land use debate and seminar aims*' Land for the Future, ESRC Festival of Science Seminar, University of Exeter, March.
- Yearley, S. (2009) '*Knowledge, trust and interest in the governance of ecological resources*' Relu Future of Rural Land Use Conference, London.
- Yearley, S., Irvine, R.J. et al. (2009) '*Governance of natural resources*'. Relu Future of Rural Land Use Conference, London.

Annex C: CONFERENCES/WORKSHOPS ATTENDED BY DIRECTOR'S OFFICE

Jan 09	Relu workshop on " <i>Expert Systems for Natural Resources Management</i> ", London
Mar 09	CRC Seminar, Alnwick. Presentation on " <i>The state of the uplands</i> "
	" <i>Land for the Future</i> " ESRC Festival of Social Science Workshop, University of Exeter
	" <i>How will Energy Crops affect our Landscape: Results from Relu Biomass</i> " National Science and Engineering Week/Festival of Social Science, Rothamsted. Presentation " <i>The rationale for Relu</i> ".
	" <i>What's Fair about the Countryside</i> " National Science and Engineering Week/Festival of Social Science Workshop, Northallerton.
	" <i>Strategic Rural Land Use</i> " Relu/Northern Rural Network, National Science and Engineering Week/Festival of Social Science event, York.
Apr 09	Northern Rural Network seminar on " <i>Rural Economies: Coping with Recession</i> ", Newcastle (Chair)
	Natural Capital Initiative (NCI), London " <i>Valuing our Life-support Systems: Securing a Healthier Natural Environment through Better Decision Making</i> " Presentation on " <i>Strategic land use for ecosystem services</i> "
May 09	BBSRC " <i>Combating Endemic Diseases of Farmed Animals for Sustainability (CEDFAS)</i> " Workshop, Wellesbourne. Presentation on " <i>Combating endemic disease in farm animals: an interdisciplinary approach</i> "
	" <i>Animal Welfare Policy</i> " Workshop, Warwick HRI, Wellesbourne
	End of project dissemination workshop " <i>Angling in the Rural Environment</i> ", York
Jun 09	Foresight Land Use Futures Regional Workshop, Newcastle.
	" <i>The Future of Rural Land Use</i> " Relu Conference, London. Presentation on " <i>The future of rural land use.</i> "
Jul 09	End of project conference " <i>Social and Environmental Inequalities in Rural Areas</i> " (Huby), York
	XXIIIrd Congress of the European Society for Rural Sociology, Vaasa, Finland " <i>Re-inventing the Rural: Between the Social and the Natural</i> ". Opening address by Director.
Sept 09	UK Food Group Conference for World Food Day 2009 " <i>Rewriting the Rules ... to secure our future food</i> ", Dragon Hall, London
	" <i>Regulating Infectious Disease in the 21st Century: Who is responsible or The Changing Landscape of Responsibility</i> ", The Innovation Centre, Reading
	RELU-sponsored session at FWAG Annual Conference
Oct 09	Beacon North East "Maximising IMPACT through Public Engagement" Stadium of Light, Sunderland. Presentation on " <i>Engaging thinking: knowledge exchange narratives and metrics</i> "
	RCUK workshop, Swindon. Presentation on " <i>Accounting for knowledge exchange: Introducing SIAM</i> ", London.
Nov 09	Govnet Conference on Science and Innovation at the QEII Conference Centre, London. RCUK seminar on " <i>Excellence with Impact: Benefitting from Collaboration</i> "
	Book Launch " <i>What is Land For: The Food, Fuel and Climate Change Debate</i> ", London
	NERC Economic Impact Workshop. Presentation on " <i>Accounting for knowledge exchange: Introducing SIAM</i> ", London.
Dec 09	End of project conference "Knowledge Controversies in Rural Land Management", Oxford. Two presentations: " <i>Introduction to Relu</i> " and " <i>Knowledge exchange and Relu</i> "

Annex D: EXTERNAL ENGAGEMENT AND EXPLOITATION

Level of usage of any research resources generated	High. See section 2 and 4
Level of co-funding by business and government agencies of any research resources generated	£2,038,272 of co-funding during 2009
Number of interactions/events focused on public participation and engagement	Several thousand interactions with various non-academic publics/audiences
Number of researchers trained in media and public engagement skills (not funded centrally by ESRC)	Unknown
Number of collaborative ESRC research projects	All 30 of ReLU research projects involve collaboration with other Research councils and have active stakeholder engagement (see section 4)
Amount of external funding for joint research (excluding joint Research Council projects)	£2,038,272 of co-funding during 2009
Number of users placed with research programme	3 visiting fellows
Number of researchers placed in user organisations	7 work shadowers