Economic and Social Research Council, Polaris House, North Star Avenue, Swindon, SN2 1UJ

Tel: 01793 413000

Fax: 01793 413001

PROGRAMME DIRECTOR'S ANNUAL REPORT FORM

(Edition 9: October 2007*)*

PROGRAMME DIRECTOR'S ANNUAL REPORT 2007

Programme Name: **RURAL ECONOMY AND LAND USE PROGRAMME**

Programme Director: **Philip Lowe, University of Newcastle**
Assistant Director: **Jeremy Phillipson, University of Newcastle**
Communications Manager: **Anne Liddon, University of Newcastle**

Reporting period: **from 1 January 2007 to 31 December 2007**

Number of Projects funded under the Programme:		**53 projects**
Total ESRC budget for Programme:		**£24,754,000**
Co-funding amount:		**£1,750,000**
Total amount of Director's Award including any supplements:		**£913,764**
Additional co-funding secured in 2007:	*Programme level*:	**£448,000**
	Project level:	**£370,000**

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Executive Summary

In 2007, the first wave of major Relu projects on sustainable food chains entered their final stages, and the third and final wave of projects began. One measure of the strength of support for the programme is the additional over £800k of co-funding that has been attracted into the projects in this year alone. As Relu's commissioning phase has ended, the emphasis has shifted to delivering good interdisciplinary science. Researchers gave 157 conference papers and published 33 journal articles during the year.

The programme's public and policy profile was raised considerably. Relu held the largest number of events in Science Week, and also had a major presence at the British Association Festival of Science. A highlight was an invitation to the Relu Director to brief the Secretary of State prior to his keynote speech on "Land Use". He also spoke at the UKERC Annual Assembly and as President of the Agricultural section of the British Association during the course of the year. The Programme generated about a hundred news items, including in national print and broadcast media.

Relu is becoming increasingly influential. In previous years we had carefully established extensive networks of stakeholder engagement and in 2007 began to structure the terms of debate for reporting from our respective project waves. In preparation for our major public/stakeholder conference on *Unlocking Change in the Food Chain* we commissioned a pathfinder report on cross-cutting research outcomes and strategic policy implications arising from the projects. The conference showcased major project results and a synthesis of these was submitted to the Cabinet Office Strategy Unit Project on Food Policy.

Relu's Land Use Policy project is setting a strategic land agenda for the UK, as a curtain raiser for the second wave of projects' results. Land use policies are currently under review nationally and the programme responded during 2007 by appointing two land use policy analysts, backed by an expert advisory group, to draw strategic lessons from its research projects and to enhance the impact of the programme's research. Already Relu has influenced the setting up of a Foresight Programme on land use.

The programme's up-front stakeholder engagement has helped it build extensive soft networks for knowledge exchange. Its interdisciplinary nature also gives it a unique vantage on innovation, one that emphasises the significance of socio-technical innovation that blends social and ecological adaptations and technological developments. Relu's path-breaking approach to knowledge exchange was published in 2007 as the briefing paper Common Knowledge. We also introduced a Visiting Fellowship scheme for stakeholders to spend time with a research project, as a counterpoint to the successful work shadowing scheme. The major implications of each research project are to be written up as a policy and practice note: the first was issued in 2007.

In 2007 the Research Councils have shown a welcome interest in deriving lessons from Relu and the programme. The programme was active in fostering strategic international links, when it was showcased at the launch of the Beijing and Washington offices of RCUK.

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 the start of the third wave of research projects.

Number of researcher and related posts: There have been 400 researcher and related posts in the programme to date in 52 projects. 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).

Number of projects started before, during and after the reporting period: 52 projects (of which 34 small seed corn projects were completed in 2005) and 10 PhD studentships started prior to the reporting period. 9 large research projects, commissioned under the Third Call, and three interdisciplinary research fellows (commissioned under the Second Call) commenced their research during 2007. 1 large project and 5 PhD studentships commissioned under the Third Call will commence in 2008, as will 1 studentship funded under the Second Call.

Year of the Programme: Year 4 (2007)

Co-funding and collaboration during the year: The programme is a collaboration between the ESRC, BBSRC and the NERC. It has a budget of £24m, including co-funding of £750k from the Scottish Government and £1m from the Department for Environment, Food and Rural Affairs. A further £818k 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

In 2007, the first wave of major Relu projects on sustainable food chains entered their final stages, and the third and final wave of projects began. One measure of the strength of support for the programme is the additional over £800K of co-funding that has been attracted into the projects in this year alone. With the long commissioning phase of the programme ended, the emphasis has shifted to delivering good interdisciplinary science. We appointed as our new Communications Manager someone experienced in science communication, and we revised our communications strategy, website and publishing formats to reflect this shift.

Raising the Public Profile

This year saw a considerable raising of the programme's public profile, and we have contributed actively to public debate on agriculture and land use, food and rural policy. The programme held the largest number of events in Festival of Social Science/National Science and Engineering Week, taking forward the Programme's commitment to civic science – of making research issues accessible and publicly exploring contrasting scientific positions. The Programme also had a major presence at the British Association Festival of Science, holding a press conference, supporting four sessions and involving several project teams in making presentations and demonstrating their work to the public (such as landscape visualisation of energy crops). A highlight of the year was an invitation to brief the Secretary of State prior to his keynote speech on "Land Use". Major speeches by the Director were given to the UKERC Annual Assembly 2007 and as President of the Agricultural section of the British Association. The Programme generated about a hundred news items, including in national newspapers and on radio.

Strategic Influencing

Relu is pursuing a sustained strategy of influencing, rather than the apparently random acts of publicity or the stand-alone, end-of-award splashes that mark so many other research projects and programmes. In previous years we had carefully established extensive networks of stakeholder engagement. On this foundation, we began this year to shape the terms of debate for reporting from our respective project waves. In preparation for our major public/stakeholder conference on Unlocking Change in the Food Chain a pathfinder report on cross-cutting research outcomes and strategic policy implications arising from the projects was commissioned from an external policy analyst. The conference then showcased major project results and provided an opportunity to debate the wider implications, which was followed up in a web-facilitated debate and wider consultations. A synthesis of the results was submitted to the Cabinet Office Strategy Unit Project on Food Policy and will form the basis of a Relu briefing paper on sustainable food chains. Food Standards Agency Chair, Dame Deirdre Hutton, praised the programme as "far-sighted" and "broadly-based" and said: "Research like this is incredibly important to the Food Standards Agency as an evidence-based organisation." We will be pursuing a similar influencing strategy for the successive waves of research projects (see section 7). Relu's Land Use Policy project is already setting a strategic land agenda for the UK (see dissemination highlight below), as a curtain raiser for the second wave of projects' results.

Innovation in Knowledge Exchange

The knowledge, insights and techniques emerging from Relu research need to get to those who can make use of them. The programme's up-front stakeholder engagement has helped it build extensive soft networks for knowledge exchange, facilitated by our consultative fora and novel mechanisms for building links between research and research users such as our work shadowing scheme. The programme's interdisciplinary nature also gives it a unique vantage on innovation, one that transcends the partial perspectives of society-pull and science-push models, and emphasises instead the significance of socio-technical innovation that blends social and ecological adaptations and technological developments. Relu's unique and path-breaking approach to knowledge exchange was published in 2007 as the briefing paper Common Knowledge which received critical acclaim. During the year we also introduced a Visiting Fellowship scheme for stakeholders to be associated with a research project, as a counterpart to the successful work shadowing scheme. Common Knowledge identified the critical role of knowledge intermediaries or brokers. We have therefore targeted the publishing outlets of key knowledge brokers in the rural economy. For example, we negotiated with the Royal Institution of Chartered Surveyors for each issue of its bimonthly journal Land – which goes to more than 27,000 land managers, advisers and agents – to carry an article about a Relu project. The major implications of each project are to be written up as a policy and practice note, which will be targeted at potential users: the first was issued in 2007.

The Wider Scientific and International Interest

Scientific interest in the Programme continues to be high, both nationally and internationally. During 2007 here have been a growing number of invitations to address conferences and workshops on the achievements of Relu, especially regarding the Programme's approaches to interdisciplinarity and knowledge transfer. The Research Councils have shown a welcome interest in deriving lessons from the Programme, in the development of their science, research and data policies. The programme was also very active in fostering strategic international links, and it was showcased at the launch of the Beijing and Washington offices of the UK research councils.

Science highlight 1: Carbon offsetting could fund regeneration of the peatlands

Britain's uplands represent our largest store of carbon, more than is stored in the forests of France and Great Britain combined. But drainage ditches dug during the 1950s in an unsuccessful attempt to increase the productivity of the land have damaged large tracts, causing them to lose carbon and reducing biodiversity. Extensive drainage networks may also contribute to downstream flooding. Researchers on the Relu project "Sustainable uplands: frameworks for adaptive learning" have evidence that blocking drainage ditches and restoring peat bogs can help to restore the carbon balance. Defra suggests that the cost of blocking one hectare of peat drains is at least £188. In response the Relu researchers have hit on the idea of working with a carbon offsetting company that would allow consumers to offset their carbon footprint by paying for upland regeneration, with additional benefits for biodiversity, water quality, flood control and reduced fire risk. The researchers have been working with a range of organisations including Defra, Environment Agency, Government Regional Office, Yorkshire and Humber Assembly, Forestry Commission, Moors for the Future, the northern National Parks, National Trust, Natural England, RSPB, and Yorkshire Forward to promote Carbon Action Yorkshire.

The group hopes that their regional scheme will lead the way for a similar initiative to be rolled out nationally.

Science highlight 2: Eat the view

Can biodiversity protection and quality meat and cheese production be the same thing? A Relu project is investigating how grazing cattle and sheep on biodiverse natural grasslands can add value and produce not only tastier food, but also healthier meat. They have studied over 40 farms, many located within what are recognised as priority habitats (notably heath and moorland and calcareous grassland), where high value, extensive systems are helping to reverse biodiversity loss. Detailed laboratory analysis has shown that meat produced on biodiverse rich grassland displays higher levels of the anti-oxidant Vitamin E and nutritionally beneficial fatty acids, as well as lower skatole levels which can adversely affect taste. Lamb meat from biodiverse rich grassland recorded higher levels of a number of nutritionally healthy fatty acids, and beef breeds (such as Longhorn) were shown to be more suited to biodiverse pastures and generally yield higher meat quality. For producers, this has potentially significant implications for farm businesses and, ultimately for rural development. By integrating natural value into production chains, producers are able to increase profits from their products and, through marketing and sales strategies, retain a greater proportion of the value within the farm business. Despite possible lower production volumes (in body weight per animal and in the number of animals produced), the higher prices obtained, in some cases combined with payments under agri-environmental schemes for natural grassland management, make this form of farm enterprise profitable in what are often otherwise considered as marginally productive regions. These kinds of products are also popular at outlets like farmers markets, specialist local retail outlets and via web sales, which enable producers to engage directly with consumers and bring money into rural areas. In a number of the cases this has increased on-farm employment and enabled further rural investment.

Dissemination highlight 1: Relu plays key role in setting national land use agenda

Relu is playing a key role in debates over land use, which is being driven up the political agenda by public concerns over climate change, flood risk, food security and sustainable energy supplies. Land use policies are currently the subject of national policy review and many of the issues of concern are being covered by ongoing Relu research. The programme has responded by appointing two land use policy analysts, knowledgeable about land use policy and backed by an expert advisory group, to draw strategic lessons from its research projects and help to enhance the impact of the Programme's research on land use policy. The research programme is beginning to develop an informed perspective on contemporary land use challenges and posing major issues for land use policy, including how to manage the countryside to provide adaptable and multifunctional landscapes. There is now a window of opportunity to influence policy developments and long-term government thinking on land use. The programme provides an independent perspective but is able to link into policy thinking within Defra and other departments and key agencies (such as Natural England, Environment Agency, Scottish Government and the Welsh Assembly Government). Already, the Relu programme has influenced the setting up of a Foresight Programme on land use and the Director was also invited to brief the Secretary of State David Miliband prior to his keynote speech on "Land Use". In 2008 the issue is being taken into the public arena with an on-line Great Land Use debate, to be opened by Secretary of State Hilary Benn.

3. Capacity Building and the Research Environment

3.1 Scientific Output

157 presentations and papers were given by Relu researchers at conferences and workshops (Annex B). Publications from the programme are also flowing, with 33 journal articles published in 2007. Most of this work is appearing in high status disciplinary journals. At the programme level we have concentrated on drawing together special issues of journals devoted to synthesised research from each of the successive waves of Relu projects. In seeking in this way to create a landmark set of scientific publications, we have targeted high-impact disciplinary journals not only to demonstrate the quality of Relu's scientific output, but also to take the interdisciplinary message into top science journals:

- A special issue of *Trends in Food Science and Technology* on Towards Sustainable Food Chains: Harnessing the Social and Natural Sciences will be finalised early in 2008. This is an international peer-reviewed journal providing those concerned with the science and technology of food production concise and critical synopses of important advances from across the full spectrum of food research. 7 synthesis papers are being prepared arising from Relu's first wave of research on sustainable food chains.
- A Relu Special Issue of *Journal of Applied Ecology* was negotiated late in 2007. 22 abstracts were submitted and reviewed. Papers are due for submission in 2008 for peer review. The special profile will include papers based on data that have used an interdisciplinary approach to address an applied ecological problem, or are giving an overview of the approaches projects are taking in dealing with the socio-ecological system under study. Papers will straddle the social sciences and ecology.

3.2 Interdisciplinary Reach

40 disciplines are represented in the Relu Programme. Every project includes natural and social scientists. The most prominent disciplines are economics, ecology, human geography, physical geography, hydrology, sociology, environmental modelling, environmental chemistry, microbiology, human psychology, crop science and management and business studies.

2007 has been the year in which Relu's interdisciplinary approach has begun to catalyse wider change within major science funders. Relu is increasingly being recognised as a prime mover in embedding socio-technical perspectives in mainstream research strategies. A report by Defra's Science Advisory Council on integrating social and natural science research draws specifically on the Relu experience. Bodies as diverse as Natural England, the Farm Animal Welfare Council and the Food Standards Agency are beginning to draw social science analysis more heavily into their evidence base and governance. Meanwhile, natural science research funders such as BBSRC are acknowledging the gains to be made from interdisciplinary research involving collaboration between social and natural scientists, not only in their support for Relu but more widely in their strategic planning (see section 3.7).

Within the Relu programme natural scientists are finding working with social scientists to be a productive experience in helping to place their own research in its socio-economic context. In the words of one Relu microbiologist / entomologist, *"social scientists have enabled us to consider the bigger picture"*[1]. Collaboration with social scientists is seen as helping to set fresh agendas commanding public and stakeholder support and to deliver science in a more useable form, thus enabling it to achieve *"longer and more effective reach"* (Relu crop scientist). Scientists are thereby becoming *"much more aware than previously of the subtleties and complexities of the social issues and the potential role/need for social science-based research to help specify exactly what should (or should not) be studied (and how)"* (Relu plant biochemist / physiologist).

The environmental science community is also recognising the contribution of the Relu model, as reflected in a Relu special feature of the Bulletin of the British Ecological Society (vol 38: 3 August 2007) on "Interdisciplinary research: leading ecologists down the route to sustainability?"

Relu is also setting a conceptual and analytical agenda around interdisciplinarity. During 2007 the programme supported four cross-project events that specifically reflected on the theory and experience of interdisciplinary working as well as a specific training event into interdisciplinary methods targeted at junior Relu researchers (see Section 3.4). During the year Relu fleshed out its notion of coupled socio-technical innovation. By requiring joint problem setting and mutual learning, interdisciplinary research helps to overcome fragmented perspectives and the partiality that can arise when natural scientists make naïve assumptions about the social world or social scientists make naïve assumptions about the natural world. In casting technical research within a social and economic framework the approach also holds the promise for coupled socio-technical innovation, i.e. technological innovation that facilitates and works with the grain of social change and social and environmental adaptation which creatively exploits technological opportunities.

3.3 Programme Wide Events and Networking

Eight Programme-wide events were organised by the Director's Office. Major events were the three UK Rural Economy and Land Use Debates on *"Power and Responsibility: Who Decides : You Decide"* held throughout Science Week in March and two major Relu national conferences on *"Research on Rural Resource Management and the Rural Economy: Addressing the Local and Regional Dimension"* (May) and *"Unlocking Change in the Food Chain"* (November) (see Section 4.2). We also organised a Relu Interdisciplinary Training Master Class for junior research staff (see Section 3.4), a workshop to launch Relu's land use policy project (Section 4.2), and the first in a series of Relu Seminars. Group planning meetings were held with all Principal Investigators from each of the three funding calls. In addition, individual site visits were conducted to 7 First Call projects and 10 Second Call projects at which inter-project links and synergies were discussed. Five cross-project, events were also supported by the programme (see Section 3.7).

[1] This and subsequent quotes come from a survey of bio-scientists who are leading Relu projects.

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. On an ongoing basis Relu projects offer fertile ground for on-the-job training and work experience for research staff and students, particularly in familiarising them with different methods and techniques as well as with interdisciplinary project management. The interdisciplinary training and research career development experience provided by projects are a specific element of assessment and monitoring. The following programme level activities took place in 2007:

Interdisciplinary studentships and fellows
Relu operates a PhD studentship scheme that is open to applications competitively from the major research projects. The rationale is that research students will benefit from the diversity of scientific expertise and research experience that these major interdisciplinary endeavours have to offer. In assessing proposals, particular attention is given to the quality and integration of the research training and supervision. 11 had already been allocated under the First and Second Calls. 5 more studentships were awarded (some with conditions) to Third Call research projects during 2007.

Interdisciplinary fellowships
In 2006 the Research Councils launched an Interdisciplinary Early Career Fellowship competition. The objective was 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, including Relu. Following the competition three fellowships were awarded to researchers linked to the Relu Programme. A second round of the scheme was launched in 2007 and applications are currently being assessed.

Training activity
A training event for researchers was organised at the BA Festival of Science in September. 13 Relu projects were represented. The event was intended for junior researchers working on Relu research projects and comprised a package of activities including: A master class with Catherine Lyall, Information Browser Ltd and Laura Meagher, Technology Development Group on interdisciplinary research design, project management and career development; and a workshop, 'Working Together Across Disciplines: Challenges for the Natural and Social Sciences', which brought together a number of leading researchers from across the Relu programme. 94% of delegates felt that the event had enhanced their ability to develop a strategy for pursuing an interdisciplinary career.

3.5 Data Collection and Management

The Relu Data Support Service (DSS) appointed a full-time Senior Project Officer in July 2007. Throughout the year dedicated data management support and advice was targeted at Call 1, Call 2 and Call 3 Relu projects. All remaining Data Management Plans for Call 2 projects were signed off, with advice and feedback given. Call 1 project teams were visited by the Relu-DSS officer in order to review the datasets created and their project-specific data management and sharing needs in preparation for data archiving. Specific

attention was given to possible confidentiality of data obtained from people as participants, copyright of datasets within and beyond project teams and suitable data documentation. All Relu research data will be archived at the UK Data Archive and at CEH data centres. Call3 projects received guidance during a PI induction meeting on developing data management strategies with special attention for dealing with confidential research data, obtaining informed consent for data sharing, copyright arrangements and data documentation; in preparation for developing their data management plans. Plans received were reviewed and further specific feedback and guidance provided. Datasets resulting from 4 Relu scoping awards were accepted for archiving at UKDA and the researchers involved are being guided in depositing those data. The Relu-DSS website [http://www.data-archive.ac.uk/relu] was extensively revised and updated to ensure all information is relevant to interdisciplinary research projects and to social and natural science data. Two information portals with underlying metadatabases were added to the website: key third party data resources of interest to Relu researchers and datasets (being) created by individual Relu projects. The Relu Data Management Subgroup met twice during 2007.

3.6 Programme Management

Programme management and project oversight
Project Communication and Data Management Plans (PCDMPs) provide a basis for quality assurance within the Programme. PCDMPs were submitted by Third Call projects and reviewed by the Director's Office and Data Support Service. The plans are updated annually and form a basis for monitoring progress as well as discussion at project visits. Group planning meetings were held with Principal Investigators from each of the three funding calls. Individual site visits were conducted to 7 First Call projects to plan their end of project activities and 10 Second Call projects to discuss ongoing progress. An induction meeting was held with the 10 new Third Call projects which started during the year.

Advisory committee meetings
The Strategic Advisory Committee and its Data Management sub-group each met twice during 2007. The Director's Office provided briefing, advice and background analysis for each. The Management Advisory Group did not meet during the year. Papers were prepared by the Director's Office for consideration by the Strategic Advisory Committee on the following themes: Communications Plans for 2007; Analysis of Third Call Outcome; Relu Follow-on/Synthesis/Reflection Activity; Relu Work Shadowing and Visiting Fellowship Schemes; Review of the Relu Programme's Seed-Corn Funding Mechanisms; Evolving Communications Plans for 2008; Relu Food Chain Research: Implications for Policy; Planning for Relu's Legacy; and the Relu Land Use Policy Commission.

Assessment activity
During the year the Director's Office contributed programme-fit assessments to the Third Call Relu Studentship panel, giving assessments on 9 applications.

3.7 Added Value

Promoting synergy between research projects
As well as programme-wide events (see section 4.2) and publications (see section 4.1), Group planning meetings were held with all Principal Investigators from each of the three funding calls, including two induction meetings for 10 new Third Call projects. The encouragement of inter-project synergies forms a specific focus for these discussions. Five cross-project events were supported by the programme during the year:

- Special Relu Session at the IBG on *"Interdisciplinarity within and beyond Geography"* . The IBG session involved 6 Relu projects and was organised by Liz Oughton and Louise Bracken.
- *Special Relu Session at BA Festival of Science on "Working Together Across Disciplines: Challenges for the Natural and Social Sciences"*. This British Academy panel discussion formed part of the British Association for the Advancement of Science's 2007 Festival of Science. It involved 4 Relu projects and was organised by Wyn Grant.
- International Interdisciplinary workshop on *"Can Interdisciplinary Research Produce 'Good' Knowledge?"*. The workshop was organised by Liz Oughton, Louise Bracken, Harriet Bulkeley and Michael Carrithers. It involved Relu ESRC-SSRC Exchange Fellow, Clare Hinrichs, several Relu researchers and the Relu Director. The proceedings of the two days were recorded and will appear on Relu website.
- Relu workshop on "*Farm Modelling*". The workshop was organised by Paul Armsworth and involved six Relu projects who came together to discuss innovative approaches to farm production modelling. The meeting coincided with the first visit to the Programme by the new Relu ESRC-SSRC Exchange Fellow, Professor Jim Shortle. The meeting gave Professor Shortle an opportunity to meet with each of the six projects individually to discuss the modelling approaches they are taking. A part of the day involved a "speed-dating" activity to explore opportunities for further collaboration between projects.
- *Stakeholder analysis collaboration*: Stakeholder analysis and engagement are important themes in Relu. A Stakeholder Analysis Workshop, led by Anil Graves and Mark Reed, was held between members of 5 Relu projects with a view to cross project learning on approaches to stakeholder analysis. The collaboration has led to joint-production of a paper on stakeholder theory and analysis drawing on Relu case studies.

Countless informal and bilateral project synergies are emerging. Examples include: Joint-meetings and publication collaboration on bio-pesticides (RES 224-25-0093 and RES 224-25-0048); Joint method development around fatty acid analysis (RES 224-25-0041 and RES 224-25-0073); Joint-publishing on farm level modelling (RES 227-25-0028 and RES 227-25-0024); Joint-meetings and method development on valuation of riverine public goods (RES 227-25-0002 and RES 227-25-0024); Joint-method development around assessing public perception of disease risk (RES 229-25-0012 and RES 229-25-0007); Informal exchange on water catchment research (RES 229-25-0008 and RES 229-25-0009); Joint-method development around stakeholder analysis (RES 227-25-0017 and RES 227-25-0025); Joint GIS data preparation and joint-modelling development (RES 227-25-0024 and RES 227-25-0020); and Joint-method development on land use modelling expertise (RES 227-25-0024 and RES 227-25-0017).

Making international connections

The Relu Programme funds basic and strategic research of relevance to UK rural economy and land use. It is crucial though that the research done is of international standard, addresses global challenges and learns from experience from outside the UK. The Director's Office has therefore sought to help Relu projects make appropriate international connections.

- The Programme and many of its projects have close engagement with several Regional Development Agencies. In 2007 the programme was able to act as a bridge for US and UK regional development officials to share best practice in local food development. Frances Rowe, head of rural development at ONE North East linked up with North American researchers at a Relu event which compared international experience on food chain localisation. She was able to pursue the contacts she made through a Winston Churchill Travelling Fellowship which took her across the United States to investigate models of local food production, including community-supported agriculture, and their contribution to local and regional development.
- Relu made a successful application to the competitive ESRC-SSRC Visiting Fellowship Scheme. Professor Jim Shortle from Pennsylvania State University was awarded a fellowship to study the "Modelling land use-environment interactions under policy change: an interdisciplinary perspective". Professor Shortle, visited in autumn 2007 and met with six of the projects to discuss approaches being taken to farm production modelling.
- A previous Relu SSRC-ESRC fellow, Professor Clare Hinrichs from Pennsylvania State University, was invited back in 2007 to give a Relu seminar to present the findings of her fellowship around the theme of relocalization of agri-food systems in USA and UK. This was held in Newcastle and attracted delegates from across the UK.
- The Relu Director Philip Lowe visited Washington in November 2007 and attended the opening of RCUK's American Office at a ceremony in the British embassy. He held bilateral talks with the National Science Foundation on potential links between the Relu Programme and parallel US research programmes. The American science community has its own version of Relu "called the Dynamics of Coupled Natural and Human Systems. It is interdisciplinary and involves a pooling of resources and research funding decisions between three NSF directorates (covering biological, geo and social sciences). It is seen as a trailblazing programme in integrating natural and human sciences expertise. Indeed, it is the only standing inter-directorate programme within the NSF. The parallels with Relu are striking, and there is strong interest in seeing what the two programmes could learn from each other, as the basis for encouraging international research collaboration on how social and natural systems are likely to cope with global environmental change.

Influencing Research Council policy and practice

The Relu Programme continues to be a conduit for learning between the Research Councils and a testing ground for inter-Council collaboration and new methods of working. Highlights from the year include:

- Publication and wide dissemination of the Relu Briefing Paper *Common Knowledge? An Exploration of Knowledge Transfer*.

- Relu submitted a response to NERC consultation on its draft strategy for 2007-2102, Next Generation Science for Planet Earth, drawing attention to issues about: Interdisciplinary scope; Collaboration between the social and natural sciences; and Stakeholder engagement and knowledge transfer.
- BBSRC Chief Executive Julia Goodfellow has praised the programme as "a bold and exciting initiative [which] I hope presages more interactions and collaborations between life and social services" (letter 20 Sept 2006). BBSRC is thus turning to the experience of Relu in thinking through its relationship with the social sciences. This is reflected in a paper from the Sustainable Agriculture Strategy Panel to BBSRC Strategy Board on *Interaction Between the Natural and Social Sciences in Sustainable Agriculture Research - Opportunities and Challenges for BBSRC* (June 2007) which explored *"the potential value of - and the need for - inputs from the social sciences to enhance the relevance and reach of agricultural research supported by BBSRC, and to extend its impact on policy and practice"*. A presentation was also given by the Director to the BBSRC Review of Environmental Change panel meeting.
- Presentations to ESRC Research Investment Directors Meeting and ESRC Strategic Research Board on the lessons in fostering interdisciplinarity.
- Presentation to the UKERC Annual Assembly 2007
- The Director's Office initiated a debate within the Relu Strategic Advisory Committee on how we can ensure that the lessons from Relu are taken on board throughout the Research Council system.

2008 will be an important year for the Research Councils in ensuring that lessons from Relu's experience are incorporated in the design of new cross-council initiatives.

3.8 Key Items of Expenditure

Key items of expenditure include: £4.7k on the *UK Rural Economy and Land Use Debates*; £12.8k on *"Research on Rural Resource Management and the Rural Economy: Addressing the Local and Regional Dimension"*; £46.1k on *"Unlocking Change in the Food Chain"*; £13.1k on the Relu *Interdisciplinary Training Master Class*; and £4.8k on promoting synergy between research projects.

4. External Communication

4.1 Programme Level Publications

In 2007 Relu published three Programme-level briefing documents:

No 5 *Power and Responsibility - Who decides? You decide!* The briefing paper presents the debates held as part of The Festival of Social Science and National Science and Engineering Week.

No 6 *Common Knowledge? An exploration of knowledge transfer.* The briefing paper reviews Relu novel approach to knowledge transfer. Knowledge transfer presents challenges to all the research councils, but the Programme is uniquely well positioned to demonstrate the potential of fresh approaches.

No 7 *What is relu?* The briefing paper provides a latest update on all the Relu research projects

The briefing papers have been well received by the Research Councils, stakeholders and academic community, with numerous letters of support received by the Director's Office. Examples include:

> *"I was interested to read Relu Briefing Papers 5 and 6 over the weekend. They are excellent on content and presentation. Congratulations on producing these"* (Nigel Brown, Director, Science and Technology, NERC)

> *"Just a quick note to congratulate you on the two briefing papers – both are very thought-provoking and imaginatively presented. I wondered if it might be possible to obtain further copies…"* (Richard Ferris, JNCC)

> *"The latest briefing paper. …is incredibly accessible, very sensible and useful (I've sent it round the division urging all to read)"* (Sarah Church, Defra)

> *"Many thanks for sending me hard copies of Relu's latest Briefing papers. They are particularly interesting especially in relation to getting messages out to wider audiences without losing the core of what we scientists wish to convey"* (Fiona Mulholland, Dep't of Environment for Northern Ireland)

"Thank you for sending me a printed copy of your new KT guide. It's a super document … I've sent it round my university colleagues with the exhortation to consult it before they write their next research dissemination and user engagement strategy" (Catherine Lyall, Information Browser Ltd)

"I recently had sight of your 'Common Knowledege' publication … This has received positive comments internally and I would like to feed that back to you …" (Victoria Morrisroe, Senior Knowledge Transfer Manager, ESRC)

"Thank you for sending me copies of the Relu briefing papers Nos. 5 and 6. They are both highly readable documents and excellent examples of good communications in science" (Seamus Kennedy, Agri-Food Biosciences Institute)

"On Tuesday evening we had a stimulating and enjoyable few hours with a former farmer with strong, and informed, views about …. science and land use. He phoned me on my mobile yesterday afternoon, very enthusiastic about taking part after checking out the project on the various websites. He was especially enthusiastic about the Relu website, particularly the Common Knowledge briefing note - … he made a point of saying how much he appreciated the clarity of the language. He said he wishes more scientists would present their ideas so clearly. (Sue Bradley, Relu researcher)

In 2007 Relu also launched a new line of publications, its *Policy and Practice Note series*, with publication of its first project note late in 2007: *The Role of Regulation in Developing Biological Alternatives to Pesticides.* This is a series of brief notes, in a consistent four-page A4 format, drawing out the main highlights of each project's findings and their policy and practice implications. The style is designed to be clear and accessible and the notes will be targeted at specific policy and/or practitioner audiences who could benefit from the research.

The briefing papers and Policy and Practice Note were distributed to approximately 1900 people on the Relu mailing list including Civil Servants, think tanks, academics, NGOs, politicians and Relu researchers, as well as being available electronically. Four newsletters were prepared and distributed to the Relu mailbase, which comprises over 2000 researchers and stakeholders.

In 2007 we also actively targeted the publishing outlets of important knowledge brokers. Relu negotiated regular slots in the publications of various critical knowledge intermediaries. For instance every issue of the Royal Institution of Chartered Surveyors Land Journal which reaches more than 27,000 land managers, advisers and agents bimonthly, carries an article about a Relu project.

We also embarked on a redesign of the Relu suite of publications and website to reflect Relu's progression from its commissioning phase of activity and to give the design a fresher, authoritative and more modern appeal. The exercise has attracted widespread acclaim beyond the Research Councils. The Relu website was further developed during 2007 (www.relu.ac.uk), including reorganisation of the research pages around thematic lines.

Preparations for two Relu journal special issues also took place during the year (see Section 3.1).

4.2 Significant Engagement Conferences

UK Rural Economy and Land Use Debates on "Power and Responsibility: Who Decides: You Decide" , March 2007, Royal Academy of Engineering, London
Relu held six events, attracting several hundred people, across the UK, during the Festival of Social Science and National Science and Engineering Week, focusing on themes of food and responsibility. This was more events than any other research programme. Relu researchers and stakeholders demonstrated the programme's potential for transcending scientific divides and making issues accessible in the best tradition of civic science, when they explored some important arguments in three high profile debates: "Consumers cannot be left to themselves to decide what to eat"; "The environment would be fine if only scientists were incharge" and "Farmers should be responsible for controlling livestock diseases". Now the debates have been published as ReluBriefing Paper 5: "Power and Responsibility – Who decides? You decide!" Of the 111 delegates, 55% were non-academic. Activity at project level was also encouraged by the programme and took place during the week. Presentations and case studies from local food groups and from Lesotho and Mali were part of the symposium held in St Asaph by Relu project "Comparing the merits of consuming vegetables produced locally and overseas". "Fish in a barn" was the topic for Relu project "Warm water fish production as a diversification strategy for arable farmers". The team went to livestock auction markets in Stirling and Perth, engaging with stakeholders and discussing the research with potential users. "Involving stakeholders in the management of food chain risks" was the theme for a day of workshops organised by the Relu "Managing food chain risks" project in Norwich.

"Research on Rural Resource Management and the Rural Economy: Addressing the Local and Regional Dimension", May 2007, Royal Society of Edinburgh, Edinburgh
This major conference explored eight Relu research projects on integrated land and water use, sustainable farming for the environment and human health and the collaborative management of rural resources, all within the overall theme of strategies for sustainable land use and the implications for rural planning. The event was held in Edinburgh, in collaboration with the Local Authority Research Council Initiative and the Northern Rural Network, to explore the local and regional dimensions of the programme, and attracted delegates from local and national government and professional organisations. The day also launched the new Relu visiting fellowship scheme, designed to enable staff from such bodies to spend time with researchers (see Section 4.4). The event was aimed at rural policy, planning and research staff in local and regional government and public agencies, as well as practitioners in the private and voluntary sectors. The event Chaired by John Thomson (Scottish Natural Heritage), Maggie Gill (Scottish Government) and Margaret Clark (Commission for Rural Communities) was facilitated by a range of stakeholder discussants including Scottish Environment Protection Agency, ADAS, Commission for Rural Communities, Institute for European Environment Policy, Borders Foundation for Rural Sustainability and Defra. Oona Muirhead of Defra and advisor to David Miliband acted as rapporteur. Of the 97 delegates, 55% were stakeholders. Participants uniformly praised the Conference: its various facets were judged of good or excellent quality by the large majority of attendees: including quality/value of presentations (97%); the organisation of the event (92%) and the overall quality and value

of the conference (92%). It was organised in collaboration with the Local Authority Research Council Initiative (LARCI) and the Northern Rural Network.

"Unlocking Change in the Food Chain", November 2007, Congress House, London
Everyone needs to eat to stay alive, but increasingly our expectations of the food we consume are much greater than that. We want it to make us healthy and help us live longer, we expect the way it is produced to keep the countryside attractive, to be safe for the environment and promote a diverse range of plant and animal life, and we assume it should provide an income for people working in farming and food businesses. But can we achieve all of this without fundamental changes in the attitudes of both consumers and producers, and in government policy? These are some of the questions which were addressed in this major programme dissemination event for seven first wave Relu projects. The event was an opportunity for the projects to present early conclusions from their work as they approached their final stages. 54% of 211 attendees were stakeholders from the private, public and voluntary sectors. The event marked the culmination of a long process of engagement with stakeholders during the lifetime of the projects which had included a stakeholder scoping event in the early stages of the work, exposure to feedback from the Relu food chain forum, engagement in Relu work shadowing and visiting fellowship schemes, as well as project level stakeholder interactions. The event was chaired by Dame Deirdre Hutton, Food Standards Agency and Professor Maggie Gill of the Scottish Government. It comprised several iterative dimensions including (i) a round table discussion involving members of Relu's food chain forum, including Tom Macmillan, Food Ethics Council; Helen Browning, Soil Association and leading organic farmer; Michelle Harrison, The Henley Centre; and John Loyd-Jones, Countryside Council for Wales (ii) discussion and feedback on a report on the Relu Food Chain research, prepared by Tom Macmillan. Tom had been commissioned previously to visit the projects to draw out strategic issues for policy and practice. Informed by this report, and following comments made at the conference and subsequently through an online consultation, preparation began on a Relu Briefing Paper showcasing the cross cutting issues emerging from the projects; (iii) an experiment with an iterative conference format involving a Sound Bites video box which provided an opportunity for delegates to offer further feedback and comment on the day's proceedings. This was subsequently aired through the Relu website and as part of an after-conference reception that featured North East Specialist food and which was sponsored by One North East Regional Development Agency; (iv) stakeholder comments on the research projects were also looped back to delegates throughout the day in the main conference hall. Participants uniformly praised the Conference: its various facets were judged of good or excellent quality by the large majority of attendees: including the quality/value of the presentations (90%); the quality of organisation of the event (96%) and the overall quality/value of the conference (99%). Two new Relu Briefing Papers and the Policy and Practice Note series were also launched at the conference (see Section 4.1).

"Relu Land Use Project Workshop", December 2007, RSA, London
Land and how we use it has risen up the political agenda, driven there by public concerns over climate change, flood risk, food security and sustainable energy supplies. Politicians have called for a strategic approach to land use. This workshop represented the launch of the Relu Land Use Project which is a collaboration with Defra, the Scottish Government and the Commission for Rural Communities. The workshop met to discuss the work of

Relu's new land use policy analysts that have been appointed to identify cross cutting and strategic ideas from the projects that will then be fed back into the policy making process via Defra and the Scottish Government. The meeting helped set the agenda for the initiative and for the analysts. Besides leaders of 17 Relu research projects, the meeting also included active involvement from staff in Defra, Scottish Government and Welsh Assembly Government, responsible for taking forward land use policy, as well as the DIUS Team responsible for the Foresight project on land use.

4.3 Programme-Level Meetings with Potential Research Users

Stakeholder engagement in Relu is as deep and dense as it is extensive. Figure 1 records merely the formal involvement of 150 different stakeholder organisations at the programme level within 2007.

Blateral discussions were held with several national stakeholders including Defra, Natural England, Scottish Environment Protection Agency, Scottish Government, Welsh Assembly Government, Commission for Rural Communities and UK Biodiversity Action Group. Relu researchers are playing central roles in advising key policy makers. Natural England, for example, the new body to conserve nature and landscape, has set up a Science Advisory Committee which includes Relu project leaders Gareth Edwards-Jones and Bill Sutherland, and the Relu Director.

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 SAC met on two occasions in 2007.

Relu stakeholder forums go from strength to strength. The Relu Food Chain Forum held two meetings during 2007 at which Relu projects presented their work. During the year the Forum focussed its attention on the new disease projects funded under the third wave of Relu funding and the format of end-of-project dissemination (notably shaping the decision to proceed with the Policy and Practice Note series (see Section 4.1). The forum includes the following members: Ian Baker, Advantage West Midlands; Helen Browning, Eastbrook Farm Organic Meat; Judy Buttriss, British Nutrition Foundation; Lord Ewen Cameron, Dillington Farms; Helen Ferrier, National Farmers' Union; Bill Goldsworthy OBE, Agri-food Partnership; David Gregory, Marks and Spencer; Michelle Harrison, Henley Centre; Brian Harris, BBSRC; John Lloyd Jones OBE, Countryside Council for Wales; Mark Kibblewhite, Cranfield University; Charlotte Lawson, Food from Britain; Chris Lewis, Fields Farm, Crewe; Tom MacMillan, Food Ethics Council; Terry Marsden, University of Wales, Cardiff; Sarah Mukherjee, BBC; Steve Parry, Unilever; Howard Petch, Commission for Rural Communities; Sue Popple, Defra; Dr Bill Vorley, International Inst. for Environment & Devel.; Peter Russell, Head of Rural Group, SEERAD.

Two meetings of the Relu People and the Rural Environment Forum were held in 2007. During the year the Forum focussed its attention on the new projects funded under the third wave of Relu funding. Members also played an active role in advising upon the scope of the Relu Land Use Policy Project (see Section 2). The forum includes the

Figure 1: Formal Stakeholder Engagement in Relu at the Programme Level (2007)

Stakeholder	Stakeholder Engagement Plan established	Representation on Programme Management Group or Strategic Advisory Committee	Representation on national stakeholder forum	Attendee at Programme Conference or Workshop
Aberdeenshire Council				√
Action with Communities in Rural England (ACRE)				√
ADAS				√
Advantage West Midlands RDA			√	√
AEA Technology Environment				√
Agricultural Industries Confederation				√
Agri-food Partnership			√	
Agronomica				√
Association of National Parks				√
Association of Rivers Trusts			√	√
Berwick Borough Local Strategic Partnership				√
BBC			√	√
British Crop Production Council				√
British Christmas Tree Growers Assoc				√
British Geological Survey				√
British Library				√
British Nutrition Foundation			√	
British Poultry Council				√
British Trust of Ornithology				
Borders Foundation for Rural Sustainability				√
Business in the Community				√
Campaign to Protect Rural England				√
Centre for Food Policy				√
Clinton Devon Estates			√	
Commission for Rural Communities		√	√	√
Country Land and Business Association				√
Countryside Council for Wales		√	√	√
Daval International Ltd				√
DAH Associates				√
Defence Estates				√

Dept for Environment Food and Rural Affairs	√	√	√	√
Dept of the Environment Northern Ireland				√
Deer Commission for Scotland				√
Dillington Farms			√	
DPR Nutrition Ltd				√
East Midlands Development Agency				√
East Riding of Yorkshire Council				√
Eastbrook Farm Organic Meat (organic farmer)			√	√
Eco Europe				√
English Nature			√	√
Entrading (James Curran)			√	
Environment Agency	√		√	√
European Environment Observatory				√
Farmers Guardian				√
Farmers Link				√
Farmers' Weekly				√
Fast Ltd				√
Fields Farm			√	
Food Ethics Council			√	√
Food Northwest				√
Food from Britain			√	
Food Processing Knowledge Transfer Network/Food Processing Faraday Partn'ship Ltd				√
Food Standards Agency				√
Foresight				√
Forestry Commission				√
Forum for the Future				√
Fresh Produce Consortium				√
Friends of the Earth				√
Gloucestershire Food Vision				√
Government Office for Yorkshire and the Humber				√
Halal Food Authority				√
HDRH Research				√
Henley Centre (futures / marketing consultancy)			√	√
Henry Doubleday Research Association				√
Horticultural Development Council				√

House of Commons Library				√
Ian Brown (diversified tenant farmer)			√	
Information Browser				√
Institute of Development Studies				√
Institute for European Environmental Policy			√	
Institute of Food Research				√
International Inst' for Environment & Dev't			√	
IPPR North				√
Joint Nature Conservation Committee		√	√	
Lake District National Park Authority				√
LEAF (Linking Environment and Farming)				√
London Development Agency				√
Marks and Spencer			√	
Meat and Livestock Commission				√
National Consumers Council				√
National Farmer's Union			√	√
National Nature Reserve				√
National Non-Food Crops Centre				√
National Soil Resources Institute			√	
National Trust			√	
Natural England			√	
Natural Environment Research Council				√
New Economics Foundation				√
New Game-Plan Ltd				√
New Scientist				√
New Zealand High Commission				√
NI Rural Development Council				√
North East Centre of Excellence				√
North West Food Alliance				√
One North East Regional Development Agency			√	√
Parliamentary and Scientific Committee				√
Parliamentary Office of Science and Technology				√
P.C. Tinsley Ltd (cereal/vegetable farmer)			√	
Peak District National Park			√	
Pembrokeshire Fish Farms			√	
Perth and Kinross Council				√

Pesticide Action Network UK				√
Practical Solutions International Ltd				√
Promar International Ltd				√
PYV Group				√
Quantera				√
Quantz				√
Royal Agricultural College				√
Royal Agricultural Society of England			√	
Royal Institution of Chartered Surveyors			√	√
Royal Society for the Protection of Birds			√	√
Rural Development Initiatives				√
Rural Development Programme for Wales				√
Rural Development Service				√
Scottish Borders Council				√
Scottish Environment Protection Agency				√
Scottish Executive Rural Affairs Department/Scottish Gov't	√	√	√	√
Scottish Natural Heritage				√
Scottish Rural Property & Business Assoc Ltd				√
Shropshire Hills AONB				√
South West RDA				√
Smiths Gore				√
South Ayrshire Council				√
South Lanarkshire Council				√
South West Food & Drink				√
South West Regional Development Agency				√
Sustain: the alliance for better food and farming				√
Sustain Ability Ltd				√
Sustainable Development Commission				√
Syngenta				√
The Game and Wildlife Conservation Trust				√
The Guardian				√
The New Economics Foundation				√
The Royal Veterinary College				√
The Vegan Society				√
Thinking Sustainable Development				√
TVSF Consultants				√

UK Water Industry Research	√		√	
Unilever			√	√
VEGA Research				√
Wales Agri-food Partnership			√	
Wales Food and Drink Partnership				√
Welsh Assembly Government	√		√	
Wessex Water Company			√	
Yorkshire Forward				√
Youth Hostel Association			√	

following members: Mark Avery, RSPB; Ian Brown,Tenant farmer; Tony Burton, National Trust; Lord Ewen Cameron, Dillington Farms; Roger Clarke, YHA / Natural England; Tamsin Cooper, Institute for European Environmental Policy; James Curran, Entrading; Julian Dennis, Wessex Water; Mike Farrimond, UK Water Industry Research; Richard Ferris, Joint Nature Conservation Committee; Tony Hams, Peak District National Park / Natural England; Emma Hennessey, Defra; Chris Lea, Welsh Assembly Government; David Macdonald, University of Oxford / Natural England; Arlin Rickard, Association of River Trusts; Susan Steer, Organic farmer and RICS Countryside Panel; Mark Tinsley, P.C. Tinsley Ltd; John Varley, Clinton Devon Estates; Tom Warburton, ONE Regional Development Agency; Paul Woodcock, Environment Agency.

In 2007 Relu continued to operationalise its suite of Stakeholder Engagement Plans (SEPs) with Defra, UK Water Industry Research, Scottish Executive Rural Affairs Department, Environment Agency and Welsh Assembly Government.

4.4 Work Shadowing and Visiting Fellowship Schemes

We ran another successful round of the Relu Work Shadowing Scheme during 2007. The scheme encourages knowledge exchange between researchers and the people and organisations that can benefit from their research. It aims to introduce Relu research staff to the action-contexts in which their research may be used. These contexts may be commercial organisations, voluntary bodies or public agencies. The second round of the scheme involved 8 work shadows.

Host	Shadowers	Project
Pinguin Foods UK Ltd	Dr Natalia Ivashikina and Dr Barry Hounsome	Comparative Merits of Consuming Vegetables Produced Locally and Overseas
Clinton Devon Estates	Dr Piran White	Collaborative Deer Management
Pesticides Safety Directorate	Professor Wyn Grant and Dr Dave Chandler	The Role of Regulation in Developing Biological Alternatives to Pesticides
Health Protection Agency	Dr Rob Fish	Sustainable and Safe Recycling of Livestock Waste
Environment Agency	Dr Christopher Bear	Angling and the Rural Environment
National Federation of Anglers	Dr Geoff Whitman	Angling and the Rural Environment

The Relu Visiting Fellow Scheme was launched during 2007. It aims to allow policy makers and practitioners from the commercial, voluntary or public sector to visit a Relu research team or cluster of teams with a view to exploring the implications of the research for their work and to raising awareness of their interests among the researchers. The scheme aims to encourage bespoke dissemination activities and materials. The first year of the scheme involved 3 Visiting Fellows plus several staff of the Pesticide Safety Directorate.

Project Host	Fellows	Fellow organisation
The Role of Regulation in Developing Biological Alternatives to Pesticides	Staff of Pesticide Safety Directorate	Pesticides Safety Directorate
Impacts of Increasing Land Use under Energy Crops	Professor Steven M Newman	Biodiversity International Limited
Improving the Success of Agri-environment Schemes	Peter Sutton	Syngenta
Collaborative Deer Management	Mark Lazzeri	Assynt Foundation

The fellows are finding their visits to research projects to be very valuable. Mark Lazzeri from the Assynt Foundation, for example, explains:

> *"My initial thoughts on this topic were that there are no cons to taking up a Relu fellowship; I certainly had an extremely useful and enjoyable week. …The time spent with Relu Collaborative Deer Management Project (CDMP) helped to encourage me to tackle some of our practical problems in a more logical and perhaps scientific manner. It enabled me to establish contacts with a number of interesting and interested people whom I can contact for opinions and advice. There are so many things that I now want to incorporate into our estate management policies. …My problem and I suppose it is actually a happy one, is that I can see so many potential benefits, that I want to start implementing everything straight away. I cannot believe that anyone, other than perhaps the most hardened cynic would fail to benefit and enjoy the experience of a Relu Fellowship. … I am sure that the contacts I made during the Fellowship visit will strengthen and that more formal links may be established in the future. I am now an even stronger advocate of involving industry (particularly land management) with academic research and will actively promote this approach"*.

Upon completion of placements, participants complete one page questionnaires evaluating the experience and providing feedback. There is also a 6 months follow-up of any further benefits arising.

The success of the schemes was recognised in 2007 by the offer of additional resources from both ESRC (to fund private sector exchanges) and LARCI (to fund local government engagement in the scheme).

4.5 Project-Level Meetings with Potential Research Users

Over 60 presentations were given specifically to stakeholders during the year (Annex B). Individual research projects ran over 32 stakeholder workshops which engaged a wide range of organisations (see Table 1). During the year the projects engaged in several thousand stakeholder contacts in the public, private and voluntary sectors, including large numbers of individual businesses and the wider public.

Table 1: Project-Level Stakeholder Workshops in 2007

Project	***Workshop***
RES-224-25-0048 Grant	Biopesticides: the Regulatory Challenge', Warwick HRI, 31 October 2007. Papers by project leaders, American and UK biopesticide manufacturers, Dutch biopesticides programme and Pesticides Safety Directorate. Main audience: growers, manufacturers, regulators and consultants. Over 70 in attendance.
RES-224-25-0086 Chadwick	Relu Uncertainty Workshop: Dealing with Uncertain Data (March 2007), Lancaster University: The workshop was organised to discuss sources of uncertainty within environmental research and focus debate on how to deal with, and use, uncertain datasets appropriately. 18 experts from the social and natural sciences attended this trans-disciplinary workshop. Audience = Social and natural scientists from Lancaster University, CEH, ADAS, IGER and Exeter University. Citizens Jury: 11th May (Pilot) and 15-16th November (Main Event) Held at University of Exeter and IGER North Wyke: Jury theme "*Contemporary livestock farming: are our watercourses at risk*?. Audience = (1) Public (elicitation of values and priorities) (2) Policy Makers (expert witnesses) (3) Policy Makers and Academic Researchers (Observers)
RES-224-25-0044 Edwards-Jones	'Local food and rural development. Does it work here and overseas?', Science Week, St Asaph Business Park, St. Asaph, North Wales, 13th March 2007. Major display on Relu project at the Royal Welsh Show in July 2007. The display won the Gold medal for 'Best exhibit of Educational and Instructional Value'.
RES-224-25-0066 Little	National Science Week event, Stirling and Perth, March 14th and 17th, 2007 Tilapia tasting and model system display at Perth and Stirling livestock auction marts, in order to engage and disseminate project findings with Scottish farmers. Farmers Workshop Event, 26th March 2007, Auchterarder. Included Tilapia Project Presentation and discussion evening. Guest speakers including a tilapia producer and the Relu team engaged with interested farmers in tilapia as a diversification option in Scotland.
RES-224-25-0090 Shepherd	3 Workshops: Involving Stakeholders in the Management of Food Chain Risks in the Rural Economy. Strategies to reduce food poisoning from Campylobacter in Chickens, 14th – 15th March 2007, Institute of Food Research (IFR), Norwich. Audience: Mix of stakeholders including the public from rural and urban areas. 3 Workshops: Involving Stakeholders in the Management of Food Chain Risks in the Rural Economy: Participatory Processes in Emergency Situations Friday 28th June and 22nd November, London and Manchester. Audience: Mix of stakeholders including the public, FSA, NFU, AIC, BRC, WFU, IFR, CSL, Consultants, and Academics.
RES-227-25-0028 Armsworth	8 Valuation workshops, October 2007, Peak District. Project staff carried out the workshops using a choice experiment format with 52 members of the general public drawn from towns and villages surrounding the Peak District. The workshops were designed to identify public preferences for different kinds of landscapes. A unique element of this research is the analysis of the relationship between how people anticipate and experience the utility of environmental goods. Participants completed a valuation exercise on three occasions: prior to a visit to the Peak District National Park, during the visit and upon return from the National Park.
RES-227-25-0001 Hubacek	Stakeholder workshop in Peak District National Park: 30th October This was a futures workshop, where a list of 10 scenarios developed from interviews and site visits were evaluated, amended and short-listed by participants, and where we explored sustainability indicators for the study area that could be used to monitor progress towards sustainability goals under different future scenarios.

	2 workshops/ site visits in Nidderdale AONB The first site visit was hosted by the Upland Hydrology Group and the second by Nidderdale AONB's JAC. Both started with a site visit to discuss key issues, followed by a workshop to scope out and prioritise the focus that stakeholders wanted the project to take in our second study site. Carbon stakeholder meeting at Leeds. This workshop was attended by approx. 50 regional and national stakeholders. Advisory Panel meeting involving stakeholders which focussed on the project's stakeholder engagement and forward planning. The panel consisted of: Lynne Crowe, a Natural England Board Member from Sheffield Hallam University; Geoff Eyre, a local agronomist; Richard May from the Moorland Association; Jon Stewart from Natural England; and Rhodri Thomas from the Peak District National Park Authority
RES-227-25-0014 Irvine	Perceptions workshops, October 2007, in Marches, Herefordshire case study site. Included site visits with stakeholder groups (landowner, forestry public/local community) to identify differences between groups in preferences for woodland and its management, and any influence on collaboration. Choices experiments at Balquidder case study, 12th Nov 2007. Local deer managers asked to decide between management outcomes to quantify trade-offs and decision processes.
RES-227-25-0020 Karp	South-West stakeholder meeting- Exeter March 2007 Engagement of stakeholders in the S-W region in the Relu-Biomass Sustainability appraisal – agreement of indicators and confirmation of appraisal framework East Midlands stakeholder meeting- Kegworth March 2007. Engagement of stakeholders in the E-M region in the Relu-Biomass Sustainability appraisal – agreement of indicators and confirmation of appraisal framework
RES-227-25-0006 Stagl	Stakeholder Workshop, London. Jan 22nd 2007. Audience of 11 stakeholders
RES-227-25-0018 Whatmore	Advisory Panel meeting held in Oxford July 2007

4.6 Relevance of Research and Potential Impact

The Director of the programme has been able to inform key policy circles of the importance of the Programme through his membership of Defra's Science Advisory Council, his appointment by Defra to chair the Vets and Veterinary Services Working Group, and his membership of Natural England's Science Advisory Committee. Relu is pursuing a sustained strategy of influencing, outlined in Section 2 and exemplified by setting the national land use agenda (also described in Section 2).

Analysis of the projects shows that the Programme is providing insights of relevance to key policy and practice domains. Examples of research impact include (see also Section 2):

Relu research feeds into policy thinking on flooding
(Relu project RES-227-25-0017)
Rural Economy and Land Use Programme research is making a contribution to many areas of policy making, including such hot topics as flooding. In 2007 the Environment, Food

and Rural Affairs Committee launched an inquiry, inviting evidence from interested parties, including the Relu project *The Integrated Management of Floodplains*. The study is exploring changes in land and water management over the last 40 years in eight selected floodplain areas that were previously served by agricultural flood defence schemes - changing priorities in the countryside, concern about environmental quality and perceptions of increased flood risk in lowland areas, in part linked to climate change, have promoted a re-appraisal of land management options and policies for these floodplain areas. The extreme flood events of summer 2007 highlight the policy relevance of the project. Rural land could have a role in flood alleviation, but at the same time, food and energy production and security have also appeared on the policy agenda. And what about the consequences of flooding for rural communities and economies? The Relu floodplain project aims to identify ways of balancing multiple roles for floodplains in a very uncertain future, and to do this in ways that consider the diverse range of interests. The project has received extended funding from ESRC to support this work and to explore the impact of the summer floods on rural society and its economy, as well as funding for parallel projects to examine impacts on agriculture (Environment Agency), rural households and communities (Commission for Rural Communities) and on biodiversity (NERC).

Impact of increasing land use under energy crops
(Relu project RES-227-25-0020)
In September 2007 shoppers on the streets of York were invited to consider how their favourite parts of the English countryside might look with large scale plantings of perennial energy crops such as miscanthus grass and willow coppice. Angela Karp who leads on the Rural Economy and Land Use project "*Impact of Increasing Land Use Under Energy Crops*" and colleagues took the opportunity to take examples of the crops and 3D computer simulations to the BA Festival of Science, attracting a lot of attention from passers-by and visitors to the festival. In 2003 the UK had some 2,000 ha of land producing energy crops: principally miscanthus grass, short rotation coppice willow and poplar. There is an official target to contribute 6% of UK electricity by 2020, and, given the level of policy support that now exists, a much greater area of land is likely to be covered by these crops in the future. However, a large-scale change to biomass crops will have wide ranging implication for the countryside. This interdisciplinary project is conducting state-of-the-art social, economic, hydrological and biodiversity research to develop an integrated framework for Sustainability Appraisal of the medium and long term conversion of land to energy crops. Results have been fed into the European Parliament and Royal Society's investigation into bio-fuels.

Jurors reckon up the risk of livestock pollution
(Relu project RES-224-25-0086)
Members of the Devon public took part in a "citizens' jury" to examine the issue of microbial watercourse pollution and what more might be done to mitigate the impact of livestock farming. The two-day process, which was part of *The Sustainable and Safe Recycling of Livestock Waste* Rural Economy and Land Use project, involved a staggered programme of debate, presentation and field walking, in which expert witnesses were cross-examined by the jury about the practical, ethical and financial dimensions of microbial risk management. Among the testimonies heard was evidence from Defra's Water Quality

Division, the Health Protection Agency, shell fisheries, South West Water, the National Farmers' Union and the Environment Agency. The jury concluded that measures should concentrate on providing advice and training, linked to financial assistance for low cost solutions, in step with existing patterns of farming.

Importing vegetables from Kenya or Uganda may be better for the environment than growing them locally
(Relu project RES-224-25-0044)
'Which is best; to produce fruit and vegetables in the UK, or to import produce from overseas?' asks a Relu project. Researchers have been comparing a range of characteristics of fruit and vegetables produced in UK, Spain, Kenya and Uganda, considering the greenhouse gases, environment, economy, consumer perception, nutrition and community aspects. This includes estimating the gases released during transport from field to final consumer and consideration of the nutritional value of fresh imported food, compared with UK produced food, which may need to be stored for several months prior to consumption. As part of the work the project has developed a land use model for Anglesey, looking at what would happen under different land-use regimes. Results suggest that ploughing up the existing grassland on Anglesey in order to provide vegetables to the local market might actually release more greenhouse gases than does the current policy of importing most of the vegetables from outside Wales. The project has developed a close relationship with industrial bodies and as a result has undertaken work on carbon footprints for both the Horticultural Development Council and Meat Promotion Wales.

Relu project develops public participation in food chain risk assessment
(Relu project RES-224-25-0090)
There have been several high profile crises in food production and agriculture over the past few years, but the response to these has tended to be more technical than social, political or economic. These latter types of issues have usually been addressed very late in the process, with the result that many people lose confidence in the authorities' management of the situation. A Relu project is incorporating the thinking and values of stakeholders into the scientific modelling of risks, with the aim of incorporating all these aspects. The research is developing ways to handle uncertainties in the estimates of risk, taking account of the complexity of contemporary food chains and the possible reactions of consumers to information on food safety. Communicating uncertainties around food risks is challenging and the team has developed interactive web-enabled tools that work like "fuzzy felt" to help stakeholders, including members of the public, to express their understanding of the complexity of food chains in clear and simple graphics.

Implications of a nutrition driven food policy for land use and the rural environment
(Relu project RES-224-25-0073)
A Relu project is investigating the implications of eating a healthier diet and how our land could produce food that is more nutritious, at a price that consumers are willing to pay. Research shows that milk and meat from grass-fed animals has a lower proportion of saturated fat and more of the beneficial n-3 fats than animals fed concentrates and the researchers are testing the hypothesis that more biologically diverse pastures will enhance these effects. They are also looking at the effects of growing soft fruit and lettuce in

polythene tunnels, and assessing the extent to which new ultra-violet transparent films enhance the levels of a range of phytochemicals known to have antioxidant properties that help to protect against cancer. Although there seems to be little difference for soft fruit (imported strawberries has phytochemical levels comparable to those grown in the UK under polythene), they found that in red lettuce, uv transparent plastic provided a dramatic increase in phytochemicals such as anthocyanin and other health-beneficial polyphenolics, with only a small loss of yield. But supposing everyone did eat a healthier diet that included five portions of fruit and vegetables every day, what would be the implications for agriculture in this country? The project's modelling work indicates that a reduction in demand for dairy products would cause a significant decline in the number of dairy herds across the country, but particularly in the South East and West Midlands, these being replaced by grass-fed beef or sheep on fertile lowland pastures. Reduced demand for meat, plus increased competition from the lowlands, would make upland livestock production less economic, leading to either ranching, or even land abandonment in some cases. Fruit and vegetable growing, particularly of soft fruits, would increase significantly, particularly in the traditional growing areas of the South and East but also, to a lesser extent, other areas, often through the use of polytunnels.

How to implement the Water Framework Directive
(Relu project RES-227-25-0024)
A Relu project is working on "Modelling the Impacts of the Water Framework Directive". This European legislation aims to ensure that water in our lakes, rivers, beaches and drinking supplies is of the highest possible quality. The project is predicting how the changes in practice that will be necessary in order to comply with the Directive could affect farming and land use. As this is the most sophisticated exercise of its kind currently taking place, the work has been proving invaluable to officials in Defra and the Environment Agency, who are responsible for implementing the Directive and meetings were held at an early stage so that the researchers could explain their approach, and the officials could outline the options they were considering for putting the Directive into practice. This meant that the researchers were able to prioritise their tasks in line with policy requirements. The work is highly relevant to the needs of the target policy community. This has led to considerable additional funding from Defra, to facilitate work of common interest concerning the use of fertilisers, and also from the Environment Agency, to analyse the cost-effectiveness of possible protective measures. The project team members have presented at high level seminars and the work has been praised for its relevance and responsiveness to policy requirements by senior policymakers.

Relu research primes emergence of a new industrial sector around biopesticides
(Relu project RES-224-25-0048)
Biopesticides such as naturally-occurring insect-pathogenic fungi could be used much more widely to control insect pests of crop plants. However there has been a poor uptake of microbial pesticides in the UK and relatively few products have been successfully registered and made available. Political Scientists at Warwick University working on the Rural Economy and Land Use project "The Role of Regulation in Developing Biological Alternatives to Pesticides" found that the regulatory system has been designed with chemical pesticides in mind, and changes in regulations are needed to encourage the

development of biopesticides. There are also concerns about the environmental sustainability of bio-pesticides and this was the focus of the research of Warwick biologists who worked alongside the political scientists. Relatively little is yet understood about the underlying ecology of bio-insecticides and nested clade analysis was used to investigate the structure of natural populations of specific insect-pathogenic fungi. This new technique enables the influences of concurrent ecological factors (in this case, habitat type) to be separated from past evolutionary events. It helped the scientists to understand how species released as control agents interact with established populations of the same species, and how to tailor specific biopesticides to function as effectively and sustainably as possible in local conditions and habitats. The Relu team of natural scientist and the political scientists has worked closely with the Pesticides Safety Directorate throughout the project, to help the PSD build their own expertise in the science of biopesticides and to support their development of regulatory processes that would help facilitate licensing and registration of these innovative methods of pest control. The work undertaken in the project supports Defra's Science and Innovation Strategy objective to develop alternative plant protection technologies to reduce reliance on conventional pesticides.

Relu Researchers Advise Parliamentary Select Committee on Future of the CAP
In 2007 the House of Commons Environment, Food and Rural Affairs Select Committee published a report on its inquiry into the UK Government's vision for the future of the Common Agricultural Policy (CAP). To guide its inquiry, the Committee asked for a private briefing with Relu researchers Wyn Grant (Warwick), Alan Swinbank (Reading) and Neil Ward (Newcastle). The report concluded that the CAP should be scrapped and replaced with a new rural policy for the European Union and made more than 20 detailed recommendations on the UK's approach to winning support in Europe for further CAP reform.

Relu advises European network on interdisciplinarity
Relu Assistant Director Jeremy Phillipson spoke to the European Research Area Network (ERA-Net) on Integrated Water Resource Management about Relu's experience of research across disciplines. The ERA-Net is open to research managers and policy-makers aiming to improve the coherence of integrated water resources management across Europe.

4.7 Press and publicity

During 2007 Relu began to step up its media profile at programme and project levels, both within the research community and to external audiences. News from the programme featured in internal newsletters and magazines, such as the RCUK newsletter virtually every month of the year, with longer articles in publications such as ESRC's *Britain in 2007* and *Social Sciences*, NERC's *Planet Earth* and *BBSRC Business*. Several of the Food Chain projects were very successful in gaining coverage in local and specialist media. For example, the Stirling University-based Tilapia project was widely covered in the Scottish press and on specialist fish-production news websites, while the Yorkshire Post and Farmers' Guardian covered news on peat restoration from the Uplands Futures project. The launch of the Reducing E coli Risk project also gained extensive coverage in Scotland and the Safe Recycling of Livestock Waste made it into local media with news of their citizens'

jury and onto more than a dozen specialist news websites with their new risk assessment tool. In July the Royal Institution of Chartered Surveyors journal *Land* featured its first article on a Relu project and since then has carried an article in every issue. The programme has also appeared regularly in national media. Projects have been cited in The Times, the Financial Times, BBC News and News 24, BBC Radio 4, and Channel 4. Relu achieved a major highlight in December when the Daily Telegraph carried an extensive feature on the Uplands Futures project and the work carried out on carbon storage.

4.8 Key items of expenditure

Key items of expenditure include: £4.7k on the *UK Rural Economy and Land Use Debates*; £12.8k on *"Research on Rural Resource Management and the Rural Economy: Addressing the Local and Regional Dimension"*; £46.1k on *"Unlocking Change in the Food Chain"*; £11.1k on Briefing Papers/Policy and Practice Notes; £5.2k on national stakeholder forums; £5.2k on website development; £1.5k on PI induction workshop.

5. Progress of Projects

52 projects (of which 34 small seed corn projects were completed in 2005) and 10 PhD studentships started prior to the reporting period. 9 large research projects, commissioned under the Third Call, and three interdisciplinary research fellows (commissioned under the Second Call) commenced their research during 2007. 1 large project and 5 PhD studentships commissioned under the Third Call will commence in 2008, as will 1 studentship funded under the Second Call.

Group planning meetings were held with Principal Investigators from each of the three funding calls. Individual site visits were conducted to 7 (from 8) First Call projects and 10 (from 11) Second Call projects. An induction meeting was held with the 10 new Third Call projects which started during the year. Expenditure on individual project visits amounted to £2.5k (budget £16.8k).

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[2]
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 asking the question: can production systems that use and maintain biodiverse natural grasslands, translate that into a source of additional product value. The project aimed to invert the conventional understanding of landscape or environmental quality as the outcome of well managed farming, to explore the idea of natural grassland biodiversity as an input into more sustainable farming and an integral component of product quality.

Detailed fieldwork was undertaken on over 40 beef, lamb and cheese producing farms where farmers have specifically sought to graze their animals on natural grasslands and where this is potentially a source of added value. The fieldwork followed the chain from intrinsic natural value to explicit commodity value through ecological surveys of pastures, farmer interviews and business surveys and, in a sample of farms, meat analysis, taste panels and consumer focus groups. The research looked at how the various links operated and what was their contribution to added value, both in monetary terms but also in terms of delivering broader public goods. The results might be divided into three sets: the contribution of on-farm grassland management to environmental value; the effects of natural grassland pasture feeding on the quality of the final animal products; and the impact of such production on farm businesses and rural development.

In terms of environmental impacts, the results show that, on certain farms, the active conversion from formerly improved pastures to natural grassland is leading to a net increase in the area under permanent grass at the farm level with an associated growth in grassland diversity. Furthermore, the extensive grazing practices observed on the farms

[2] All project start and end dates are taken from 2007 Project Annual Reports

studied are having an identifiable and beneficial impact upon the floristic composition of these pastures. As many of the farms concerned are located within what are recognised as priority habitats (notably heath and moorland and calcareous grassland), these high value, extensive systems are helping to reverse biodiversity loss.

A second component of the research assessed whether the meat and dairy products coming from animals grazed upon quality biodiverse grasslands is identifiably different from that available from more standard, intensive systems. Detailed laboratory analysis, confirmed earlier research in showing that differences in pasture biodiversity can positively affect meat quality, chiefly as a result of the impact of plant species upon the rumen process. There are a number of elements to this. First, the research revealed that, when controlling for breed, lamb meat produced on biodiverse rich grassland (particularly heather pasture systems) displayed higher levels of Vitamin E (a natural anti-oxidant affecting shelf life) than control meat. Second, lamb meat from biodiverse rich grasslands recorded generally lower skatole levels (a product of rumen fermentation which adversely affects meat taste, particularly when grilled) than control meat. Third, lamb meat from biodiverse rich grassland recorded higher levels of a number of nutritionally healthy fatty acids (notably n-3 polyunsaturated fatty acids and conjugated linoleic acid) than control meat. Fourth, beef breeds (such as Longhorn) were shown to be more suited to biodiverse pastures and generally yield higher meat quality. The research thus provided a range of evidence that there are added product qualities to be created through the linking of the protection and maintenance of species rich grazing pastures with quality food products.

The third component of the research focussed on the implications for farm businesses and, ultimately for rural development. By integrating natural value into production chains, producers are able to increase the value of their products and, through marketing and sales strategies, retain a greater proportion of that value within the farm business. Analysis of returns shows that despite possible lower production volumes (in body weight per animal and in the number of animals produced), the higher prices obtained, in some cases combined with payments under agri-environmental schemes for natural grassland management along with other 'Pillar 2' measures, make this form of farm enterprise profitable in what are often otherwise considered as marginally productive regions. Furthermore, in their explicit linking of place-based environmental quality and food quality, producers are engaging directly with consumers through 'alternative' outlets and networks such as direct selling, farmers' markets, specialist local retail outlets, web-sales and so on, thereby further contributing to the flow of revenue directly to rural areas. In a number of instances studied here, this has permitted increases in on-farm employment and further rural investment.

By bringing formerly unproductive grazing lands into production, or by converting formerly improved pastures into 'natural' grasslands, producers are taking an active – and at the same time productive - role in grassland management. For some producers, often initially from outside the profession, this represents an opportunity for investment and dynamic marketing. For others, often more longstanding farm businesses, this has represented a post Foot and Mouth alternative. Many are more careful than the incoming entrepreneurs, preferring to maintain more intensive systems in parallel on improved

pastures. For all the producers, responding to consumer demand for more naturally embedded food products and for a greater sense of distinctive food provenance, linking biodiversity as an input to food quality represents a new source of social, economic and environmental value which deserves recognition in policy objectives and instruments. Ultimately, this research offers a different take on sustainable agricultural production; one that is less about leaving as 'small a footprint as possible' on some pre-existing nature, and more about seeing food and nature production as mutually constitutive.

RES-224-25-0044, Prof G Edwards-Jones, University of Wales, Bangor
01 Dec 04 – Feb 08
Comparative Assessment of Environmental, Community and Nutritional Impacts of Consuming Vegetables Produced Locally and Overseas

The project poses the question 'Which is best; to produce fruit and vegetables in the UK, or to import produce from overseas?' It seeks to answer this question by comparing a range of characteristics of fruit and vegetables produced in UK, Spain, Kenya and Uganda, relating to the environment, economy, consumer perception, nutrition and community.

The research is considering whether fewer greenhouse gases are released by producing food in the UK, or by importing it from Spain / Kenya/ Uganda, by measuring gases released from vegetable fields in the four countries and estimating the gases released during transport from field to final consumer. The nutritional value of fresh imported food is being compared with UK produced food which may need to be stored for several months prior to consumption. The social and economic advantages of home and overseas produced food are being considered through a large survey of consumers, and by working in a more detailed way with three case study rural communities. All these results are being brought together in one case study site and an overall assessment of the advantages and disadvantages of home and overseas produced fruit and vegetables.

During the year all relevant field work was finalised and analysis of plant and soil data was completed as planned. Research highlights included the conduct of field work in Kenya. The project had been trying for 3 years to get the right permissions to undertake work in Kenya and had almost given up hope, when in late summer an opportunity arose with a commercial horticultural company. They were thus able to spend the best part of 3 months collecting data from Kenyan farms. Another highlight has been the development of a land use model for Anglesey which links the details of the agricultural enterprises in a particular part of the island with greenhouse gas emissions from that farm. The early results suggest that ploughing up the existing grassland on Anglesey in order to provide vegetables to the local market may actually result in the release of more greenhouse gases than the current approach of importing most of the vegetables from outside Wales.

During 2007 numerous talks were given to industry and stakeholder groups about the work. The project also ran a one-day public seminar in Science week which explored the linkages and conflicts between local food and international development. The project has developed a close relationship with industrial bodies and as a result has undertaken work on carbon footprints for both the Horticultural Development Council and Meat Promotion Wales.

These industry contacts have proved extremely valuable and have enabled the researchers to interact directly with a range of industry stakeholders.

RES-224-25-0048, Prof WP Grant, University of Warwick
01 Nov 04 – 31 Oct 07
Biological Alternatives to Chemical Pesticide Inputs in the Food Chain: An Assessment of Environmental and Regulatory Sustainability

The project is based on insect pathogenic fungi, which 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 is also examining 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.

UK farmers and growers face the challenge of using more environmentally acceptable methods of crop protection while maintaining food quality, productivity and profitability. There are good opportunities to reduce chemical inputs using Integrated Pest Management (IPM) based on biological control agents such as naturally occurring fungi, bacteria, viruses or nematodes. The project focused particularly on microbial bio-insecticides, based on entomopathogens, for the control of insect pests which form part of a group of microbial biopesticides. They are applied in much the same way as chemical pesticides, but they offer a number of advantages such as low impact on non target organisms, compatibility with other natural enemies and limited toxic residue. However, there has been a poor uptake of microbial pesticides in the UK. Relatively few products have been successfully registered and made available. This project focused on regulatory barriers to wider adoption. The regulatory system in the UK was developed in accordance with a chemical pesticides model which did not facilitate the registration of biopesticides.

The regulatory agency, the Pesticides Safety Directorate (PSD), introduced a Pilot Project to facilitate the registration of biopesticides in 2003 and converted this into a Biopesticides Scheme in 2006 offering features such as pre-submission meetings, reduced registration fees and a Biopesticides Champion within PSD. The project was able to study this process of regulatory innovation and work with PSD to provide training to facilitate the achievement of their objectives. It also enabled the development of a model specifying the conditions under which regulatory innovation was likely to occur.

The model was informed by cross-sectional comparative analysis of regulatory arrangements in Denmark, the Netherlands and the United States. The pesticides tax in Denmark was not considered to offer a way forward for the promotion of biopesticides. The Genoeg scheme in the Netherlands provides assistance with registration costs of new products. In the USA, the Environmental Protection Agency has a well resourced Biopesticides Division with a clear mission to facilitate biopesticide registration. This is helped by its links with the IR-4 programme. One lesson from these arrangements is that there may be scope for limited interventions to assist the development and registration of products. However, the absence of a functioning system of mutual recognition of

biopesticides between EU member states means that there is no effective internal market comparable with that of the USA which has had a much higher rate of biopesticide registration and adoption. This makes it difficult for the SMEs which are the typical developers and producers of biopesticides to secure economies of scale.

Relatively little is still understood about the underlying ecology of bio-insecticides. However, research in Canada showed that two soil dwelling entomopathogenic fungi were adapted to local environmental conditions. This was a significant finding because it challenged a paradigm in insect pathology that the host insect is the predominant influence on population genetics. Local adaptation would have profound implications for the ability of natural entomopathogens communities to compete with bio-insecticide genotypes, and hence determine the efficacy and sustainability of bio-insecticide applications. The work undertaken in the project showed the existence of local adaptation in that particular strains represent an adaptation to both latitude and habitat such as woodland, ploughed field, permanent grassland etc. The results indicate that habitat type is likely to influence the environmental fate and behaviour of entomopathogenic fungal strains released as biocontrol agents. It would make sense to develop control agents for a particular habitat type using fungal strains from a genetic group adapted to the same habitat. Ecological niche theory suggests that such strains are likely to persist for longer (thereby giving more effective pest control) and there should be less of risk of the strain establishing in a heterologous habitat and causing unintended effects on nontarget organisms.

The project was characterised by effective engagement with a range of stakeholders, including statutory organisations such as Pesticides Safety Directorate, growers, biopesticide manufacturers and retailers. The project team submitted a response to the draft National Pesticides Strategy and also fed into the informal and formal consultations run by Defra on the future of PSD. The work undertaken in the project is consistent with Defra's Science and Innovation Strategy objective to develop alternative plant protection technologies to reduce reliance on conventional pesticides. The broader regulatory framework is a European one, and it too has been undergoing a process of change. The revision of the relevant directive, EC 91/414, has been under discussion throughout the life of the project, and the opportunity has been taken to inform the process. The project was represented on the steering group of the European Commission policy action, REBECA (Regulation of Environmental Biological Control Agents). Project members took an active role in various workshops and played a key role in shaping the final report with Professor Grant serving as a member of the round table at the plenary session of the final conference in Brussels.

RES-224-25-0066, Dr DC Little, Stirling University
03 Jan 05 – 31 Dec 07
Warmwater Fish Production as a Niche Production and Market Diversification Strategy for Organic Arable Farmers with Implications for Sustainability and Public Health

This project aims to develop technical guidelines for a sustainable system for tilapia culture as a potential diversification strategy for farmers in the UK. A comprehensive

analysis of the practicality, sustainability and viability of the system is being gained through laboratory and on-site investigations, as well as trials with commercial partners.

Research techniques have used mixed methods drawn from qualitative, quantitative and case study approaches. Production units within conventional recirculating aquaculture systems (RAS) are being compared with those managed as activated suspension technology units (AST) that promise improved efficiencies, enhanced animal welfare and greater accessibility for conventional farms. Data developed through the technical trials at the Institute and with a commercial partner in Thailand are being used to inform testing by commercial partners in the UK. The costs and benefits of using organic, and /or traceable and locally produced feed have been assessed for different production models. Markets for tilapia have been explored by means of consumer focus groups and in-depth interviews with organisational channel members, including processors, retailers, foodservice and other relevant interest groups. These components are leading to an improved understanding of production alternatives and existing perceptions of food safety, health and dietary communications. Health and sustainability impact assessments – worker, consumer, environmental – are being used to combine the evidence base of current knowledge with evidence from the technical trials on the direct and indirect impacts of tilapia culture in the UK.

AST (activated suspension technology) systems were found to be less robust and efficient than conventional RAS (recirculating aquaculture systems) for UK tilapia production. An economic evaluation comparing AST and RAS systems concluded that AST is not currently a commercially viable option for UK farmers, although both systems produced fish scoring well in terms of taste and welfare indicators. A small scale, adaptive approach to RAS, is highly cost sensitive, both to the farm gate price achievable for tilapia and also to the level of integration with existing farm infrastructure and management. This emphasized the importance of an interdisciplinary research perspective incorporating technical, marketing and public health phenomena. Biosecurity issues common to fish farming are not an issue with on-land, enclosed systems. The energy costs to maintain required temperatures for this warm water species are manageable, and the re-use of waste heat energy for tilapia production is not as significant as earlier expected. However, the energy required for operational purposes such as pumps and water engineering is considerable and the source can be critical. Analysis of the ‘waste’ or bacterial floc from both AST and RAS systems revealed potential use as a fertilizer, adding further sustainability and financial gains for small scale production of tilapia on UK farms.

The market assessment indicated that there is potential for domestically produced tilapia in UK niche markets, primarily amongst ethnic consumers, green and health conscious consumers and the wider food service industry. The relatively small scale of production will favour outlets catering for diners willing to pay higher prices rather than more cost-focused. Therefore, ethnic and fish speciality restaurants, fishmongers and fish markets in both rural and urban locations, and online fishmongers hold potential for locally produced fresh tilapia. Farmers markets and farm shops may also provide some scope to reach target consumers, but the requirements to build and maintain a customer base at farmers markets may place disproportionately heavy demands upon small producers. Organic certification

for tilapia as a means to adding value and attracting consumers is not as important as other green indicators. The tag of local production is a prime cue of quality and freshness to entice consumers and high-end food service operators.

A major focus for the last year's activities has been the dissemination of the results of the research. A final technical trial was concluded early in the year that confirmed the findings of the previous trials and led to the development of simple RAS designs with which dialogue with potential adopters in the UK could be facilitated. A notable feature of potential adopters has been their technical orientation, with many barely considering marketing or post-harvest options. Conversely the farmers that did consider marketing aspects to be of importance, tended to minimise the technical requirements and overlooked the health & safety and hygiene implications of post harvest activities. An important aspect of the dissemination work therefore was to convey a more rounded assessment of the technical and marketing challenges and opportunities.

RES-224-25-0073, Prof B Traill, University of Reading
01 Apr 05 - 30 Apr 08
Implications of a Nutrition Driven Food Policy of Land Use and the Rural Environment

Common Agricultural Policy reform is shifting farm policy away from traditional production support; meanwhile concern with diet-health relationships will move nutritional goals to the policy front-line, with major implications for food demand and land use. This project draws 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 overall objective of the research is to examine the potential for the development of sustainable UK food chains capable of delivering 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.

It is known that milk and meat from grass-fed animals has a lower proportion of saturated fat and more of the beneficial n-3 fats than animals fed concentrates. The project is testing the hypothesis that more biologically diverse pastures, suitable for less favoured areas, will enhance these effects. With respect to soft fruit (strawberries, blueberries, raspberries) and lettuce which are increasingly grown in the UK in polythene tunnels, the research is assessing the extent to which new ultra-violet transparent films enhance the levels of a range of phytochemicals known to have antioxidant (cancer protecting) properties. Using a range of psychological and economic models and data from interviews, surveys and secondary sources, they are also investigating consumers' attitudes to healthy eating, their willingness to pay for healthier foods, their response to possible policy interventions to promote healthy eating and the market level demand implications of healthier products and policies to promote their consumption. The implications for human health will be assessed. Finally, the land-use implications will be analysed using an updated version of the existing and well-validated Land Use Allocation Model. The implications for rural employment,

landscape and biodiversity in different landscape types within England will be evaluated using appropriate modern methods from the social and natural sciences.

In 2007 the estimation of the demand models was completed. The impacts of a number of possible tax and subsidy regimes on the demand for healthier food products have been simulated, including a combination of graduated taxes related to their fat content in the food and subsidies on fruit and vegetable consumption designed to be fiscally neutral. Analysing focus group data on healthy eating identified key areas for investigation in national surveys. Age in particular was highlighted to be an important influence. This was carried through to a small intervention study that was targeted specifically on younger people age 18-30. Initial results suggest that targeted information can have a more positive influence on healthy eating behaviour than standard healthy eating messages.

The polytunnel work in 2007 built on the principal finding of the first two years' work: the nutritional quality and yield of soft fruit (strawberry, raspberry and blueberry) are maintained by commercial-scale cultivation under standard polythene; the use of uv-transparent polythene does not lead to significant enhancement in nutritional quality. Imported strawberries had phytochemical levels comparable to those grown in the UK under polythene. By using a colorimeter to follow anthocyanin development in strawberry (Elsanta) the team determined the extent to which colour could be related with a variety of quality parameters (sweetness, keeping quality etc). By contrast with soft fruit, in red lettuce, uv transparent plastic provided a dramatic increase in anthocyanin and other health-beneficial polyphenolics, with a minor diminution in yield.

Following the establishment of biodiverse pastures involving six 'sown' species; *Trifolium pratense* (red clover), *Lotus corniculatus* (birdsfoot trefoil), *Achaillea millefolium* (yarrow), *Centaurea nigra* (knapweed), *Plantago lanceolata* (plantain) and *Prunella vulgaris* (selfheal), these were successfully grazed by lambs between May and July 2007. Further work is continuing to determine the effect of these botanically diverse pastures on the fatty acid content and profile of sheep meat.

The impact on agricultural land use of the public following Scientific Advisory Committee on Nutrition guidelines was modelled using the LUAM for England and Wales and compared with a reference run representing a future based on current polices. The model predicts expansion of the area under horticulture, contraction of the national dairy herd and restructuring of livestock farming. Responses in the distributions of bird species in response to these changes were generally small and differed between species.

RES-224-25-0086, Dr D Chadwick, IGER, North Wyke
01 Feb 05 - 30 Jun 08
Sustainable and Holistic Food Chains for Recycling Livestock Waste to Land

Dairy and beef farmers provide consumers with reliable sources of milk and meat, but the animal waste generated poses environmental and social risks. This project is evaluating 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 are being investigated as well as the 'knock-on' effects for local communities and industries reliant on clean water supplies.

The aim of the project is to evaluate the impact of management practices to control the risk of pathogen transfers (measured as faecal indicator organisms – FIOs) from grazing livestock, manures and other waste streams on the economics and practicalities of farming and the 'knock-on' effects of such decisions on local communities and industries reliant on clean water supplies. Risk assessments have been conducted of pathogen transfers from farms under current livestock and manure management practices, including targeted monitoring on ten farms. Perceptions of farmers, retailers, consumers and local 'downstream' industries towards pathogen transfers have been gauged, to help assess the potential impacts of changes in farm management practices.

A core aspect of the work is the development of a farm-scale risk indexing tool based on physical and socio-economic risk factors. The concept contends that environmentally and socially appropriate management interventions arise from understanding the interplay of social and natural processes at the farm scale. Through identification of governing controls on FIO loss from land to water the project has developed a tool which can help devise different styles and forms of mitigation to reduce FIO delivery to watercourses. This risk tool will allow the policy community not only to target high risk areas, but also develop mitigation strategies that are sensitive to the different ways in which risk is produced.

The project team conducted a major exercise in stakeholder and public consultation in 2007 through a Citizens' Jury funded by Defra. Members of the Devon public examined the evidence base surrounding microbial watercourse pollution and what more might be done to mitigate the impact of livestock farming. The two-day event drew in eighteen expert witnesses, including from the Health Protection Agency, the shellfisheries industry, South West Water, the National Farmers Union and the Environment Agency, generated regional press and radio publicity and provided a platform in which stakeholders could explore and, debate views regarding emerging priorities. The project has also contributed to the evidence base surrounding the applicability and value of the jury technique to policy development and consultation within Defra.

RES-224-25-0090, Prof R Shepherd, University of Surrey
01 Feb 05 – 31 Jul 08
Integration of Social and Natural Sciences to Develop Improved Tools for Assessing and Managing Food Chain Risks Affecting the Rural Economy

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 is therefore incorporating the thinking and values of stakeholders into the scientific modelling of risks. The research is centred on three contrasting case studies: a chemical contamination, a microbial contamination and a mock crisis scenario. The project is developing ways to handle uncertainties in the estimates of risk, taking account of the

complexity of contemporary food chains and the possible reactions of consumers to information on food safety. Various groups, including producers, NGOs, regulators, risk managers and members of the public, are helping define each of the problems and discussing their understanding of risk. This will enable examination of the effectiveness of different forms of risk communication.

The main aim of this project is to develop better ways of communicating uncertainties around food risks to different stakeholders, including members of the public. This will involve the development of interactive web-enabled tools to open up national dietary and nutrition surveys and use them in improved quantitative assessment of short and long term food chain risks and uncertainties. Participatory methods will be used to ensure that the proposed processes and web-enabled risk management tools provide the appropriate information to all stakeholders. This will provide improved methods and tools for communicating to all stakeholders quantitative information about food chain risks and uncertainties and using them in different types of risk management processes including participation of stakeholders and the public, and consideration of other factors including economic, health and environmental effects. Particular food chain models, incorporating accessible concepts such as FSOs, will help to define the scope of the project and to facilitate participations.

The project team ran a series of workshops on two different case studies. The first three were held in Norwich in collaboration with the Institute of Food Research (IFR) during science week (14^{th}-15^{th} March). These workshops explored different strategies to reduce the incidence of food poisoning from Campylobacter in chickens with stakeholders from rural and urban areas. In these workshops they tested communication tools developed in this project including electronic food chain modelling and belief-net modelling. The remaining three workshops held in London and Manchester (in June and November), in collaboration with the Food Standards Agency (FSA), investigated the use of participatory processes in emergency management situations. A number of stakeholder groups, including government authorities, NGOs, industry, and consumers, participated in working through an evolving crisis scenario. Alongside this work the ThinkTank programme has been used to develop a methodology of stakeholder engagement in emergency management over the web. In addition, an experimental study of communications effectiveness has been conducted based on PSD risk communications.

Analysis has been completed of the stakeholder focus groups associated with the first two case studies. This has involved developing a new two-level system of qualitative analysis. One level is focused on the structure of the icon-based methodology designed to capture the food chain; the second is a detailed textual analysis of the discussions generated while developing the icon-based system to explore stakeholder conceptions of such factors as risk and how to mitigate it. An interface for a risk calculator tool has been developed for use over the web. Work has also continued on approaches for modelling exposure and risk from contaminants in the food chain, including a novel statistical approach using Bayesian methods to model individual variation in long-term consumption of a food type from short-term survey data - a key requirement for assessing human exposure to food contaminants.

Two consumer behaviour questionnaires were conducted. The first was based on the FSO in relation to campylobacter. The second used the outputs for the workshops associated with the third case study. These were included in a questionnaire to test the effect of both the content of the output and the attribution to different forms of workshop. The results of these studies are currently being analysed. The new conceptual approach for bringing together social representation theory and the mental models approach is giving rise to a series of article in the Journal of Risk Research to debate the merits of the new approach .

RES-224-25-0093, Dr AS Bailey, Imperial College London
01 Feb 05 – 31 Jan 09
Re-Bugging the System: Promoting Adoption of Alternative Pest Management Strategies in Field Crop Systems

This project is investigating both the efficacy of alternatives to chemical pesticides and issues for producers in switching to them. Two alternatives are being explored: habitat manipulations to encourage predators and parasites and semiochemical odours (natural smells) to manipulate predator distribution. By choosing an established and a new technology, the aim is to look backward and forward in developing effective tools to evaluate and promote the adoption of alternative pest control technologies in UK agriculture.

The project is conducting innovative natural science research to evaluate an existing (i.e. habitat manipulation) and novel (i.e. semiochemical 'push-pull') biocontrol technology considering ecological mechanisms and impacts from lab to farm scales. This technical knowledge is being combined with outputs from novel social and economic analyses of path dependency, considering factors such as private costs of adoption, consumer preference and retailer led supply chain governance. By choosing an 'established' and a new technology, the project is combining technical and economic research to look backward and forward to develop effective tools to evaluate and promote the adoption of alternative control technology in UK agricultural systems.

With regard to semiochemicals, it has been found that different wheat varieties respond differently to *cis*-jasmone treatment, which implies genetic variation in inducible defences and improves the scope for practical use of *cis*-jasmone. New sustained release formulations of semiochemicals are being developed. Retention of parasitoids in crop has been found to be increased by nepetalactone. Regulatory requirements for semiochemical crop protection treatments are a major hurdle which prevents them being made commercially available. Costs of registration are in the region of £500K making the process too expensive for small niche markets or companies with limited capital available for investment.

Field/landscape scale studies over two years, have identified aerial predators as the most important for cereal aphid control. The most popular habitat enhancement options adopted by farmers in Environmental Stewardship will therefore have little impact on pest control. Greater reward should be provided to encourage farmers to increase floral resources on farmland for beneficial insects.

Farm survey work has yielded interesting insights concerning the types of non-pesticide control technologies and strategies either considered or employed by cereal farmers either consciously or otherwise and how these might contribute toward the portfolios of IPM strategies of the future.

5.2 Second Call Projects on People and the Rural Environment

RES-227-25-0001 Dr K Hubacek, University of Leeds
01 Mar 06 - 28 Feb 09
Managing Uncertainty in Dynamic Socio-Environmental Systems: An Application to UK Uplands

The uplands in Britain are facing a time of considerable change, and it is important that these biodiverse areas, which provide much of Britain's drinking water, as well as being a valuable resource for tourism, sheep farming, game, fishing and other recreation, are managed in a sustainable and acceptable manner. This project aims to help people identify the most appropriate ways to adapt to changes in a socially and environmentally sustainable way, and to monitor progress. Focusing on three upland areas, the Peak District, Nidderdale in the Yorkshire Dales and Galloway in Scotland, it seeks to encompass the diverse pressures on land use and livelihoods, as well as the range of visions for a sustainable future held by those who live and work there.

The project is developing an adaptive learning process that can rapidly and effectively integrate knowledge from stakeholders and researchers from different disciplines to: i) identify sustainable rural futures that are desired by different stakeholders; ii) identify drivers of change and model likely future scenarios; iii) develop innovative adaptive management and policy options that could facilitate multiple sustainable rural futures under different scenarios; iv) model the environmental, economic and social implications of these options; and v) develop sustainability indicators to monitor and further adapt management and policy to achieve sustainable multiple land use.

Stakeholders in the Peak District National Park have participated in a series of site visits that they helped design with researchers, to discuss what the future of UK uplands might look like. The site visits informed the formulation of future scenarios from which stakeholders were subsequently asked to shortlist those they considered most likely to happen and to have greatest impact. Some of these were simply extrapolations of current biophysical and policy trends, such as climate change, large-scale restoration activity and a ban on burning blanket bog. However, some of the scenarios represented a radical shift. For example, participants considered a "managed retreat" from the uplands, the collapse of hill farming, and the expansion of arable land into uplands. Participants refined these scenarios, adding and changing components to make them more realistic. The scenarios are now being explored in greater depth using integrated biophysical and socio-economic models. After viewing the results of this work in a series of short films, stakeholders will be able to evaluate the scenarios and discuss how they could respond. The researchers will then use their models to estimate how well the suggested responses might work

The project has used data from the Peak District to show how Social Network Analysis can enhance stakeholder analysis. This information helped them identify which individuals and categories of stakeholder played more central roles in their social network It also helped in understanding relationships between different categories of stakeholders within the overall structure of the network. In this way, they were able to identify the power and influence of different stakeholders and used this information when deciding who to include in smaller group discussions about resource management. Participants were selected to ensure that certain groups were not marginalised, but also ensuring that many were highly networked and respected individuals who could disseminate the emerging ideas and attitudes widely. In this way, it may be possible to enable stakeholders to manage resources more effectively and effect change within their social networks (Hubacek *et al*., 2006; Prell *et al*., in press a, b) Using this work as a case study, the project is now leading the development of a cross-programme journal article that draws together experience from across Relu to develop a typology for stakeholder analysis. This is the first time that this has been attempted, and the most comprehensive review of the topic to date. It draws on case studies from three other Relu projects.

Results from the biodiversity modelling include vegetation maps produced by classifying high resolution aerial imagery and the development of a realistic model of red grouse populations. The project is currently analysing the distribution and turnover of vegetation to understand how management affects moorland landscapes and coupling the vegetation models to the red grouse models.

Over the last year, the nature of stakeholder engagement has shifted from being primarily initiated by the project, to stakeholders seeking collaboration and inputs from the project and using results themselves. Results of the research have been taken up by Natural England, the National Trust, the CLA, the Environment Agency, Peak District National Park Authority, Nidderdale AONB Board and the Moorland Association. The project has organised a workshop “Carbon in Yorkshire and the Humber” to enable participants to share experience and expertise in developing domestic land-based carbon storage, sequestration and offsetting projects, and identify potential synergies and future collaborations. The project has also teamed up with the Moors for the Future partnership to produce a joint Research Note Series: “timely research reviews for easy consumption” and fed into a manual published by the Global Environment Centre and Wetlands International, titled “Assessment on peatlands, biodiversity and climate change”.

In the first 2 years, the project has generated 11 peer reviewed journal articles in international journals, 9 book chapters and 36 presentations at national or international conferences/workshops and a project podcast has been created and trialed with students to positive feedback. Interviews are planned to create further episodes, and films are being developed. A feature about the project has also appeared in the Daily Telegraph. The project has now attracted almost £1M additional funding from a variety of external sources to extend the work.

RES-227-25-0002 Dr E Oughton, University of Newcastle
01 Mar 06 - 28 Feb 09
Angling in the Rural Environment: Social, Economic, Ecological and Geomorphological Interactions

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. Bringing together researchers from natural and social sciences, as well as stakeholders from government, non-governmental organisations and the local community, this project analyses the complex relationships between river, fishing, biodiversity and institutions of governance and practice. Results will be used to inform policy on integrated development of the rural river environment.

The research is analysing the complex network of natural and socioeconomic relationships around angling in the river environment, including the institutions of governance and land-use practices at a range of interconnected scales. Research is being conducted on the Esk, Swale and Ure river catchments to assess how the natural environment, the institutional context of management and cultural practices influence angling and to identify the goods provided by the rivers to anglers and other users. The results of the research are being used to inform and strengthen the sustainable management of rivers and their rural catchments.

Ecological work during the year has continued along several key themes, linking with other disciplines. Trials have been carried out to assess in situ mortality of autumn-spawned salmonid eggs within egg tubes distributed across a range of sites within the Esk, characterised by differing fine sediment. These measurements will be available in late spring 2008. Aerial photographs from the River Swale have been partially analysed to examine the variability in riparian habitat and related to the activities of angling groups, in particular in the context of tree planting and stock fencing for enhancing angling quality and ecological condition. Key localities within the river catchments have been surveyed for native conservation species and alien species. The researchers are continuing to gather data on the characteristics of still water habitats (from small ponds to large lakes and reservoirs) across the Ure and Swale watersheds to analyse physical and ecological characteristics, including fish assemblages, stock and species introductions and angling activity. This combines with social scientific examination of angling activities on a subset of these still waters. Quasi-continuous data collection on fine sediment transfer is continuing; initial sampling of bed composition has been carried out; and preliminary analysis is underway.

Distribution and analysis of the angler questionnaire has continued. 43 interviews have been conducted so far and key personnel have been interviewed. Focus groups have been organised to gain additional insights and 19 interviews have been conducted with angling related businesses. All interviews are now transcribed and analysis started. Work has also been carried out to undertake interviews on micro-institutional governance. A better understanding of the key institutions of angling has been gained through the programme of work shadowing with the Environment Agency and Angling Development Board. The project has also gained an in depth understanding of the micro politics of rivers through

close working with local stakeholders and a member of the team has been invited to join the Esk Pearl and Salmon Recovery Project, which has been established by the Environment Agency, the North York Moors National Park and Natural England to attempt to reverse the decline in the number of salmon and pearl mussels in the River Esk.

There is a significant shift in angling to still waters and a decline in river fishing in the study catchments. The research so far shows that generally only very low income is generated by angling in the businesses that we have investigated, with the exception of a very few larger specialised angling businesses. However, the timing of income flows and the use of under developed resources can mean that the level of income generated does not necessarily reflect the degree of importance of angling in complex rural business portfolios or livelihoods. David Steward, chair of the Regional Fisheries Ecology and Recreation Advisory Committee, has been appointed a visiting fellow to the project, with a remit to assist in access to planning and policy makers

RES-227-25-0006 Dr S Stagl, University of Sussex
01 Jan 06 - 31 Dec 09
An Integrated Analysis of Scale Effects in Alternative Agricultural Systems

Changing land cultivation from conventional to organic practices can have significant impacts on environmental factors such as wildlife, soil and water quality, as well as changing the ways in which food is supplied, the economics of farm business and indeed the attitudes of farmers themselves. However, we know much less about how these factors depend on the scale and concentration of alternative farming systems across the landscape, from local, up to the national scale. This project investigates what causes organic farms to be arranged in clusters at local, regional and national scales, rather than be spread more evenly throughout the landscape 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.

The unforeseen problems in identifying appropriate matching case study areas necessitated a complex multivariate analysis of organic farm locations, utilising a number of bio-geochemical and climatic variables, as a groundwork for site selection. The results indicate some propensities for organic farms to be located in particular biophysical envelopes, though caution is required in interpreting these basic findings since a number of additional variables, notably policy measures and socio-economic factors, are not at this point included in this analysis. Nevertheless, this work has developed an excellent baseline. The research will now build on these results in two directions. The first is to augment the spatial analysis with additional - primarily socio-economic – variables, such as proximity to population centres. This will require more advanced GIS layers to be introduced. The second anticipated element is an analysis of the historical development of organic sites; this work requires historical data on organic conversions, for which cooperation with the database holders is critical. This issue will be addressed early in 2008, having been delayed in 2007.

The desk study of business organisation in organic supply chains, and associated theoretical literature, has developed very significantly and will continue into 2008. During the biodiversity surveys in 2007, in total 256 plant species, 3966 earthworm individuals (3565 juveniles and 401 adults) from 10 species, 1063 butterfly individuals from 23 species and 88 bird species, thereof 18 farmland bird species, were recorded. Diversity and abundance of plants in crop and grass fields were higher in organic than conventional fields and higher in the field edges than in the field centres. This pattern was consistent across all spatial scales i.e. at the field, farm and regional scale. Plant diversity of field margins did not differ between the two farming systems. Crop yields were higher in conventional than organic fields, but did not differ between hot and cold spot landscapes. Furthermore, there was a negative relationship between plant species richness and crop yield. Butterflies responded to the habitat and farming system at the local and landscape scale. The abundance and diversity was higher in field margins than in field centres and higher in organic than in conventional cereal fields. A significant interaction between local and landscape scale farm management showed that butterfly abundance in conventional and organic fields also depended on landscape context. The positive effect of organic farming on butterfly abundance was highest in hotspot landscapes. A preliminary analysis revealed no differences in farmland bird density and species richness between organic and conventional farms and hot and cold spot landscapes. However, chick food availability has not yet been included in the analysis as sample sorting is not yet finished.
No significant differences between organic and non organic fields were found for any of the soil properties measured.

So far, the farm economic and business data collection goes well, the data load is detailed but not too long to lose the farmer's attention. They are very keen to get data especially from the bird survey and soil sampling results. Some farmers were raising the question why the environmental footprint is not measured or issues of energy use and carbon emissions are not in the research protocol. From the limited farm visits, it is already clear that 2007 was a very difficult year for most farms but interestingly this is different in different regions. "Below average, 30% below average and worst in living memory" are some of the assessments on general winter wheat yield levels in 2007, however also "best ever". This massive variation suggests that a third sampling year for the 6 clusters were currently only two-year data will be collected is necessary to achieve a more robust data-set. Early indications of why there are more organic farms in some areas than others are (1) organic farming is most suited to a mixed farming system of crops and livestock; it is therefore easier for farmers with mixed farms (or in geographic areas where mixed farming is common) to convert to organic farming; (2) the ‘Prince Charles effect’ – some estates actively seek organic farmers as tenants. A cluster can occur when a single estate tenants its land to multiple organic farmers; (3) the success of several local organic farms makes conversion a more palatable option for other farmers.

RES-227-25-0010 Dr J Bullock, CEH Dorset
01 Oct 06 - 31 Sep 11
Improving the Success of Agri-Environment Initiatives: The Role of Farmer Learning and Landscape Context

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.

The team is progressing in their aims: to develop a holistic understanding of the factors determining success of agri-environment schemes (AES) through the combination of ecological and socio-economic research methodologies and interaction of researchers; and to promote knowledge transfer between practitioners (farmers, advisors, scheme administrators) and researchers in the design of the research programme and between researchers and practitioners in the communication of research findings.

During the year, a set of 48 farmers was selected and agreed to take part in the project. All had semi-structured interviews to provide baseline on attitudes, social and economic context and aspects of the farm. Half of the farmers were selected to receive formal training, and already they have had a day of group training and follow-up ½ day visits by the trainer have been completed for about half. All these activities have been observed by the project team. For all the farms, up to 3 patches of the relevant ELS option were selected per farm (fewer if they had <3 patches) along with 3 control patches, for ecological fieldwork. Despite bad weather during the summer, which affected insect activity, all surveys were done to time. These comprised: a survey of the state and surroundings of each patch, two summer surveys of bumblebees and butterflies along with flower abundance, autumn sampling of seed yield, and the first of three surveys of birds. Questionnaire analysis of the training days showed that the farmers responded positively to training. 100% stated that they have learned useful information and 96% said that it would affect how they managed their land and ELS options in particular. Aerial photos and map data for the 4km square around each farm were obtained and analysed to create a maps of habitat categories around each farm.

The team has met with Defra & Natural England in July 2007. The project was well received, especially the approach to training. Further meetings are planned (the next in early 2008). The meeting with Natural England was initiated through the Visiting Fellowship Scheme and the team has also hosted another Visiting Fellow, Peter Sutton (Syngenta), in August 2007.

RES-227-25-0014 Dr J Irvine, Macaulay Institute
01 Feb 06 - 31 Dec 09
Collaborative Frameworks in Land Management: A Case Study on Integrated 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. It provides jobs for stalkers on forestry and sporting estates and for workers in the meat industry; tourists are drawn to particular landscapes which deer help to create, and to see the deer themselves. However, in some areas, high deer numbers are causing overgrazing and damage to sensitive natural habitats, to agricultural and forestry crops and even to suburban gardens, and are often involved in road traffic accidents. This project will investigate 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. The researchers will also look at how these lessons might apply to the management of other natural resources where multiple management objectives exist.

The team aims to produce a generic framework for the development of effective, informed and inclusive collaborative management to promote rural sustainability, using wild deer in the UK as a model system. They are working with individuals and organisations to gain a clear understanding of their aims, objectives, strategies and issues in relation to deer, using an innovative mix of methods including surveys, informal and formal meetings, discussions and workshops with stakeholders at six case study locations across England and Scotland. The team will bring together the different types of information gathered using a range of participatory tools including participatory GIS and discrete choice modeling. The impact of this process on stakeholder collaboration will be tested.

Although no results have been published, there are a range of interesting findings coming out of the project which are being developed for publication. In 2007 the following major research activities have produced preliminary results which we hope to discuss with the Relu policy Analysts in Feb/Mar 2008. These include issues around stakeholder collaboration, development of deer-related legislation, the market for venison, integrating different types of practitioner knowledge, decision making in deer management and public perceptions of landscape.

An example of a research activity derived from stakeholder engagement is the “Perceptions of Landscape” work. Initial discussion with practitioners indicated that the woodland landscapes were the important feature but many people from across different strata of society did not consider the connection between landscapes and deer because of the effect of grazing in shaping biodiversity and woodland landscape types. This work led to a structured approach where different groups of people were invited to participate in outlining their preferences for different woodland landscapes. The team investigated how different categories of people (woodland managers, conservationists, general public, landowners) change their preferences when presented with information about the biodiversity value and deer management associated with the different woodland landscapes. The results are illuminating how people engage with landscapes and what effect

management actions may have on these perceptions which is important for understanding how future management is likely to be received by landscape users and managers.

RES-227-25-0017 Professor J Morris, Cranfield University
01 May 06 – 31 Jul 08
Integrated Land and Water Management in Floodplains: The Experience of Agricultural Flood Defence Systems in England and Wales

Agricultural Flood Defence Schemes in floodplain and coastal areas were once an important element of Government support for farmers. However, concern over environmental quality and increased sensitivity towards flood risks and their effects on non-farming interests, have promoted a re-appraisal of land management options and policies. This project is exploring 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, will show how land use has changed in the meantime and the consequences for livelihoods and the management of flooding problems. The project will help inform decisions about the future management of floodplains.

Good progress has been made against targets, with the completion of farm and ecological surveys, and the installation and interrogation of water level recorders, for all 8 study sites. Some site revisits were made following the summer flood events. Scenarios and indicators have been defined for modelling land and water management option for each of the study sites, with some progress on application. A framework for optimisation of land use options in floodplains was constructed and applied to the Trent case.

The project team has participated in a range of stakeholder and public engagements which have drawn on and publicised the work. These include participation in a series of flood risk management workshops held by Defra in support of policy formulation, Aug/Sept 2007, Reading (J Morris, T Hess), and ESRC strategy workshop on climate change and research priorities, Cardiff Jan 2007 (J Morris). Drawing on the work of the project, evidence was submitted in September 2007 to the House of Commons Select Committee on the Summer Floods, with particular reference to the rural sector. Presentations have been given to policy and practitioner workshops on research issues, methods and outcomes for integrated land and water management, namely: River Restoration Conference, April 2007; Relu Conference for Regional Government Edinburgh, May 2007; Sustainable Agriculture, Lisbon, November 2007; Hydraulics Research, Wallingford, November 2007; and CIWEM River Basin Planning and Land use, November 2007. The Relu project interfaced with the EPSRC Flood Risk Management Risk Consortium (FRMRC) programme for example on Policy and Stakeholder Analysis (Edinburgh, may 2007) and on sustainable floodplains with the OnTrent Initiative (www.ontrent.org.uk) in which our Trent Beckingham Marshes case study site was used to explore research methodology, preliminary findings, and the management of integrated floodplains.

The extreme flood events of Summer 2007 highlight the policy relevance of the project and its intended outcomes. Large tracts of rural floodplains flooded with consequences for

property, people and the environment, especially those associated with farming and nature conservation activities. The summer floods of 2007 confirm the important and diverse roles played by rural floodplains, not least of which is the ability to attenuate flooding in urban areas. There is concern, however, that in future, especially in the face of climate change, rural areas will be exposed to increased flood risk. This could be because it is expensive to protect them or because rural flooding is a cost effective means of protecting densely populated urban areas. At the same time, however, food and energy production and security have very recently returned as challenging strategic issues at the national scale. In this respect the Relu floodplain project has heightened resonance as it tries to identify ways of balancing multiple roles for floodplains in a very uncertain future, and do this in ways that explicit consider the diverse range of stakeholder interests. In this context, the Relu project has received extended funding from ESRC to explore the impact of the summer floods on rural society and economy, as well as funding for parallel projects to examine impacts on agriculture (Environment Agency), rural households and communities (Commission for Rural Communities) and on biodiversity (NERC).

RES-227-25-0018 Professor S Whatmore, Oxford University
01 Mar 07 – 30 Jun 10
Knowledge Controversies in Rural Land Management: Science, Democracy and Environmental Expertise

Scientific activities that were once hidden in laboratories and journals have become more open to public scrutiny through technologies like the internet. This means that scientists, and those who use their work, have to think again about how science should inform democratic decision-making. 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 will evaluate this approach and identify lessons for other kinds of controversial areas of science (e.g. nanotechnology and climate science).

The first 6 months of the project were devoted to training events, preliminary literature reviews, analytic mapping, and recruitment of local members for the first Competency Group. (The timing of the recruitment coincided with the summer '07 flooding, giving the project an especially sharp focus). The team made effective use of the local media to recruit members.

Phase 2 (12 months) is centred in North Yorkshire. Much of the research effort has focused on the Ryedale Flood Research Group, including meetings (3/6 meetings held to date), an interactive website and exchange forum and a selection of activities in situ (such as project team members working with local residents to collect data to aid the model-building). This is an experimental method of public involvement in science, and as such it too early to

report any findings, but there has been a positive response and the researchers are pleased with progress.

The project has the potential to gain media interest, particularly as flooding moves up the public agenda. Neil Ward and Stuart Lane have given interviews on flooding and rural land management and rural policy to Radio 4 (Farming Today, Westminster Hour, Costing the Earth) and BBC News 24. PI Sarah Whatmore also gave a paper in the Academy of Learned Societies for the Social Science session on "What's scientific about social science" at the Royal Society in March.

RES-227-25-0020 Dr A Karp, Rothamsted Research
01 Jan 06 - 31 Dec 08
Social, Economic and Environmental Implications of Increasing Rural Land Use Under Energy Crops

The government is keen to see a major expansion of energy crops, such as miscanthus and short rotation coppice willows. To be viable they will need to be grown in geographical concentrations. The decisions on appropriate areas are likely to be based on climate, soil type and water availability that would ensure good growing conditions. However, it is not clear how such considerations should be balanced against the possible impacts on the environment and the rural economy, and the public acceptance of consequent changes to the countryside. This project is developing an integrated framework for sustainability appraisal of the medium and long term conversion of land to energy crops. The researchers aim to model future planting scenarios to test against targets of carbon dioxide emissions, biodiversity, landscape character etc, and present these in terms that could feed into future policy development.

Using the East Midlands and South-West regions as study areas, this project is reviewing current knowledge and conducting 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.

Visualisations of the landscape impact of different energy crops have been explored through 3D computer simulations. A large questionnaire survey has been completed (490 respondents in four locations) which suggested generally positive attitudes to the crops but some concerns regarding associated infrastructure (e.g. power stations). Early results on butterfly and bee population suggest some species are increased in both SRC and *Miscanthus*. The Biodiversity fieldwork in the project has now come to an end. Researchers are currently going through a process of quality assurance, by checking entries on the data-sheets against expectations of species occurrence. To date, most of the sheets from plant protocols and those for the bee and butterfly assessments have been checked and entered in the project database. The team expects to produce a list of basic analyses on the data, along with associated Genstat programs, that will answer the questions raised in the project proposal by the end of March 2008. The hydrological measurements being made on *Miscanthus* in Somerset were ended late in February 2007, due to the crop being harvested rhizomes. The instruments were transferred to a field of *Miscanthus* in Lincolnshire, close

to the site of measurements on SRC willow, and measurements began at the end of May and are continuing. Measurements continued throughout 2007 on the SRC willow. All measurements, up to the end of 2007, have been quality controlled and analysis is going on. Work has also begun on the numerical model of the water and energy balances of the crops.

RES-227-25-0024 Professor I Bateman, UEA
01 Jan 06 - 30 Apr 10
Catchment Hydrology, Resources, Economics and Management: Integrated Modelling of WFD Impacts upon Rural Land Use and Farm Incomes

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. The modelling will seek to anticipate the effects of both Common Agricultural Policy reform and climate change. The project will also incorporate surveys of decision-making by farmers, to provide guidance on alternative strategies, and to estimate the consequences for farm incomes and fragile rural economies.

Following advice from stakeholder representatives on the project steering group, work was reorganized to provide estimates of the financial cost upon 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. A case study exercise was completed. Working papers detailing all of the above work are available from the CSERGE website http://www.uea.ac.uk/env/cserge/ and project homepage http://www.uea.ac.uk/env/cserge/research/54.htm

Recent advances include the first multinomial logit application to modelling land use in the UK. This combines time series and cross sectional data and will subsequently be extended to include climatic variability data so as to simulate the effects of climate change upon land use. The primary goal of this research is assess the likely impact of policy change upon land use, agricultural incomes and measures of environmental quality, principally those associated with water quality. Key policy foci include WFD implementation and reform of the Common Agricultural Policy. Early results will be presented at international conferences in Seville and Gothenberg.

Substantial advances were also made with respect to the valuation of preferences regarding improvements in the quality of open access water (rivers, etc.) A novel model was proposed for disentangling use and non-use values from a mixture of revealed and expressed preference data. Extensive efforts including a simulated data exercise have refined this design and its analysis to ensure that a workable model of the resultant data can be identified and parameters estimated. To implement this approach a computerised, CAPI-style questionnaire has been written combining travel cost with contingent valuation, choice modelling and other stated preference methods. A new approach to conveying environmental and use opportunity changes was designed for this survey in the form of a

'water quality ladder'. This together with the contingent valuation element of the above design has been adopted for use in a common-design replication to be conducted across Europe with applications within Norway, Lithuania, Belgium, Netherlands, Denmark and well as the UK to be undertaken in 2008.

Working closely together, team members at the Centre for Ecology and Hydrology and UEA thoroughly updated existing models using up to date Agricultural Census data. A case study test of the Derwent Catchment ground truthed this updating process and tied the land use and pollution models together yielding a joint paper. A water quality baseflow survey was undertaken for the strategically important eastern Humber where agriculture is particularly extensive but for which there is a shortage of data. This data was compared with long-term nutrient records of the Environment Agency of England and Wales (EA) showing that, despite many of the rivers being nutrient rich, they are generally of good biological quality when point source inputs are not important. A paper has been prepared on this research and will be in print shortly.

A new set of generic models of Faecal Indicator Organisms (FIOs) for 15 of CREH's (Aberystwyth) UK study catchments (comprising over 200 individual sub catchments) has been developed. Team members at UEA created a common land use database for this work using catchment boundary data supplied by CREH In due course, the new models will be applied to the Humber catchment to predict spatial variations in FIO concentrations and fluxes within the catchment at low and high flow under present conditions, and investigate the likely effects of land use change, including measures directly aimed at reducing FIO concentrations.

The work has been highly praised by the target policy community and this led to considerable additional funding being provided to the project by Defra to facilitate work of common interest concerning the usage of fertilisers by different agricultural enterprises. Project representatives were invited to present a summary of all of this work at a dedicated Defra seminar in December 2007, attended by high ranking departmental officials from a variety of sectors. Here the project was introduced by a senior Defra figure as the most responsive to policy needs that they had ever experienced. A further tranche of additional funding was provided by the Environment Agency who are also represented on the project Steering Group. Project members and UEA hydrologists teamed up to undertake a case study analysis testing out a cost-effectiveness approach to the assessment of water quality improvement schemes. A report detailing this work has recently been submitted to the Environment Agency. Presentations regarding the methodology being developed for assessing public preferences regarding water quality improvements led to interest in the project from the European Union (EU) through its Aquamoney programme. As a result the team was invited to propose a common-design methodology for application in case studies across the EU. Further international interest in the project was also raised through a series of presentations in Australia and New Zealand.

RES-227-25-0025 Professor W Sutherland, University of Cambridge
25 Sep 06 - 21 Dec 09
Evaluating the Options for Combining Economically, Socially and Ecologically Sustainable Agriculture

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.

The demands of profitable agriculture and conservation are often considered as conflicting. This research project integrates ecological, social and economic research within a novel framework to evaluate how changes in drivers will impact both on farming practice and biodiversity. By doing so it will assist in the delivery of economically and ecologically sustainable agriculture.

The farms have been selected for the study: 16 in Beds, 17 in Lincs, 15 in Norfolk. These encompass a range of farm sizes, soil types and farmer attitudes, from small family farms to large conservation-minded agri-businesses growing wild bird food. All farmers have been visited personally at least once and are happy with the project and with the work so far. In 2007 three weed censuses took place. A spring census to map tractor wheelings, position GPS census grids in the fields and map seedling distributions, a summer census to map mature weeds in grass crops and oil seed rape, and an autumn census to map mature weeds in sugar beet and any seedlings present in newly-sown winter crops. The team is also preparing data analysis techniques using both the Farm Scale Evaluation dataset and six censuses from a large forest plot. Using these data they are trialling density-state matrix models in order to examine spatio-temporal changes in density within plant populations.

A prototype of the integrated socio-economic-ecological model was constructed and used to predict future outcomes for birds under a scenario of increasing bio-fuel prices on landscapes where farmers had different hypothetical social objectives. These results were presented at the British Ecological Society Annual Meeting. Since constructing this prototype considerable progress has been made towards a more flexible integrated model that will accommodate input data such as individual farm business survey records. A mathematical framework for incorporating results from our farmer interviews into social objectives for the computer model has also been developed. Work is progressing on validation of the economic model using farm business survey data. As a small side project the team developed a model to predict set-aside rates under different compulsory set-aside levels and overall profitability of farming. Results of this model were presented by Ira Cooke in seminars at Cambridge University and the Macaulay Institute.

This project seeks to better predict and understand the decision making behaviour of farmers and to explain the variation of that decision making behaviour. The model predictions need to hold for the population of arable farmers as a whole, based on interviewing a sample, and for the diverse set of choices that farmers do or might face.

These goals challenge the application and theory of approaches, such as, multi-attribute utility theory and raise many fundamental questions about the identification; measurement and modelling of non-profit objectives. Daniel Sandars presented this methodological challenge and the team's approaches to the the European Operational Research community at their conference in Prague.

For the purpose of stakeholder analysis, an initial list of stakeholders with an "Interest" in and "Influence" over farmland bird populations was identified at a project workshop and an initial stakeholder analysis report drafted. An extensive review of literature on stakeholder analysis has been carried out, leading to a draft review paper that focuses on the link between stakeholders, ecosystems services and property rights. This has informed the development of a 'Stakeholder Analysis Tool' that attempts to quantify stakeholder interest, influence and interaction with respect to specific phenomena of concern. Following reference to the tool in the Relu Newsletter in June 2007 fifteen requests for it from various research and consultancy organisations were received. A simple user-guide has been written and the tool is also being used on the Relu Floods project and by MSc and PhD students at Cranfield University to aid their thesis research and it has been used as an interactive teaching aid.

RES-227-25-0028 Professor P Armsworth, University of Sheffield
01 Jan 06 - 31 May 09
A Landscape-scale Analysis of the Sustainability of the Hill Farming Economy and Impact of Farm Production Decisions on Upland Landscapes and Biodiversity

Taking the Peak District as a case study, the project is examining how hill farmers are likely to respond to major changes in the Common Agricultural Policy. The effects on the uplands and its wildlife will depend not just on individual farming decisions but on the interactions between ecological and economic factors at a larger scale. Ecological-economic models will be set up to anticipate these wider effects and to evaluate the capability of farm-level policy interventions to satisfy the multiple functions of moorlands.

Project staff visited 47 farms in the Peak District through the winter of 2006-2007 conducting a detailed questionnaire based survey that examined the structure of the farm business, income and expenditures, farmers' perspectives on the state of key upland species on their land, and their future plans regarding ongoing policy changes.

From the economic surveys, 6 representative farm types were identified for the area based on their enterprise mix and prevailing land uses. A linear programming model for each farm type was constructed based on the survey data. The models are being used to look at the effect of the Single Farm Payment vs. historical headage payments and to compare these to a scenario with no subsidy payments. Project staff are currently working on how to include agrienvironment and Hill Farm Allowance payments in the models. We also developed strategies for extending the LP models to look at spatial interactions among farms in collaboration with Relu Exchange Fellow Jim Shortle.

The team surveyed all bird species on 44 of the same farms and 37 paired moorland sites, many managed by same landowner. In total, they surveyed 240km of bird transect. From these data they will be able to estimate species richness and to develop density estimates for each species at each site. The researchers developed farm-level habitat maps for the focal farms characterising each field in terms of land use. They also recorded more detailed field-level data in 400 fields along the transect paths. Plus broad-scale habitat types and dwarf shrub species on the paired moorland sites. Historical habitat maps were collated and prepared for analysis. The workshop conducted with local stakeholders examining historical land use change in late 2006 was presented as a conference poster, and was written up and submitted for publication.

The project ran 8 valuation workshops with 52 participants drawn from Bolsterstone, Penistone and Stannington on the edges of the Peak District. The workshops used a choice experiment design to identify public preferences for different kinds of landscapes. A unique element of this research is the analysis of the relationship between how people anticipate and experience the utility of environmental goods. Participants completed a valuation exercise on three occasions: prior to a visit to the Peak District National Park, during the visit and upon return from the National Park.

Results from the ecological and economic surveys were presented to local stakeholders and policy-makers at the Moors for the Future conference in November and project staff met to discuss agricultural policy as it relates to the uplands with MEP Linda McAvan during her visit to PRA's research group in November.

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

A refined and extended dataset on Social and Environmental Rural Conditions (SECRA) developed in an earlier Relu Scoping Study will be used in this project to examine patterns of social and environmental inequalities in the distribution of social, economic and environmental goods and services. Methods for measuring inequality differ in the natural and social sciences and the project will explore ways to resolve differences and find a common approach. Having identified inequalities in socio-economic or environmental goods and services, consideration will be given to whether they can be regarded as unfair or unjust. The best people to consult on these matters are the people actually living in the areas where inequalities have been identified. Mapping techniques will be used to explore local residents' perceptions of local inequality and injustice.

With help and advice from our advisors and partners the researchers are making good progress towards the selection of indicators for analysis. This involves the preparation of new data, for example distances to public libraries. They are also updating and refining

some variables already present in the SECRA dataset, for example biological and chemical quality of rivers.

The new project website is now on-line, linked to the original SECRA dataset at http://www.sei.se/relu/

RES-229-25-0005 Dr C Potter, Imperial College London
01 Sep 07 – 30 Aug 09
Memory and prediction in plant disease management: a comparative analysis of Dutch Elm Disease and 'Sudden Oak Death' in the UK

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. A stakeholder jury will be convened to draw together memory and prediction in order to reach a series of verdicts on the impact of DED and the prospects and manageability of SOD in the UK.

The researchers have made good progress agreeing and refining the underlying conceptualisation of the research through a series of project team meetings during the early weeks of the work. They commenced the historical and modelling analysis of DED in late October. The review of the archive of public reportage of DED held at Forest Research is now complete and they have also substantially completed an analysis of the extensive material relating to DED held in the Public Records Office. Interviews with key informants commenced in January and are now fully in progress. The modelling component of the work is also well underway, with agreement reached concerning the design of the DED model and initial model runs having been completed. Discussions are continuing concerning the further calibration of the model in the light of the archival research findings and interview results.

RES-229-25-0007 Dr C Quine, Forest Research
01 Sep 07 – 31 Aug 10
Assessing the potential risk of, and possible responses to, zoonotic diseases on the development of recreational use of British forests and wild-lands

Many people take pleasure from activities in forests and wild lands in the UK and others are being encouraged to participate. Unfortunately, there are risks and one of the most insidious is the possibility (albeit tiny) of acquiring a disease from wild animals; for example, ticks can be vectors of the bacterial infection leading to Lyme Disease. Both diagnosis and treatment can be problematic so prevention of acquiring such disease is highly desirable. Surprisingly little is known about how best to warn countryside users about the potential for disease without scaring them away or spoiling their enjoyment. Answering such questions is the goal of this project, and it requires the integration of a diverse set of scientific skills, and an understanding of the views of those who manage countryside, those who have contracted zoonotic diseases and those who access the land. It

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.

At this early stage of the project, the team has been framing the research plan (identifying study sites, refining their approach) and making initial contacts with stakeholders. They have established a link with the Health Protection Agency, which will be invaluable in providing access to information detailing: the spatial distribution of people contracting Lyme disease, proportions of suspected cases that are confirmed. They have presented their plans to the Relu People and Environment Forum, and participated in Relu initiatives with policy analysts. The first steps of the project, focusing on 'Understanding the present' have progressed satisfactorily, capturing initial milestones on time. The development of the evidence base for scenario analysis has focused on the forces and factors influencing changes in Lyme disease incidence, adapting a Driver, Pressure, State, Impact, Response (DPSIR) methodology. Data on tick presence and tick hosts has been collated and data collation from health authorities continues. Pilot interviews to understand the perspective of people who have contracted Lyme disease will take place shortly. The project website is in place.

RES-229-25-0008, Dr C Waterton, Lancaster University
01 Jun 07 – 31 Aug 10
Understanding and acting within Loweswater: 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. The research will be shaped by a new institutional mechanism or 'new collective' (Latour 2004) to be set up by the local community, stakeholders, and Lancaster and Loweswater researchers as part of the research project. It will be called the Loweswater Knowledge Collective (LKC) and is based on the widening recognition that publics have relevant knowledges and critical perspectives that should be taken seriously as inputs in planning, management and development. The research has three main objectives: 1. to create a new institutional mechanism – the 'Loweswater Knowledge Collective'; 2. to create a catchment knowledge-base; 3. to assess the transferability of our approach to other places and problems.

As part of ecological component of the research, the team began the procedure necessary for placing a telemetric weather and water monitoring station on Loweswater before the grant began (June 2007). The National Trust initially objected to the positioning of a buoy on the lake but this objection led, however, to an unanticipated but useful piece of research: a survey of local Parish residents to determine the acceptability of putting a buoy on the lake for the purposes of generating data about the weather and ecological conditions in the lake water. 96 letters were sent out. 42 out of 45 resident returns replied that they would be happy for the buoy to be sited on Loweswater. The survey also provided many good contacts and further information about how local people feel about Loweswater and the Relu research. Planning permission was subsequently granted and the buoy was installed on

the lake in early December. Data from it will stream into the project website (under construction).

Community and stakeholder meetings have gone well. There is acceptance and excitement about the prospect of setting up the Loweswater Knowledge Collective and lots of good ideas as to what that might mean. The researchers will build these ideas into a future meeting which will bring residents and stakeholders together. Common themes discussed within both meetings will be the basis of further investigation as part of the research.

RES-229-25-0009 Mr L Smith, Imperial College London
01 Jun 07 – 31 Oct 10
Developing a catchment management template for the protection of water resources: exploiting experience from the UK, Eastern USA and nearby Europe

This project will investigate 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. It will demonstrate how to: integrate scientific investigation with policy, governance and legal provisions; foster decision-making and implementation at the appropriate governance level to resolve conflicts; and share best practice. The project will provide an international comparative analysis of catchment governance systems, with a focus on processes, organisational structures and institutional arrangements that promote and facilitate local coordination and action. Two UK catchments will be investigated as case studies, against which the lessons from international experience will be tested: the River Tamar and the River Thurne. The project will research the current issues, drivers of change, water quality targets, pollution mitigation potential and governance systems in these two catchments. Results will be integrated with the findings of the wider comparative study of governance arrangements, leading to the "template".

The transfer of the award of the grant from Imperial College to SOAS and the setting up of new administrative arrangements was frustratingly slow but the project commenced operation again with effect from 1st November 2007. Sub-agreements were put in place to cover the inputs of the other University partners in the project, i.e. UEA and UKC. Good progress has been made, however, with planning and start up activities, and with literature review work.

An intensive series of meetings and discussions with partners took place in June and July 2007. These included a visit to the New York State Water Resources Institute at Cornell University and field visits and discussions with their watershed partners in NYS and Pennsylvania (Upper Susquehanna Coalition, Hudson River Estuary Programme and Delaware County Action Plan). The core team also held a planning meeting at UEA in June and made a field visit to the Upper Thurne catchment. Other meetings were held with the Broads Authority in Norwich and with the EA, Westcountry Rivers Trust and IGER in

Devon. The latter included meetings concerning a planned EA led EU Interreg IV bid that would have linkages with the work of the project in the Tamar catchment. One of these meetings took place in Quimper, Brittany, with potential French and other European partners. An exploratory meeting at Wye took place with the Australia National University Vice Chancellor's Representative in Europe, and Chair of The ANU's Water Initiative.

RES-229-25-0012 Professor K Killham, University of Aberdeen
01 Oct 07 – 30 Sep 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.

The team has held a press launch for the project which was covered in several Scottish news outlets. They have made progress with plans for questionnaires collection of soils for analysis and seeking ethical approval. They have completed a stakeholder list which currently comprises some 296 stakeholders along with key contacts. This list will inform future stakeholder engagement workshops and questionnaires, as well as a possible co-operative enquiry.

RES-229-25-0013 Professor P Mills, University of Warwick
01 Sep 07 – 31 Aug 10
Growing risk? The potential impact of plant disease on land use and the UK rural economy

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 social infrastructure. 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.

The project started in September 2007 and a good start has been made towards early milestones. An Advisory Board has been established which includes a wide range of stakeholders. Discussions with individual Board members has revealed a genuine enthusiasm for involvement with this interdisciplinary project. An application was made to ESRC for a studentship to augment the work of the Centre and latest news is that this has been successful.

RES-229-25-0015 Professor B Wynne and Professor L Heathwaite, Lancaster University
To start in 2008
Lost in translation: a cross-disciplinary analysis of knowledge exchange and effectiveness in animal disease management

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.

RES-229-25-0016 Professor G Medley, University of Warwick
01 Nov 07 – 31 Oct 10
Decision-making frameworks in management of livestock disease: interaction of epidemiology, economics and politics

Nobody wants to see animals suffering. As well as concerns about their welfare, we know that sick animals produce less meat and milk, and provide less profit. Animal disease can also seriously affect consumer demand at home and abroad, which has an effect on the economy. 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.

No annual report received to date.

RES-229-25-0022, Professor C Banks, Southampton University
01 Oct 07 – 30 Sep 10
Integrated systems for farm diversification into energy production by anaerobic digestion: implications for rural development, land use and environment

The 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 work will develop models to analyse the economics, energetics and land use implications of diversification into on-farm energy production; assess the benefits and potential drawbacks regarding environmental protection and sustainable agricultural practice, through environmental risk-based analysis methodologies; seek farmers' opinions on diversification and renewable energy production; and explore the potential benefits to the rural community from uptake of anaerobic digestion in integrated farming systems.

A good start has been made to the project. All staff involved have now been appointed and the project website has been established (see www.AD4RD.soton.ac.uk) and will be developed further in the coming months. Two partner meetings have taken place in which the project planning was discussed and methodologies harmonised between the teams. Good progress has been made in meeting the first milestone with draft reports on Review of European policy and regulatory drivers for promoting farm-based energy production in a UK context and a review of the state of the art of AD as applied on farms. The project has established a steering group with academic and industrial representatives expert in the relevant disciplines.

5.4 Interdisciplinary Fellows

RES-229-27-0003 Althea Davies, University of Stirling
01 Mar 07 - 29 Feb 10
Foundations for the Future: Learning from the Past (Lessons from the past for the future of the uplands)

In Year 1 Althea familiarised herself with current conservation and policy issues and trends, and with social science methods. A summary of the project was included in the latest issue of the JNCC Uplands Lead Co-ordination Network (December 2007), which has a wide distribution across conservation agencies and policy. This has resulted in several requests for the forthcoming review of existing environmental history information relevant to upland management and conservation.

Local stakeholder groups, including land owners, have shown keen interest in the work, particularly in Sutherland, where several groups have requested increased involvement in the development of conservation and heritage programmes. This will be undertaken in Year 2 of the grant, alongside planned work. Some conservation agency responses have been more conservative and pose challenges. This will be tackled through workshops and seminars in years 2 and 3.

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

The methodological framework developed as part of this research formed the basis for a work package in the ESRC Centre for Climate Change Economics and Policy co-led by LSE and Leeds. Evan also received invitations to speak to practitioner and academic symposia (French Academy of Sciences, International Institute for Applied Systems Analysis, University of Sheffield centre for wellbeing studies, and the Global Land Projects International Scientific Steering Committee). He co-authored a book that translates the ideas that went into his fellowship proposal for a popular audience, to be published in the USA later in 2008, and made two media appearances. A version of his talk on adapting to extreme weather events was picked up by a number of print/internet news sources (including “Yahoo!news”) and he was interviewed on the merits of local food by the BBC national news. This was aired a number of times before Christmas 2007. Evan has submitted one academic manuscript and is working on another three that should be prepared by spring 2008, as well as submitting abstracts to three conferences and giving one conference talk.

RES-229-27-0001 Abigail Woods, Imperial College London
1 Sept 07 - 31 Aug 10
Reinventing the wheel? Farm health planning 1942-2006

During the first 4 months of this 3-year project, Abigail devoted much of her time to an exploration of relevant secondary literature, enhancing her understanding of the social, political and economic contexts in which farm health planning (FHP) took place over the period 1942-2006. She has begun to explore developments over the last 5 years by reference to the veterinary and farming press and drawn up a timetable of key historical developments, based upon the examination of National Archives material and government publications on agricultural policy, advisory services and veterinary services.

Already other members of the academic community have asked her for advice on inter-disciplinary working, and she has made some useful contacts with other Relu projects, notably 'Reducing E Coli risk' (RES 229-25-0012) and 'The governance of livestock disease' (RES 229-25-0016). Her engagement in this research has been reported on the new 'History and Policy' website which aims to demonstrate the relevance of history to policy and promote links between members the two communities. She was commissioned to write an article on 'Pursuit of the Risk Vaccine' – on the history of Foot and Mouth Disease research for The Guardian and a longer article on this topic was also published on the Relu website.

6. Key Performance Indicators

The Tables present the Key Performance Indicators for Year 4 of the Programme. All indicators and measures were satisfactorily achieved or exceeded.

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 2007 was on: (a) preparation of a scientific publication covering the First Call projects (Section 4.1); (b) dissemination of Relu's perspective on knowledge exchange (Section 2); (c) leading major conferences on *Unlocking Change in the Food Chain* and *Rural Economy and Land Use: Addressing the Local Dimension* (Section 4.2); (d) delivery of keynote speeches, including to the UKERC Annual Assembly 2007 and as President of the Agricultural section of the British Association (e) fostering strategic international links, including showcasing of the programme at the launch of the Beijing and Washington offices of the UK research councils.
1.2 Relu applications and awards	Over 17% EOA reports rated outstanding and less than 10% rated problematic[3]		PMG to report
1.3 Refereed journal articles	Number in 2007		33 articles were published (Annex B).
1.4 Books/book chapters authored	Number in 2007		10 books / book chapters were published (Annex B).
1.5 Conference papers	Number in 2007		157 conference papers/presentations were given by Relu researchers, including 11 by the Director and Assistant Director (Annex B).
2. Interdisciplinarity			
2.1 To ensure that the Programme engages the wide range of disciplines	To engage under-represented disciplines in the third call.	A discipline analysis to be prepared when shortlisted applicants prepare their full	A discipline analysis was presented in the previous reporting period, which highlighted the successful engagement of under-represented disciplines.

[3] These % figures reflect the current average evaluation grades under ESRC Programmes

within the natural and social sciences that can make important contributions to its research		proposals.	
2.2 Facilitation of inter-disciplinary training and advice opportunities		1 interdisciplinary training workshop for junior researchers	A successful training workshop was held (Section 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 the previous reporting period.
3. User Engagement, Knowledge Transfer and Impact			
3.1 Meetings or events involving stakeholders		a) 1 Conference on the food chain; 1 workshop on local dimension of Relu; Relu science week debates b) 2 meetings of Food Forum c) 2 meetings of People and the Rural Environment Forum d) Membership of forums and SAC e) Number of bilateral meetings with stakeholders f) Number conferences attended by Director or Assistant Director g) Number of presentations to stakeholders by Director and Assistant Director	a) Major Conferences held (May and Nov), 3 Relu debates (March) – see Section 4.1 b) 2 meetings were held of the Relu Food Chain Forum (Section 4.3) c) 2 meetings were held of the Relu People and the Rural Environment Forum (Section 4.3) d) Forum membership expanding (Section 4.3). PMG to report on SAC e) 19 bilateral meetings were held between the Director's Office and stakeholders (Annex A). f) 25 conferences were attended by the Director or Assistant Director (Annex C). g) 11 presentations were given to stakeholders by the Director and Assistant Director (Annex B)
3.2 Links		Commentary on	Commentary provided in Section 4. See

created between award holders and stakeholders		actions taken to engage stakeholders with award holders.	also Section 2.
3.3 Work shadowing and visiting fellowships		5 work shadows and 5 visiting fellowships set up and completed	8 work shadows and at least 5 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 agriculture and policy debates during 2007. A highlight was an invitation to brief the Secretary of State prior to his keynote speech on "Land Use" (Section 2). Relu pursued a sustained strategy of influencing, including: a major public/stakeholder conference on Unlocking Change in the Food Chain; submission of synthesis of results to Cabinet Office Strategy Unit Project on Food Policy; initiation of a Land Use Policy project to set the strategic land agenda for the UK (Section 2). Individual projects made substantial inputs into several policy domains (Section 4.6).
3.5 Project Comms and Data Management Plans	To be completed 3 months after start of award	Director to oversee preparation of PCDMPs for all 10 3rd Call projects	1 second call and 9 third call projects, as well as 3 interdisciplinary research fellows, started their research during 2007. 11 plans were submitted and have been signed off by the Director's Office, 1 is under review and 1 is pending submission.
3.6 Media coverage of research and outputs		Number press releases issued	The Director's Office issued 7 press releases in 2007. The Programme generated about a hundred news items, including in national newspapers and on radio (see Annex B).
3.7 Reports or briefings produced for stakeholders		3 programme briefings and 1 policy and practice note prepared and distributed	3 programme briefings were prepared and distributed, and 1 policy and practice note (Section 4.1). 62 presentations were given specifically to stakeholders and 44 working papers and briefing papers published (Annex B).
3.8 Relu website		a) Director to maintain up to date website b) Revise website to reflect shift from Relu	a) The website was developed and updated regularly throughout 2007. b) We revised our communications strategy, website and publishing formats to reflect this shift (Section

		commissioning phase	4.1).
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		Director to organise 1 interdisciplinary training workshop for junior researchers.	1 training workshop held (Section 3.4).
5. Data Collection and Management			
5.1 Data Support Service	Progress of Data Support Service		PMG to report
5.2 Deposition of Data	Project data deposited within 3 months of end of awards		PMG to report
6. Programme Management			
6.1 Commissioning	Complete commissioning of 3rd call studentships	Review proposals and provide advice at third call studentship proposals assessment panel	The Director's Office provided programme fit assessments of 9 proposals.
6.2 Applicants and Award holders		a) Provide telephone and email advice to applicants and award holders b) Meet with second call award holders to discuss progress c) Hold induction meeting for third call PIs d) Meet with third call award holders to discuss progress	a) Regular contact was maintained with all award holders through joint planning meetings, individual site visits and frequent e.mail correspondence advice b) Meetings with Second Call projects took place in 2007. c) An induction meeting was held with Third call PIs. d) Due to delays in start dates of third call projects visits have been rescheduled to 2008.
6.3 Annual Report		Prepare annual report for 2007, to include report on progress of projects.	Submitted to ESRC by Director's Office. 25 of 26 of the active Relu projects submitted annual reports with guidance supplied from the 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 1 major conference for food projects; Hold 1 workshop on the local dimension of Relu research, and other networking activities as appropriate	2 Major Conferences (May and Nov), 1 training workshop (Sept) and 3 Relu debates (March) were held – see Section 4.2. Additionally the Director's Office actively encouraged inter-project linkages (Section 3.7).

7. Forward Look

Our forward communication plans for 2008 are structured around the groups of projects in the successive waves of Relu funding, as follows:

Sustainable Food Chains

1 A special journal issue of *Trends in Food Science and Technology* will be finalised.
2 A briefing paper will be prepared drawing strategic lessons for policy and practice from across 7 food chain projects.
3 A popular book on the food chain will be initiated
4 We will continue to prepare *Policy and Practice Notes* for food chain projects

People and the Rural Environment

1. Papers will be submitted to a Relu Special profile of *Journal of Applied Ecology*
2. Relu will undertake its Land Use Project to feed strategic research input into UK land use policy.
3. We plan to organise a Great Land Use Debate as part of Festival of Social Science/National Science and Engineering Week, as part of an experiment in civic engagement.
4. Planning will be initiated for a major *Conference on Land Use and Ecosystem Services*, to take place in 2009.

Management of Animal and Plant Diseases

1. Individual planning meetings with the new third call projects will take place in 2008.
2. A *Defra-Relu workshop on the Management of Animal and Plant Diseases* is being planned for May 2008. The workshop will aim to identify long term scientific and policy challenges and enhance knowledge exchange between Relu researchers and key policy makers.

Planned and potential activities and outputs for 2008 include:

January	Relu Newsletter
February	Media training course for Relu researchers
March	Great Land Use Debate
	Annual Report 2007
April	Relu Newsletter
	Fifth meeting of Relu People and the Rural Environment Forum
	Briefing paper 8 on the Food Chain
	Relu Special Journal Issue *Trends in Food Science and Technology*
May	Relu Workshop on the Management of Animal and Plant Diseases
	Final meeting of Relu Food Forum
July	Relu Newsletter
September	Project visits to third call projects to begin
October	Sixth meeting of Relu People and the Rural Environment Forum
	Relu Newsletter

Relu – handing on the baton

A debate was initiated during the year on how the lessons arising and research capacity that has been built within Relu should be captured and fed into subsequent Research Council activity and initiatives. Relu has opened a dialogue between the social, environmental and biological research communities, and the Research Councils need to consider how to absorb the lessons and maintain the dialogue. It is vital that these discussions come to fruition and tangible outcomes during 2008/9. Some of the lessons to be carried forward from Relu are process/procedural ones (e.g. about how to promote interdisciplinarity); some are substantive ones, such as understanding the centrality of socio-technical change to processes of social innovation, technological development or environmental adaptation. How will each Research Council be drawing lessons into their respective programmes and procedures? Relu has pioneered various aspects of cross-council working and programme and project management (including developing interdisciplinary capacity, cross-council peer review and project assessment, interactive stakeholder engagement, novel approaches to knowledge transfer, integrated data management, etc.) How can the experience of Relu be drawn into other cross-council initiatives? How specifically should Relu influence the shape of the Living with Environment Change programme?

8. Budget Matters and Co-funding

There are no matters of concern to report. The programme was successful in negotiating significant additional co-funding during 2007, amounting to £448k, including:

Defra for Animal Disease projects £239k
Defra for water catchment projects £125k
Defra/ESRC/Scottish Government/Commission for Rural Communities for Land Use Policy Analysts £61k
LARCI/ESRC for local gov't work shadowing / visiting fellowships £12k
ESRC Knowledge Transfer for private sector work shadowing / visiting fellowships £2.7k.
SSRC-ESRC Visting Fellowship Scheme £3.5k
One North East Regional Development Agency for conference sponsorship £3k
ESRC for Science Week 2007 £2k

Individual projects were also very successful in 2007 in bringing in over £370k of additional co-funding to extend their research and strengthen knowledge transfer:

RES-224-25-0086 Sustainable and Holistic Food Chains for Recycling Livestock Waste to Land	£20k from Defra to support the Citzens Jury
RES-227-25-0001 Managing Uncertainty in Dynamic Socio-Environmental Systems: An Application to UK Uplands	£100k Natural England and Moors for the Future: additional carbon model development £52k Unitied Utilities, Optimising carbon storage in United Utilities peat catchments £85K Natural England: Verifying carbon model outputs £3K Lancashire Wildlife Trust, applying carbon model to Chat Moss lowland bog
RES-227-25-0020 Social, Economic and Environmental Implications of Increasing Rural Land Use Under Energy Crops	£1.5k: British Council and German Academic Exchange Service for a programme of exchange visits with Technical University of Berlin to assess the use of GIS and visualisation tools in the context of increased renewable energy generation from energy crops, July 2007-December 2008. £3k: Environment Agency to carry out a review on the impacts on water and soil £8k: from English Heritage to carry out a review of impacts on soil and hyrdology
RES-227-25-0024 Catchment Hydrology, Resources, Economics and Management: Integrated Modelling of WFD Impacts upon Rural Land Use and Farm Incomes	New grant funding: *Fertiliser quantity data collection*. Defra. Grant amount: £15k. Collects new data on farmer usage of fertiliser for use in a model of diffuse pollution. New grant funding: *WaterCost*. Environment Agency. Grant amount: £22k. The work provides cost effectiveness guidelines and a case study examining WFD implementation. Additional funding provided by the European Community to facilitate meetings with members of their Aquamoney consortium and to provide a common design approach to the assessment of preferences regarding improvements to water quality across Europe. As a result the ChREAM design will now be implemented across a variety of EU countries. Marie Curie Fellowship: Applied for and funded. Will allow a regional government policymaker (Sandra Barns) from Environment Waikato, New Zealand, to come and work with the ChREAM team

	at UEA from June 2008. The work will focus on a survey of farmers in the Humber catchment, examining their understanding of new policy relating to water quality (including the WFD), assessing their preferences for likely response to policy change and gauging their reactions to results (to date) from the ChREAM project.
RES-227-25-0017 Integrated Management of Floodplains	Additional funding on parallel summer flooding impact assessment has been awarded subject to contract by the Environment Agency (£30k) and Commission for Rural Communities (£15k) and NERC (£15k).

ANNEX A: PROGRAMME CHRONOLOGY 2007

Month	Programme Events	Project Start/End Dates and Visits
Jan 07	Regions and Regionalisation in and beyond Europe Colloquium, Lancaster University, Institute of Advanced Studies (Presentation on *"Rural Futures")*	
	Seminar to debate Food Ethics Council report on *"Sustainable Farming and Food: Emerging Challenges"*, Newcastle University	
	Energy, Environment and Climate Change Subgroup meeting, London	
	NERC Open Meeting Launch of NERC's Draft Science Strategy	
	Integrated Rural Water Management-European Research Area-NET, Workshop, London (Presentation on *"Lessons on Managing Interdisciplinary Research Programmes"*)	
	Relu Newsletter October – December 2006	
	Planning meeting with First Call PIs, London	
Feb 07	Roundtable to brief David Miliband on *"Challenges for Land Use"*, London	Director's Office visit to Project, 227-25-0006 *"The effects of scale in organic agriculture"*,Brighton
	Ageing and Rural Communities Conference, Queen's University Belfast (Presentation on *"The Ageing Countryside")*	Director's Office visit to Project 227-25-0020 *"Rural impacts of increasing the growth of energy crops"*, Rothamsted
	Meeting with Communications Heads of UK Research Councils by new Science Communications Manager, Swindon	Director's Office visit to Project 227-25-0014 *"Collaboration in Land Management of Deer"*, Edinburgh
		Director's Office visit to Project 227-25-0001 *"Managing an uncertain future in UK uplands"*, Leeds
		Director's Office visit to Project 227-25-0017 *"Integrated Land and Water Management in Floodplains"*, Cranfield
		Director's Office visit to Project 227-25-0025 *"Holistic options for sustainable agriculture"*, Cambridge
Mar 07	Meeting with Peter Stevenson to discuss Defra funding of Relu	Director's Office visit to Project 227-25-0024 *"Modelling the impacts of the WFD"*, Norwich
	CPRE Conference (David Miliband speech on Land Use), Royal Society	Director's Office visit to Project 227-25-0002 *"Angling and the rural environment"*, Newcastle
	Meeting between Relu Director's Office and senior SEPA policy staff, Stirling	Director's Office visit to

		Project 227-25-0028 *"Sustainability and impact of hill farming on landscapes and biodiversity"*, Stirling
	First meeting of Natural England's Science Advisory Committee, Oxford	
	ESRC Festival of Social Science 2007, Relu Debates on Power and Responsibility: Who Decides : You Decide, Royal Academy of Engineering, London - 9 Mar: *"The environment would be fine, if only scientists were in charge"* - 12 Mar: *"Consumers cannot be left to themselves to decide what to eat"* - 14 Mar: *"Farmers should be responsible for controlling livestock diseases"*	
	Third meeting of Relu's People and the Rural Environment Forum, London	
April 07	UKERC/Relu Bio-Energy Meeting to bring together Research Council-supported bio-energy teams (EPSRC-led "Supergen" Biomass consortium, the Research Councils' TSEC BIOSYS consortium, Relu energy projects and UK Energy Research Centre, Oxford	
	UKERC Bioenergy Research Roadmap workshop, Oxford	
	Relu Newsletter January - March 2007	
	Relu Data Services Management Group meeting, London	
May 07	Fifth meeting of Relu's Food Chain Forum, London	
	Relu/LARCI Conference "Research on Rural Resource Management an the Rural Economy: Addressing the Local and Regional Dimension", Royal Society of Edinburgh (Presentation on *Research on Rural Resource Management and the Rural Economy: Addressing the Local and Regional Dimension*)	
	Induction Meeting with Third Call PRE Projects, Edinburgh	
	Second and Third Call Projects Planning Meeting, Edinburgh	
	Relu Strategic Advisory Group meeting, Swindon	
June 07	Workshop on The Social and Material Practices of Agriculture, Farming and Food Production. (Presentation on *"The Co-Production of Agriculture")*. Centre for Science Studies, Lancaster University	Start date project RES-229-25-0008 *Understanding and acting within Loweswater: a community approach to catchment management* (Waterton), Lancaster
	Meeting with Natural England Evidence Team to discuss Relu/Natural England links, Leeds	Start date project RES-229-25-0009 *Developing a catchment management template for the protection of water resources: exploiting experience from the UK, Eastern USA and nearby Europe* (Smith), Imperial
	Meeting with Defra Farm Health Planning Team to discuss Abigail Woods' Relu Fellowship and interactions between Relu disease projects and Defra, London	Director's Office visit to Project 227-25-0014 *"Collaboration in Land Management of Deer"*, Leeds, to discuss work shadowing
	UKERC Annual Assembly 2007 (Presentation on *"An Integrated Approach to Whole Systems in the Framing of Research Questions ")*, Cambridge	

	Penn State/USDA Project: Design and Evaluation of Public Policies for Rural Development: An EU/US Comparison, Imperial College London (Discussant comparing EU/US rural policies)	
	ESRC Strategic Research Board, York – "The Management of inter-research council programmes" (Presentation on *"Fostering interdisciplinarity: the rural economy and land use programme"*)	
	Briefing Paper No. 5 *"Power and Responsibility - Who decides? You decide!"*	
July 07	CPRE Seminar *"Population Pressures and the Countryside"*, London	Director's Office visit to Project, 224-25-0041 *"Realising the Links between Quality Food Production and Biodiversity Protection"*, Exeter to discuss emerging findings and knowledge transfer.
	Defra workshop *"England 2050: Trends and Pressures on Land Use"*, Reading	Director's Office visit to Project, 224-25-0086 *"Sustainable and Safe Recycling of Livestock Waste"*, IGER, to discuss emerging findings and knowledge transfer.
	Meeting with Defra Animal Health Agency, London	Director's Office visit to Project 224-25-0048 *"The Role of Regulation in Developing Biological Alternatives to Pesticides"*, Warwick, to discuss emerging findings and knowledge transfer.
	ESRC Research Investment Directors Meeting, London	
	Briefing Paper No. 6 *"Common Knowledge: An Exploration of Knowledge Transfer"*	Director's Office visit to Project 224-25-0073 *"Implications of a Nutrition Driven Food Policy for the Countryside"*, Reading, to discuss emerging findings and knowledge transfer.
	Relu Newsletter April – June 2007	
Aug 07	Special Relu Session at the IBG: *"Interdisciplinarity within and beyond Geography"*, London	Start date project RES-229-25-0004 *Social and environmental inequalities in rural areas* (Huby), York
		Director's Office visit to Project, 224-25-0066 *"Warmwater Fish Production as a Diversification Strategy for Arable Farmers"*, Stirling, to discuss emerging findings and knowledge transfer.

		Director's Office visit to Project, 224-25-0044 *"Comparative Merits of Consuming Vegetables Produced Locally and Overseas"*, Bangor, to discuss emerging findings and knowledge transfer.
		Director's Office visit to Project, 224-25-0090 *"Managing Food Chain Risks"*, Surrey, to discuss emerging findings and knowledge transfer.
Sep 07	BA Festival of Science, Biological Sciences Section (Presentation on *"The Future Yorkshire Landscape")*, York	Start date project RES-229-25-0005 *Memory and prediction in plant disease management: a comparative analysis of Dutch Elm Disease and 'Sudden Oak Death' in the UK* (Potter), Imperial
	BA Festival of Science, York (address as President of the Agricultural Section *"Challenges for Rural Land Use"*), York	Start date project RES-229-25-0007 *Assessing the potential risk of, and possible responses to, zoonotic diseases on the development of recreational use of British forests and wild-lands* (Quine), Forest Research
	Meeting with Relu Land Use Policy Analyst and Defra, London	Start date project RES-229-25-0013 *Growing risk? The potential impact of plant disease on land use and the UK rural economy* (Mills), Warwick
	Relu Interdisciplinary Training event for Junior research staff, York	
	Special Relu Session at BA Festival of Science, York, 9-15 September: *"Working Together Across Disciplines: Challenges for the Natural and Social Sciences"*	
	ReluSeminar by Professor Clare Hinrichs (ESRC-SSRC Relu Fellow), Pennsylvania State University **"***Boundary Work in Interdisciplinary Research on Sustainable Food Chains"*	
	International Interdisciplinary workshop. "*Can Interdisciplinary Research Produce 'Good' Knowledge?"*, Durham University	
	Relu Data Management Subgroup meeting, London	
	Meeting with Veerle van den Eynden, Relu DSS, Newcastle upon Tyne	
	Induction meeting with Third Call PIs, Newcastle upon Tyne	
Oct 07	Meeting with Ken Roy (Commission for Rural Communities), Newcastle	Start date project RES-229-25-0012 *Reducing Escherichia coli O157 risk*

		in rural communities (Killham), Aberdeen
	Meeting with Richard Ferris (UK Biodiversity Research Action Group), to discuss biodiversity research agendas and knowledge transfer.	Start date project RES-229-25-0022 *Integrated systems for farm diversification into energy production by anaerobic digestion: implications for rural development, land use and environment* (Banks), Southampton
	Science in Society End of Programme Conference, London	Director's Office visit to Project, 227-25-0010 *"Improving the Success of Agri-Environment Schemes"*, Monk's Wood, Huntingdon
	Meeting with Scottish Government and Relu Land Use Policy Analyst for Scotland, Edinburgh	
	Meeting of Natural England Science Advisory Committee, London	
	"Biopesticides - The Regulatory Challenge", Relu Project Conference, Warwick	
	Academy of Social Sciences Knowledge Transfer Conference, London	
	Launch of RCUK China office (Presentation on *"Researching environment-society relations*), Beijing	
	Relu Farm Modelling Workshop, Sheffield, including presentation by Professor Jim Shortle (ESRC-SSRC Relu Fellow) from Pennsylvania State University	
	Fourth meeting of Relu People and the Rural Environment Forum, London	
	Relu Newsletter July – September 07	
	Meeting with Relu Land Use Policy Analysts, Newcastle upon Tyne	
Nov 07	Meeting with Jane Downes, Meat Hygiene Service, York	Start date project RES-229-25-0016 *Decision-making frameworks in management of livestock disease: interaction of epidemiology, economics and politics* (Medley), Warwick
	Meeting with Christianne Glossop, Welsh Assembly Government, Cardiff	
	Northern Rural Network seminar *"Developing the Regional Food Economy"* Beamish, Co Durham (Launch of Relu report: Relu Food Chain Research: Implications for Policy)	
	Launch of RCUK Washington Office, Washington, USA	
	Relu Conference *"Unlocking Change in the Food Chain"*, London / Fifth meeting of Relu Food Chain Forum	
	Briefing Paper No. 7 *"What is relu?"*	
	Policy and Practice Note No. 1 *"The Role of Regulation in Developing Biological Alternatives to Pesticides"*	
Dec 07	Meeting of England Implementation Group on Animal Health and Welfare Strategy, London	
	Meeting of Relu Land Use Analysts Advisory Group, London	
	BBSRC Review of Environmental Change panel meeting (Presentation on *"The Rural Economy and Land Use Programme: Lessons for collaboration*	

	between biologists and social scientists")	
	"Quantifying Biophilia", Wildlife Conservation Research Unit, University of Oxford.	
	Meeting with and submission to Strategy Unit Project on Food Policy, London	
	Relu Third Call Studentship Assessment Panel	
	Relu Strategic Advisory Committee, London	
	Planning Meeting with First Call Projects, London	
	Meeting with Julio Berdegue, Head of Rimisp, Chile, and leader of programme on rural territorial dynamics in Latin America, London	

Annex B: PUBLICATIONS DURING THE YEAR

JOURNAL ARTICLES

Benton, T.G. (2007) "Ecology - Managing farming's footprint on biodiversity". *Science* 315: 341-342.

Bruce, T.J.A. and Pickett, J.A. (2007) "Plant defence signalling induced by below- and above-ground attacks". *Current Opinion in Plant Biology* 10: 387-392

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Griffiths, G.J.K., Winder, L., Holland, J.M., Thomas, C.F.G. and Williams, E. (2007) "The representation and functional composition of carabid and staphylinid beetles in different field boundary types at a farm-scale" *Biological Conservation* 135, 145-152.

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Acs, S. and Dallimer, M. (2007) *"The economics of hill farming and its contribution to supporting biodiversity"*, Moors for the Future Annual Conference - Climate Change and Upland Management, Castleton.

Acs. S. (2007) *"Impacts of policy reform on sustainability of hill farming"*, Presentation to Research on Rural Resource Management and the Rural Economy: Addressing the Local and Regional Dimension, Royal Society of Edinburgh, Edinburgh, 16 May.

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Avery, M. (2007) *"The environment would be fine, if only scientists were in charge."* Relu Debates on Power and Responsibility: Who Decides: You Decide, Royal Academy of Engineering, London. March.

Banks, C.J. (2007) *"Review of biogas production processes - examples of ongoing projects"*, Presentation to Renewable Bioenergy Alternatives for City Transport Applications, Izmir, Turkey.

Bateman, I.J., Burgess, D., Day, B., Dent, S., Dupont, D., Georgiou, S., Hutchinson, W.G., Jones, A.P., Louviere, J., Matthews, D., Mawby, J., Morimoto, S., Munro, A., Poe, G.L., Slovic, P., Starmer, C. and Wang, P. (2007) *"Preferences: from construction to discovery?"* Presentation to Environmental Economics in Action, Economics Department, University of Las Palmas, Gran Caneria, 10th April.

Bateman, I.J., Burgess, D., Hutchinson, W.G. and Matthews, D.I. (2007) *"Preference learning versus coherent arbitrariness: NOAA guidelines or a learning design contingent valuation (LDCV)"* Presentation to Fifteenth Annual Conference of the European Association of Environmental and Resource Economists (EAERE), University of Macedonia, Thessaloniki, Greece, 27-30 June.

Bateman, I.J., Burgess, D., Hutchinson, W.G. and Matthews, D.I. (2007) *"Preference learning versus coherent arbitrariness: NOAA guidelines or a Learning Design Contingent Valuation (LDCV)"*, Envecon 2007, The Royal Society, London, 23rd March.

Bateman, I.J., Burgess, D., Hutchinson, W.G. and Matthews, D.I. (2007) *"Preference Learning versus Coherent Arbitrariness: NOAA guidelines or a Learning Design Contingent Valuation (LDCV)"* Presentation to the Royal Economics Society Conference, April 11-13.

Bear C. 2007. *"Reading rivers: everyday practice and environmental knowledge in freshwater angling"*. Presentation to Relu-sponsored session 'Geography & Trans-disciplinarity', Royal Geographical Society Annual Conference, London, August.

Bear, C., Whitman, G. and Carrithers, M.B. (2007) *"Making anglers count: realities, rhetoric and quantification"*. Presentation to "ESRC Narratives, Numbers and Social Change", University of Manchester.

Bertaglia, M.,Bertaglia, M., and Fraser, I. (2007)*"Bridging the "natural" & the "social" in knowledge about socio-technical transitions"*. Presentation to ESRS 2007, Wageningen, 20-24 August.

Bertaglia, M., Sharma, A., Bailey, A., and Fraser, I. (2007)*"Perceptions Of biocontrol and the adoption of new pest management strategies in the UK"*. Presentation to AES, Annual Conference University of Reading, April.

Brandão, M., Clift. R. and Milà i Canals, L. (2007) "*Food or energy? Towards sustainable land use – a life cycle approach for the assessment of the carbon intensity of land use for food and bioenergy in the UK. Abstract Book. Industrial Ecology for a Sustainable Future"*. Presentation to 4th International Conference of the International Society for Industrial Ecology, ISIE . Toronto (Canada) 17-20 June.

Buller, H. (2007) "*Can we change the way producers add value to their products*" Presentation to Relu Conference "Unlocking change in the food chain", London, 7 November.

Buller, H. (2007) *"Counting sheep: Interdisciplinary approaches to the notion of 'quality' in the food chain"*. Presentation to British Association for the Advancement of Science, 2008 Festival of Science, York University, 13 September.

Buller, H. (2007) "*Eating biodiversity and the commodification of the non-human*" Presentation to the Annual Conference of the Association of American Geographers, San Francisco, April.

Buller, H. et al. (2007) "*Tasty science*" Presentation to the Institute of British Geographers Annual Conference, London. August.

Bullock, J. (2007) *"Improving the success of agri-environment schemes"* Presentation to Research on Rural Resource Management and the Rural Economy: Addressing the Local and Regional Dimension, Royal Society of Edinburgh, Edinburgh, 16 May.

Bulmer, N., Hodgson, C. J. and Chadwick, D. R. (2007) *"The survival of FIOs in soil, following dairy cattle slurry application to land by surface broadcasting and shallow injection"* Proceedings 161st meeting of the Society of General Microbiology (SGM), University of Edinburgh, 2-6 September 2007.

Chadwick, D. et al (2007) *"Dealing with uncertain data"* Rural Economy and Land Use Uncertainty Workshop, Lancaster University. March.

Chambers, S. and Lobb, A.E. (2007) *"Consumer acceptance of functional foods: soft fruit and lamb"* Poster presentation to International Symposium on "Developments in Functional Foods in Europe – International Impact and Significance" Malta, 9-11 May.

Chambers, S., Lobb, A.E. and Traill, W.B. (2007) *"The promotion of healthy eating: a moral dimension?"* Presentation to "Setting an Ethical Agenda for Health Promotion Conference", Ghent, Belgium, 18-20 September.

Chandler, D. *"Biopesticides in the UK: Can we get regulatory innovation?"* Presentation to 40th Annual Meeting of the Society for Invertebrate Pathology, Quebec, August.

Chandler, D. and Davidson, G. *"Population biology of Beauveria"* Presentation to 40th Annual Meeting of the Society for Invertebrate Pathology, Quebec, August.

Chandler, D. and Grant, W. *"Biopesticides: environmental and regulatory sustainability"* Presentation to Biopesticides: the Regulatory Challenge, Warwick HRI, 31 October.

Chandler, D. and Grant, W. *"Working together across disciplines: challenges for the natural and social sciences"*. Presentation to British Association for the Advancement of Science, 2008 Festival of Science, York University, 13 September.

Chapman, D.S. (2007) *"Red grouse and climate change"*. Presentation to Moors For the Future Conference, Castleton, November.

Cook, M. and Morris, J. (2007) *"Valuing ecosystem services for floodplain management"* Presentation to River Restoration Conference, Edinburgh, April.

Cross, P. A., Edwards-Jones, G. and Edwards, R. T. (2007) *"Does farm worker health differ between conventional and organic horticultural systems?"*. Proceedings of the XVI International Plant Protection Congress, 130-131.

Dallimer, M. (2007) *"The impact of hill farming on upland bird communities in the Peak District"*, BES Annual Conference, Glasgow.

Day, G. and Truninger. M. (2007) *Eating locally: a comparative regional study*, Presentation to 'Local food and rural development. Does it work here and overseas?', Science Week, St Asaph Business Park, St. Asaph, North Wales, 13th March.

Day, G. and Truninger, M. (2007) "*Place, food and belonging: a comparative investigation of local food cultures in three rural areas of the United Kingdom*" Presentation to XXII Congress of the European Society for Rural Sociology, 20-24 August, Wageningen.

Day, G. and Truninger, M. (2007) "*Showing the 'local': image and text in the representation of local food*" Presentation to FEAST Festival, Bangor University, 22-23 November.

Dougill, A.J. (2007) *"Conceptual modelling and participatory approaches: interdisciplinary lessons from the UK uplands"*. Presentation to ZEF Interdisciplinary PhD Training Programme, University of Bonn / United Nations University.

Dougill, A.J., Termansen, M., Stringer, L.C., Quinn, C.H., Prell, C., Reed, M.S., Hubacek, K., Holden, J., Fraser, E.D.G. and Bonn, A. (2007). *"Learning to transcend disciplines, scales and stakeholder groups: reflections on interdisciplinary research processes"*. Presentation to Relu-sponsored session 'Geography & Trans-disciplinarity', Royal Geographical Society Annual Conference, London, August.

Edwards-Jones, E. (2007) *"Would changing our eating habits save the planet?"* Presentation to Relu Conference "Unlocking change in the food chain", London, 7 November.

Edwards-Jones, G. (2007) *"Comparative advantages of growing vegetables at home and overseas"* Presentation to The National Vegetable Conference, Rutland. December.

Edwards-Jones, G. (2007) *"Should consumers be allowed to make their own food choices?"* Relu Debates on Power and Responsibility: Who Decides: You Decide, Royal Academy of Engineering, London. March.

Edwards-Jones, G. et al. (2007) "*Practical lessons from counting carbon in sheep and horticultural enterprises*" Presentation to British Institute of Agricultural Consultants, Annual Conference, Coventry November.

Edwards-Jones, G., Koerber, G., York, E. and Mila I Canals L. (2007) "*Identifying and managing emissions from farms and food chains*" Presentation to The Carbon Summit. 24-25 May.

Fezzi, C. (2007) "*Farm land use modelling in the ChREAM project"* Presentation to workshop on Farm Production Modelling organized at Sheffield University. October.

Fezzi, C., Lovett, A., Posen, P. and Rigby, D. 92007) ChREAM project "overview" poster presented at Relu conference: *Research on Rural Resource Management and the Rural Economy: Addressing the Local and Regional Dimension,* Edinburgh.

Fiorini, S. (2007) "*Collaboration and the landscape approach to natural resource management: bridging deer management practices in Scotland"*, Presentation to Indiana University, USA.

Fiorini, S. et al (2007) "*Land use change and the need for a landscape approach to natural resource management: collaborative deer management in Britain"* Presentation to IGU/LUCC Central Europe. "Man in the landscape across frontiers: Landscape and land use change in Central European border regions" Prague, 28 August – 4 September.

Fish, R. (2007) "*The responsibility of the state in controlling livestock diseases"* Contribution to the Festival of Social Science and National Science and Engineering Week, London. March.

Fish, R. (2007) "*Worlds within worlds: recognising and reconciling intra-disciplinary controversies within inter-disciplinary research*". Presentation to British Association for the Advancement of Science, 2008 Festival of Science, York University, 13 September.

Fraser, E.D.G. (2007) *"Globalization and land use change: are there common trends, are there common implications?"* Presentation to Global Land Project, University of Copenhagen, Copenhagen, Denmark, 25th October.

Fraser, E.D.G. (2007) *"Identifying indicators of adaptive capacity in different land use systems".* Presentation to the International Institute for Applied Systems Analysis, Vienna, Austria, 17th September.

Fraser, E.D.G. (2007) *"Quantifying adaptation to extreme environmental events"* Presentation to French Academy of Sciences Colloquium on Adapting to Extreme Weather Events. Paris, France, 2-5th July.

Fraser, E.D.G. (2007) *"Vulnerability of rural economies and land use systems to climate change"* Presentation to Workshop on Climate Change and Wellbeing. University of Sheffield 25 November.

Fraser, E.D.G. Termansen, M., Sun, M. Guan, D. Dodds, P., Feng, K., Yu, Y (2007). "Using past climate variability to understand how food systems are resilient to future climate change" Eursafe 2007 Conference. 15-18th September, Vienna Austria.

García-Macías, P., Ordidge, M., Vysini, E., Waroonphan, S., Lovegrove, J.A., Battey, N.H., Hadley, P., John, P., Wagstaffe, A. and Gordon, M.H. (2007) Presentation to "*Enhancement of polyphenols in crops by exposure to UV radiation during cultivation"* 3rd International Conference on Polyphenols and Health, Kyoto Japan, November.

Greaves, J. (2007) "*Do we need regulatory changes to make biopesticides a mainstream solution?*" Presentation to Relu Conference "Unlocking change in the food chain", London, 7 November.

Griffiths, G.J.K, Thomas, M.B, Wilby, A. and Crawley, M.J. (2007) *"Isolating the components of diversity in multipredator assemblages"*. Presentation to Royal Entomological Society International Symposium, Edinburgh, July.

Griffiths, G.J.K, Thomas, M.B, Wilby, A. and Crawley, M.J. (2007) *"Natural enemy diversity and pest control function: theory and practice. Association of Applied Biologists"*. Presentation to Theoretical Population Biology and Biocontrol', Warwick, December.

Harris, F. (2007) Presentation to Relu-sponsored session 'Geography & Trans-disciplinarity', Royal Geographical Society Annual Conference, London, August.

Harrison, M. (2007) "*Should consumers be allowed to make their own food choices?"* Relu Debates on Power and Responsibility: Who Decides: You Decide, Royal Academy of Engineering, London. March.

Hinrichs, C. (2007) *"Boundary work in interdisciplinary research on sustainable food chains"* Presentation to Relu Seminar Series, Newcastle University.

Hodgson, C. J. et al. (2007) *"Would changing farmers attitudes to waste management make our food and water safer?"*. Presentation to Relu Conference "Unlocking change in the food chain", London, 7 November.

Hodgson, C. J., Oliver, D. M., Fish, R. D., Heathwaite, A. L., Winter, D. M. and Chadwick, D. R. (2007) *"Assessing the impact of farm management practices on stream FIO loads using an evidence based approach"* 15th International Environmental Bioindicators Conference, City University of Hong Kong, 7-9 June (also presented at 161st meeting of the Society of General Microbiology (SGM), University of Edinburgh, 3-6 September).

Holden, J. (2007) "*Peatlands and environmental change"* Presentation to Moors for the Future Conference, Castleton, November.

Holden, J. (2007) *"Peatlands and secret carbon flux"* Presentation to Symposium on Carbon in Peatlands, Wageningen, Netherlands, April.

Holden, J. (2007) "*The limits to restoration"* Presentation to the International Perspectives on Peatland Degradation and Restoration: from Science to Practice, Manchester, June.

Holland, J.M., and Bailey, A. (2007) "*Investigating adoption of alternative pest management strategies in field crop systems"*. Presentation to AAB meetings on "Arable Biodiversity and Insect Pest Management" by JM Holland; Theoretical population ecology – bridging the gap.

Hubacek K., Prell, C., Reed, M., Quinn, C., Jin N., Holden, J., Burt, T.P., Kirkby, M. and Sendzimir, J. (2007) *"If you have a hammer everything looks like a nail: 'traditional' versus participator"*. Presentation to International Conference on Adaptive, Integrated Water Management (CAIWA), Basel, Switzerland, 12 - 15 November.

Hubacek, K. (2007) *"Stakeholder participation in the strategic management of upland landscapes"* Presentation to Research on Rural Resource Management and the Rural Economy: Addressing the Local and Regional Dimension, Royal Society of Edinburgh, Edinburgh, 16 May.

Hubacek, K., Quinn, C.H., Prell, C., Reed, M.S., Dougill, A.J., Fraser, E.D.G., Holden, J., Stagl, S. and Stringer, L. (2007) *"Stakeholder selection as a precondition for successful participatory processes"*. Presentation to 7th International Conference of the European Society for Ecological Economics: Integrating Natural and Social Sciences for Sustainability, Centre for Environmental Research –UFZ, Leipzig, Germany, 5-8 June.

Huby, M. (2007) *"England's green and pleasant land: inequality and accessibility"* Presentation to the ESRC/NERC Transdisciplinary Seminar: Inequalities, Greenspace and the Natural Environment 12-13 September 2007, Royal Statistical Society, Edinburgh.

Huby, M. (2007) *"Perspectives' on childhood well-being and inequalities"* Presentation to ESRC/NERC Transdisciplinary Seminar: FRESH (Framing Ecosystem Services and Human Well-being) 23-24 October 2007, University of Nottingham, UK.

Huby, M. (2007) *"Social and environmental inequalities in rural areas"* Presentation to seminar of the Environmental Research Initiative (Linking Biodiversity and Biotechnology) 13 December, University of York.

Hutchins, M., Davies, H., Deflandre, A., Dilks, C. and Posen, P. (2007) "*Spatial heterogeneity of nitrate dynamics as illustrated in catchment hydrological modelling studies"* Presentation to Understanding Processes for Basin Scale Management, National Meeting of the British Hydrological Society, Institute of Civil Engineers, London, 17th October.

Irvine, J and Dandy, N. (2007) *Natural resource management: A case study on collaboration over deer,* Presentation to DI National Conference. Buxton, 23/-24 March.

Irvine, J. (2007) *"Collaborative deer management"* Presentation to Research on Rural Resource Management and the Rural Economy: Addressing the Local and Regional Dimension, Royal Society of Edinburgh, Edinburgh, 16 May.

Irvine, J. (2007) *"Deer & climate change"* Presentation to DI National Conference, Buxton, 23-24 March.

Irvine, J., White, P. and Fiorini, S. (2007) "*Collaborative frameworks in land management: a case study on integrated deer management"* Poster presented to Relu "Research on Rural Resource Management and the Rural Economy: Addressing the Local Dimension" Conference, Royal Society of Edinburgh.

Karp, A. (2007) *"What are the environmental impacts of energy crops production beyond $C0_2$ abatement?"*. Presentation to AES Conference 'Bioenergy-Green Gold' Royal Horticultural Halls & Conference Centre, London. 31 January.

Killham, J. (2007) *"Reducing E.Coli risk in rural communities"* Presentation to Research on Rural Resource Management and the Rural Economy: Addressing the Local and Regional Dimension, Royal Society of Edinburgh, Edinburgh, 16 May.

Lee, R., Phillipson, J. and Lowe, P. (2007) "Social science and the social shaping of agri-food technology". Paper presentation to XXIIst Congress of the European Society for Rural Sociology, Wageningen, Netherlands, 20-24 August.

Little, D. (2007) *"Do farmers need to change their ideas about diversification?"* Presentation to Relu Conference "Unlocking change in the food chain", London, 7 November.

Lloyd Jones, J. (2007) *"Farmers should be responsible for controlling livestock diseases.*" Relu Debates on Power and Responsibility: Who Decides: You Decide, Royal Academy of Engineering, London. March.

Lobb, A.E., Chambers, S.A., Butler, L.T. and Traill, W.B. (2007) "*Consumers' attitudes and motivations towards diet and health"*. Presentation to the 3rd International Consumer Sciences Research Conference 27-29 June 2007.

Lowe, P (2007) *"Rural futures"* Presentation to Regions and Regionalisation in and beyond Europe Colloquium, Lancaster University, Institute of Advanced Studies.

Lowe, P , Donaldson, A. and Phillipson, J. (2007) *"The co-production of agriculture"*. Presentation to Workshop on The Social and Material Practices of Agriculture, Farming and Food Production, Centre for Science Studies, Lancaster University

Lowe, P. (2007) *"An integrated approach to whole systems"*. Presentation to UKERC Annual Assembly 2007, Cambridge.

Lowe, P. (2007) *"Challenges for rural land use"*. Presentation to BA Festival of Science, York (address as President of the Agricultural Section).

Lowe, P. (2007) *"Research on Rural Resource Management and the Rural Economy: Addressing the Local and Regional Dimension"* Presentation to Research on Rural Resource Management and the Rural Economy: Addressing the Local and Regional

Lowe, P. (2007) "*Researching environment-society relations*". Presentation at launch of RCUK China office, Beijing.

Lowe, P. (2007) *"Social impacts and landscape change in Yorkshire"*. Presentation to BA Festival of Science, Biological Sciences Section, York.

Lowe, P. (2007) "*The ageing countryside"*. Presentation to Ageing and Rural Communities Conference, Queen's University Belfast.

Lowe, P. (2007) "*Unlocking change in the food chain: introduction"*. Presentation to Presentation to Relu Conference "Unlocking change in the food chain", London, 7 November.

Lowe, P. and Phillipson, J. (2007) *"Fostering interdisciplinarity: the rural economy and land use programme"*. Presentation to ESRC Strategic Research Board, York.

Macmillan, D. (2007) "*Valuation – testing the theory"* Presentation to Applied Environmental Economics Conference, Royal Society, London.

Macmillan, P. (2007) Paper and poster presentations to The Wildlife Society 14th Annual Conference Tucson, Arizona. 22-26 September.

MacMillan, T. (2007) *"Should consumers be allowed to make their own food choices?"* Relu Debates on Power and Responsibility: Who Decides: You Decide, Royal Academy of Engineering, London. March.

Macmillan, T. (2007) *"Sustainable farming and food: emerging challenges"*. Seminar to debate Food Ethics Council report, Newcastle University

Maule, J. (2007) *"If we want to change the way consumers think about risk, should we talk to them differently?"* Presentation to Relu Conference "Unlocking change in the food chain", London, 7 November.

Milà i Canals L , Hospido A , Clift R, Truninger M, Hounsome B. and Edwards-Jones G. (2007) *Environmental effects and consumer considerations of winter consumption of lettuce in the UK*. 5th International Conference LCA in Foods. Book of Proceedings . Pp. 47-52. SIK, Gothenburg (Sweden) 25-26 April 2007.

Milà i Canals, L., Cowell, S.J., Sim, S. and Basson, L. (2007) *"Effects of seasonality and variability in energy consumption data on a comparison of local vs. imported apples"*. Presentation to 17th SETAC Europe Annual Meeting. Abstract Book. Porto, Portugal, 20-24 May, p.142.

Milà i Canals, L., Koerber, G.R., Brandão, M., York, E.H., Clift, R., Jones, D.L. and Edwards-Jones, G. (2007) *"Contribution of soil emissions to the impacts of horticulture: comparison of literature estimates with field measurements"*. Presentation to 17th SETAC Europe Annual Meeting. Abstract book. Porto, Portugal, 20-24 May, p. 143.

Milà i Canals, L., Koerber. G.R., Brandão, M., York, E.H., Clift, R., Jones, D,L,, Cowell, S,J. and Edwards-Jones, G. (2007) *"Impacts on soil quality in the LCA of horticultural crops"*. Presentation to 17th SETAC Europe Annual Meeting. Abstract Book. Porto, Portugal, 20-24 May 2007, p.148.

Morris, C. and Kirwan, J. (2007) "*Getting with the (de)fetish: emotional value and naturally embedded food products*". Pesentation to the European Society for Rural Sociology Annual Conference, Wageningen, August.

Morris, J. (2007) *"Better management of floodplains"*. Presentation to Research on Rural Resource Management and the Rural Economy: Addressing the Local and Regional Dimension, Royal Society of Edinburgh, Edinburgh, 16 May.

Morris, J. (2007) PR09, *"Economics of land use and ecosystems"*. Presentation to CIWEM – CMS Conference "River Basin District Planning and Land Use, Planning the Lessons into Practice", London, 6 November.

Morris, J. and Posthumus, H. (2007) *"Multi-functional agriculture in UK floodplains: opportunities for agriculture to deliver ecosystem services"*. Presentation to XXII Congress of ESRS: Mobilities, Vulnerabilities and Sustainabilities: new questions and challenges for rural Europe, Wageningen, the Netherlands, 20-24 August.

Munk, A. (2007) *"Understanding environmental knowledge controversies: environmental competency groups and flood risk management"* Presentation to University of Uppsala, Dept of Cultural Geography, October 2007.

O'Brien, L. (2007) *"Interdisciplinary working: perspectives from the Relu project on collaborative deer management"*. Presentation to British Association for the Advancement of Science, 2008 Festival of Science, York University, 13 September.

Oaten, H. *"Crop protection in Southern Britain"* Presentation given at AAB meetings on Arable Biodiversity and Insect Pest Management by JM Holland; Theoretical population ecology – bridging the gap.

Oughton, E.A. (2007) *"Realising the economic, social and environmental benefits of angling in river catchments"*. Presentation to Research on Rural Resource Management and the Rural Economy: Addressing the Local and Regional Dimension, Royal Society of Edinburgh, Edinburgh, 16 May.

Oughton, E.A. and Bracken, L.J. (2007) *"Framing interdisciplinary research"*. Presentation to Relu-sponsored session 'Geography & Trans-disciplinarity', Royal Geographical Society Annual Conference, London, August.

Owens, s. (2007) *"The environment would be fine, if only scientists were in charge."* Relu Debates on Power and Responsibility: Who Decides: You Decide, Royal Academy of Engineering, London. March.

Petkov, M. and Shepherd, R. (2007) *"How can personality affect the risks we take? A closer look into food risks and consumer behaviour"* . Presentation to the Society for Risk Analysis Europe conference, The Hague, 17-19 June 2007.

Phillipson, J. (2007) *"Lessons on managing interdisciplinary research programmes"* Presentation to Integrated Rural Water Management-European Research Area-NET, Workshop, London.

Pickett, J. (2007) *"cis-Jasmone: not a sink but a sophisticated signal"* Presentation to Third European Symposium on Plant Lipids, King's Manor, York, 1-4 April 2007, Keynote Lecture, April.

Pickett, J. (2007) *"Highlights in the evolution of phytochemistry"* Presentation to 50 Years of the Phytochemical Society of Europe, Churchill College, Cambridge: 11-14 April, 2007, Future developments in ecological phytochemistry, April.

Pickett, J. (2007) *"New semiochemical technologies for use in crop protection"* and *"Exploiting induced and constitutive plant signalling in crop protection"*. Presentations to X Siconbiol meeting on "Pheromones and other scents for the alleviation, worldwide, of many pest problems in plant, animal and human health", Brasilia, July.

Pickett, J., (2007) *"Exploiting induced and constitutive plant stress signalling in crop protection"* Presentation - 17th Annual H.R. MacCarthy Pest Management Lecture, University of British Columbia, Canada, October.

Pickett, J., (2007) *"Exploiting induced and constitutive plant stress signalling in crop protection"*. Presentation to workshop on Plant-insect Interactions:from Molecular Biology to Ecology, Faculty of Biology, University of Amsterdam, October.

Posthumus, H. and Morris, J. (2007) *"Summer flood events: rural space"*. Water, Environment and Society seminar series: the summer 2007 flood events. ESRC Seminar Series: Lancaster, 14 December.

Posthumus, H.. and Morris, J. (2007) *"Engaging stakeholders in trans-disciplinary research on agriculture and flood risk management"*. Presentation to XXII Congress of ESRS: Mobilities, Vulnerabilities and Sustainabilities: new questions and challenges for rural Europe, Wageningen, the Netherlands, 20-24 August.

Quinn, C.H., Hubacek, K. and Reed, M.S. (2007). *"Stakeholder participation in the strategic management of upland landscapes"*. Presentation to Research on Rural

Resource Management and the Rural Economy: Addressing the Local and Regional Dimension, Royal Society of Edinburgh, Edinburgh, 16 May.

Reed, M.S. (2007) *"Knowledge Exchange in the Sustainable Uplands Project"* Presentation to NERC KT team, University of Leeds, September.

Rickard, S. (2007) *"Farmers should be responsible for controlling livestock diseases.*" Relu Debates on Power and Responsibility: Who Decides: You Decide, Royal Academy of Engineering, London. March.

Rosa, P., Kodithiwakku, S., Young, J. and Little, D. (2007) *"Opportunity, necessity and entrepreneurial success: a farming perspective"*. Presentation to 4th ASGE International Entrepreneurship Research Exchange, 6-8 February, Brisbane Australia.

Sandars, D. L. & Audsley, E. (2007) *"Biodiversity and agricultural production planning by LP"*, Presentation to EURO XXII Conference, University of Economics, Prague, 8-11 July.

Selfa, T. (2007) *"Household and landscape responses to changing environmental mandates: examples from Devon, England"* Presentation to XXIInd Congress of the European Society for Rural Sociology, 20-24 August, Wageningen, NL.

Sharma, A., Bailey, A., Bertaglia, M. and Fraser, I. (2007) *"Modelling the technology adoption decision: theory and empirical evidence"* Presentation to AES, Annual Conference University of Reading, April.

Smith, L.E.D. (2007) *"Adaptive management of catchments for the protection of water quality: drawing on international experience"* Presentation to International Conference on Adaptive and Integrated Water Management: Coping with Complexity and Uncertainty, Basel, 12-15 November 2007.

Smith, L.E.D. (2007) *"Governance for catchment management and protection of water resources: drawing on international experience, water governance: emerging theory and practice*", Presentation to ICID Workshop, Institution of Civil Engineers, London, 19th October 2007.

Smith, L.E.D. (2007) *"Local management of water catchments and river basins: drawing on international experience"*, Presentation to 10th International River symposium & Environmental Flows Conference, Brisbane, 3-6 September 2007.

Smith, L.E.D. and Hiscock, K. (2007) *"Local management of water catchments: drawing on international experience"*, Presentation to Research on Rural Resource Management and the Rural Economy: Addressing the Local and Regional Dimension, Royal Society of Edinburgh, Edinburgh, 16 May.

Stirling, A. (2007) *"The environment would be fine, if only scientists were in charge."* Relu Debates on Power and Responsibility: Who Decides: You Decide, Royal Academy of Engineering, London. March.

Sutherland, L. and Brown, K. (2007) *"Strength in numbers? the neighbourhood effect in english organic farms"* Presentation to XXII European Society for Rural Sociology Conference, Wageningen, the Netherlands, 20–24August.

Sutherland, W. (2007) *"The environment would be fine, if only scientists were in charge."* Relu Debates on Power and Responsibility: Who Decides: You Decide, Royal Academy of Engineering, London. March.

Tinch, D. (2007) *"Historical drivers of change in the Peak District National Park"* Poster presentation at Relu Conference - Research on Rural Resource Management and the Rural Economy: Addressing the Local Dimension, Edinburgh.

Trail, W.B. (2007) *Trends in healthy eating and the possible implications for our diet, UK agriculture and the countryside***.** ESRC data archive event in Leeds as part of Social Science week

Traill, B. (2007) "*Should consumers be allowed to make their own food choices?"* Relu Debates on Power and Responsibility: Who Decides: You Decide, Royal Academy of Engineering, London. March.

Traill, W.B. (2007) **"***Can changing the way we grow food make our diets more nutritious?"* Presentation to Relu Conference "Unlocking change in the food chain", London, 7 November.

Traill, W.B., Chambers, S., Arnoult, M.H., Lobb, A., and Tiffin, J.R. (2007) "*Consumers' willingness to pay for innovative healthy agricultural products"* Presentation to 5th International MAPP Workshop on Consumer Behaviour and Food Marketing, Middelfart, Denmark, 8-9 May.

Truninger, M. and Day, G. (2007) "*Eating locally: a comparative study of three British rural areas*". Presentation to 8th Conference of the European Sociological Association, Glasgow, UK, 3rd-6th September.

Waage, J. (2007) "*Farmers should be responsible for controlling livestock diseases.*" Relu Debates on Power and Responsibility: Who Decides: You Decide, Royal Academy of Engineering, London. March.

Wagstaffe, A. and Battey, N.H. (2007) "*Tunnel production of strawberries in the UK: a review"* Presentation to 6th International Strawberry Symposium, Ventura, California, USA, International Society of Horticultural Science, February 9-12.

Ward, N. and Whatmore, S. (2007) "*Understanding environmental knowledge controversies: environmental competency groups and flood risk management"*. Presentation to British Association for the Advancement of Science, 2008 Festival of Science, York University, 13 September.

Waterton, C. (2007) "*Experimenting with a new collective: loweswater, latour and more"* Presentation to STS and Farming Workshop, Lancaster University

Whatmore, S. (2007) "*Between earth and life: geography as an inter-discipline"'*. Presentation to ESRC Interdisciplinary Symposium, Oxford, February 2007.

Whatmore, S. (2007) "*Environmental competency groups: trying things out"*. Presentation to ALSIS Symposium "What is scientific about social science", Royal Society, March 2007.

Whatmore, S. (2007) "*Environmental knowledge controversies: science, democracy and the redistribution of expertise"*. Presentation to Centre for Interdisciplinarity, Bielefeld University, May 2007.

Wheelock, J. and Oughton, E.A. (2007) "*Sustainable economic development and the ecosystem: developing interdisciplinary tools for understanding the impact of angling in a river catchment"*. Presentation to Interdisciplinary Social Sciences Conference, Granada. Spain.

White, P. (2007) "*Enhancing the value of interdisciplinary research for researchers and policy-makers: lessons from shared experience"*. Presentation to RGS-IBG Annual International Conference 29-31 August 2007, Royal Geographical Society, London.

Whitman, G. (2007) *"Ecology- naturally interdisciplinary?"* Presentation to Relu-sponsored session 'Geography & Trans-disciplinarity', Royal Geographical Society Annual Conference, London, August.

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Arnoult, M.H. and Tiffin, R. (2007) Report 7. *"Econometric models of nutrient demand"*, June. http://www.relu.rdg.ac.uk/Working%20Papers%20and%20Reports/Doc07WP1Rep02EconModels.pdf

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Stagl, S. et al (2007) *Relu SCALE Newsletter 1*. March 2007. An informal newsletter primarily aimed at the farmer partners but used as publicity for the project generally.

Stagl, S. et al (2007) *"Stakeholder workshop report: Relu programme"*. 1 Carlton House Terrace, London. Jan 22nd.

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PRESENTATIONS TO STAKEHOLDERS AND SUBMISSIONS TO STAKEHOLDER CONSULTATIONS

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Bateman, I.J., Day, B.H., Deflandre-Vlandas, A., Ferrini, S., Fezzi, C., Hadley, D., Hime, S., Hutchins, M., Posen, P., Rigby, D. and Turner, R.K. (2007) "*Modelling and valuing the impacts of the Water Framework Directive: The ChREAM project"*, Presentation to Relu People and the Rural Environment Forum, UKWIR, London, 19th March.

Chadwick project Citizens Jury to answer the case "*Contemporary livestock farming: are our watercourses at risk?"* University of Exeter. 11 May.

Chadwick project Citizens Jury to answer the case "Contemporary livestock farming: are our watercourses at risk?*"* (Funded by Defra – Water Quality Division) Exeter and IGER North Wyke, 15-16 November.

Chadwick, D. et al (2007) Science week – We highlighted this relu project to 600+ primary school children in our exhibit on 'The Good, the Bad and the Fungi'. March.

Edwards-Jones, G. (2007) "*Carbon footprints in the vegy patch: problems and opportunities"*. Presentation to National Horticultural Research Group, Warwick. 2007.

Edwards-Jones, G. (2007) "*Counting carbon in horticultural enterprises"*. Presentation to National Tomato Growers Association, Annual Conference, Coventry. October.

Edwards-Jones, G. (2007) "*Food miles or food minutes: the sustainability of fresh food chains"*. Presentation to Business Forum of the Food Ethics Council, London. June.

Edwards-Jones, G. (2007) "*Scientific and commercial challenges in carbon accounting"*. Presentation to IGD Leadership Programme, Maidenhead. November.

Edwards-Jones, G. (2007) "*What future for Welsh agriculture? 2020, FMD, floods and beyond*". Presentation to Cardiganshire Grasslands Annual Meeting, Camarthen. November.

Fiorini S. and Phillips, S. (2007) Project overview to Association of Deer Management Groups, Scotland.

Fish, R. and Winter, M. (2007) "*Unruly pathogens: eliciting risk for sustainability science*". Sustainable Development Seminar Series, University of Exeter. March.

Grant, W. (2007) "*The regulatory challenge*" Presentation to Pesticides Safety Directorate, York. April.

Grant, W. (2007) Presentation on project at Syngenta plc's Jealott's Hill research station, Berkshire.

Grant, W. (2007) Project team response to the Pesticides Safety Directorate document, 'A Draft National Strategy for the Sustainable Use of Plant Protection Products'.
Grant, W. et al. (2007) Programme of lectures at PSD, York and workshop at Warwick HRI
Grant, W. et al (2007) Response to the informal consultation for creating a new Defra Regulatory Science Agency (RSA) by University of Warwick Relu research team.
Hodgson, C. J. and Oliver, D. M. (2007) *"Mitigation and current management attempts to limit pathogen survival and movement within farmed grasslands"*. Presentation to Technical conference for Catchment Sensitive Farming officers, Warwick University .23-25 January.
Huby, M. (2007) *"Social and environmental inequalities in rural areas"*. Presentation to Relu People and The Rural Environment Forum, London. October.
Karp, A. (2007) *"Biofuels: the way ahead"*. Presentation to University of Lincoln, Riseholme Park. 1 March.
Karp, A. (2007) Presentation to European Environment Agency and Joint Research Centre workshop. 17-18 October.
Karp, A. (2007) Presentation to Royal Society Biofuels meeting, London. 22-23 April.
Karp, A. (2007) Presentation to Tetrapartite meeting, California USA. June.
Little, D., Grady, K. and Leschen, W. (2007) "*Fish on the farm"* Presentation to Scottish Agricultural College. February.
Lovett, A. (2007) Presentation to European Environment Agency and Joint Research Centre workshop. 17-18 October.
Medley, G. (2007) *"Decision-making frameworks in the management of livestock disease: interaction of epidemiology, economics and politics"* Presentation to Relu Food Chain Forum, London. May.
Milà i Canals, L., Hospido, A., Muñoz, I. and Brandao, M. (2006-2008) LCA reports for specific farms and crops for participant farmers in the UK, Spain and Kenya.
Mills, P (2007) *"Growing risk? The potential impact of plant disease on land use ant the UK rural economy"* Presentation to Relu Food Chain Forum, London. May.
Morris, J. (2007) *"Sustainable agriculture"* FCO Conference, Instituto Technico Superior, Lisbon. 28 November.
Murray, F. (2007) '*Tilapia project presentation'*, Auchterarder. 26 March.
Murray, F., Little, D. and Leschen, W. (2007) '*Tilapia project presentation'*, July - December 2007, University of Stirling. Presentation given to various farmers and rural entrepreneurs who visited the university throughout 2007 as they were interested in adopting tilapia as a diversification strategy.
O'Brien, L. (2007) *"Interdisciplinary research on collaborative deer management"* Seminar at Forest Research, NRS.
Ogden, I. (2007) *'Reducing Escherichia coli O157 risk in rural communities'* at opening meeting of The Pathogenic *Escherichia coli* Network (PEN, http://www.pen-project.eu/asp/default.asp)
Oughton, E. (2007) Project team, Feedback about AIRE project to partners and invited stakeholders Fountains Abbey Yorkshire July.
Posthumus, H. (2007) *"Integrated floodplain management in the UK: stakeholder interests"*. Workshop on 'Survey of existing bargaining between stakeholders and farmers', Middlesex University. London, 29 November.

Posthumus, H. (2007) *"The impact of agricultural policy on land and water management in the UK"*. Countryside and Community Research seminar series, University of Gloucestershire. Cheltenham. 15 March.

Posthumus, H. and Morris, J. (2007) *"Exploring the potential for integrated floodplain management in the Beckingham Marshes"*. Presentation to OnTrent Initiative: links to EPSRC Flood Risk Management Research Consortium Nottingham, 26 January.

Posthumus, H. and Morris, J. (2007) Flood Risk Management Policy Issues: Rural FRMRC Annual Assembly , Edinburgh. 11 July.

Potter, C. (2007) *"Lessons from Dutch Elm Disease in assessing the threat from Sudden Oak Death"*. Presentation to Relu People and The Rural Environment Forum, London. October.

Quine, C.P. (2007) *"Assessing and communicating animal disease risks to countryside users"*. Presentation to Relu People and The Rural Environment Forum, London. October.

Quine, C.P. (2007) *"Blood suckers lurking in the forest"*. Presentation to Forest Research Northern Research Station, Roslin. October.

Quinn, C., M. Reed and B. Irvine sat on the steering committee and presented to the Ripon Multi-Objective Project, a joint DEFRA and Environment Agency project, which has been operating in areas bordering our second study site in Nidderdale. March and July 2007.

Reed, M. (2007) *"Sustainable uplands: frameworks for adaptive learning"* Presentation to Relu People and the Rural Environment Forum, UKWIR, London, 19th March.

Reed, M. (2007) Presentation of the project to stakeholders in the Peak District National Park. October.

Reed, M. (2007) Presentation of the project to stakeholders of the Upland Hydrology Group. July.

Reed, M. (2007) Presentation of the project to stakeholders of the Nidderdale AONB's JAC. July.

Stagl, S. et al. (2007) Stakeholder Workshop, 22 January 2007 London..

Smale, R., Willis, K.G. and Bateman, I.J. (2007) *"Lessons from recent assessments of benefits of water service improvements"*. Report to Ofwat and UKWIR, VividEconomics, London.

Smith, L.E.D. (2007) "*Developing a catchment management template for the protection of water resources: Exploiting experience from the UK, Eastern USA and Nearby Europe: A research project financed by the Relu programme"*. Presentation to Roadford Reservoir Visitor Centre, Launceston, Devon. March.

Smith, L.E.D. and Hiscock, K. (2007) "*Developing a catchment watershed management template for the protection of water Resources: Exploiting experience from the UK, Eastern USA and Nearby Europe: A research project financed by the Relu programme"*. Presentation to Mohonk Mountain House, Hudson valley, NY, USA. June.

Smith, L.E.D. and Hiscock, K. 2007) "*Developing a catchment management template for the protection of water resources: Exploiting experience from the UK, Eastern USA and Nearby Europe: A research project financed by the Relu programme*". Presentation to How Hill, Norfolk. November.

Smith, L.E.D., Hiscock, K. and Cook, H. (2007) *"Developing a catchment management template for the protection of water resources: Exploiting experience from the UK, Eastern USA and Nearby Europe: A research project financed by the Relu programme"*. Presentation to IGER, North Wyke, Devon. March.

Stagl, S. (2007) *"What is limiting the expansion of organic farming in our landscapes and what would the implications of a greater organic landscape be?"*. Workshop at the Organic Producer Conference, Royal Agricultural College, Cirencester. 10-11 December.

Sutherland, W. (2007) *"Sustainable Agriculture and Bio Energy"* Foreign and Commonwealth Office: Instituto Technico Superior, Lisbon. 29 November.

Sutherland, W. (2007) Input into planning Natural England's targeting of higher level scheme, London. 23 October.

Sutherland, W. (2007) Lecture Future directions in Conservation. University of Cambridge.

Swinbank, A. (2007) *"Bioenergy"* The Common Agricultural Policy - Understanding Agricultural Policy in Europe, London. December

Whatmore, S. (2007) Submission to consultation on public consultation, Cabinet Office.

Whatmore, S. (2007) *"Understanding Environmental Knowledge Controversies"* Presentation to Relu People and the Rural Environment Forum, UKWIR, London, 19th March.

Whatmore, S. (2007) Invited expert consultation on Review of Science Framework, Natural England.

Worrall, F. and Holden, J. (2007) Presentation to Natural England workshop on upland management held at Barnard Castle, Teesdale September.

Yearley, S. (2007) Science week event, Scottish Parliament. March.

PRESS AND PUBLICITY

January	Relu Newsletter	October – December 2006
	Britain Today	"Rural development, is it sustainable?" by Relu Director
	RCUK newsletter	"Strategies for managing animal and plant diseases"
February	NFU Science and Technology News	Relu debates and project events for Festival of Social Science/Science and Engineering Week on www.nfuonline.com Issue 6
	Barn	"Herio'r consensws" interview with Gareth Edwards-Jones about food miles (RES 224-25-0044)
	RCUK newsletter	"Power and responsibility" Relu debates for Festival of Social Science/Science Week
March	The Times	Reference to Relu food debate for science week Science Notebook, The Times, 12 March
	Stirling Observer	"Farmers' cash plans" coverage of Reluproject's Fish in a barn event Stirling Observer, 14 March. (RES 224-25-0066)
	Relu press release	"Carbon offsetting could fund regeneration of the uplands" (RES 227-25-001)

	Farmers' Guardian	"Carbon offsetting could help fund upland peat restoration" Farmers' Guardian 23 March (RES 227-25-001)
	Yorkshire Post	"Moorlands could be used to combat global warming, researchers (RES 227-25-001) say", Yorkshire Post 26 March
April	Relu Newsletter	January - March
	RCUK Newsletter	Relu is building interdisciplinary capacity April/May
	BBC Radio 4	Gareth Edwards-Jones interviewed BBC Radio 4 on "The Investigation" into food miles 26 April (RES 224-25-0044)
May	Scottish Farmer	Spare room in your barn? - Scottish farmers encouraged to grow their income through fish (Res-224-25-0066)
	Scotland Food and Drink website	http://www.scottishfoodanddrink.com/view_item.aspx?item_id=52934&list_id=list1-7161&list_index=221 Growing tilapia project (Res-224-25-0066)
June	Relu Briefing Paper No. 5	Power and Responsibility - Who decides? You decide!
	Relu Briefing Paper No. 6	Common knowledge? An exploration of knowledge transfer
	Daily Telegraph	"Greener by miles" 3 June – article on food miles quoting Gareth Edwards-Jones (RES 224-25-0044)
	Green Futures	Lamb in Full Flavour, by Gail Vines, 64, May/June, pp 34-37. (RES 224-25-0041)
	Artisan Foods	'What kind of Grass?' Comment by Owain Jones Vol. 3, No 1, pp 10-11. (RES 224-25-0041)
	Malton Gazette and Herald website	"Flood Study" Knowledge Controversies project appealing for members of the public to take part in competency groups. On website 25 June. (RES 227-25-0018)
	Malton and Pickering Mercury	"People can help floods research" 27 June And on website. (RES 227-25-0018)
	Social Sciences	"Is there a social scientist on board?" article by Philip Lowe Summer issue 66
	RCUK newsletter	"Pioneering new approaches to knowledge transfer" publicity on Relu briefing paper
July	Relu Newsletter	April – June 2007
	RCUK Newsletter	Unlocking change in the food chain conference in November. July newsletter
	Channel 4 Dispatches	8 pm Monday 2 July programme on carbon offsetting and labelling etc featured Gareth Edwards-Jones. (RES 224-25-0044)
	Planet Earth – NERC magazine	Carbon offsetting could fund peatland regeneration Summer issue – Sustainable uplands: frameworks for adaptive learning. (RES 2127-25-0001)
	BBSRC business magazine	Institutes win agricultural awards Angela Karp awarded 2007 research medal of Royal Agricultural Society of England – her Relu work mentioned in

		report. (RES 227-25-0020)
	SDRN newsletter	Relu Briefing paper: Power and Responsibility: Who decides? You decide! Publication of briefing paper 5
	RCUK newsletter	"Unlocking change in the food chain" publicity for Relu conference
	RICS Land journal	"Growing energy" article on biofuels project in July/August issue (by Anne Liddon) (RES 227-25-0020)
August	Farmers' Weekly	Spare room in your barn? Article about David Little tilapia project at Stirling University 3 August. (RES 224-25-0066)
	Fishupdate	Tilapia offers diversification opportunity for uk farmers http://www.fishupdate.com/news/fullstory.php/aid/8269/Tilapia_offers_diversification_opportunity_for_UK_farmers_.html 7 August. (RES 224-25-0066)
	Intrafish	University turns tilapia red 13 August http://www.intrafish.no/global/archive/;jsessionid=274866ED8EA989770CDE6FA31E044BD2.intrafish.franc. (RES 224-25-0066)
	Guardian	Pursuit of the risk vaccine – article on history of FMD research by Relu research fellow Abigail Woods 7 August
	SDRN newsletter	Relu seminar "Boundary work in interdisciplinary research on sustainable food chains" 31 August
	Yorkshire FWAG newsletter	Relu note about discussions between Relu and FWAG and references to projects and website August
	Times Higher Educational Supplement	Collaboration in research a "tick-box" trick article re interdisciplinary session at RGS conference quoting Meg Huby and Geoff Whitman and citing Relu
	Bulletin of British Ecological Society	Special issue on Interdisciplinarity edited by Alison Holt and Tom Webb. Vol.38, no.3 (check)
	Yorkshire Post	24 August The growing threat to our countryside interview with Philip Lowe
	Exeter Express and Echo	Uni wants volunteers to sit on water pollution jury – livestock waste project 18 August. (RES 224-25-0086)
	Western Morning News	Uni wants volunteers to sit on water pollution jury – livestock waste project 18 August. (RES 224-25-0086
	Pirate FM	Interview with with Rob Fish from livestock waste project 18 August. (RES 224-25-0086)
	Radio Devon	Interview with Rob Fish from livestock waste project 18 August. (RES 224-25-0086)
	RCUK Newsletter	Relu research informs land use policy Relu research highlighted in flooding review Aug/Sept
September	Town and	The challenge of strategic rural land use by Terry

	Country Planning	Carroll, citing Relu research
	Aquaculture Association of S Africa	Tilapia article in vol 4 no 4. (RES 224-25-0066)
	BBC Radio 4 Costing the Earth	6 September Stuart Lane on flooding and land use http://www.bbc.co.uk/radio4/science/costingtheearth_archive.shtml. (RES 227-25-0018)
	BBC TV News 24	BA Festival of Science Angela Karp interviewed about Relu project (RES 227-25-0020) on energy crops and Philip Lowe interviewed about interdisciplinarity and the Relu programme 4.55 pm 10 September
	Times	How seeds of technology could turn the country green reporting from BA Festival of Science on biofuels (RES 227-25-0020) project on energy crops, quoting her and Philip Lowe 11 September http://www.timesonline.co.uk/tol/incomingFeeds/article2426427.ece
	Financial Times	Biofuel crops to transform landscape reporting from BA Festival of Science on Biofuels (RES 227-25-0020) project on energy crops, quoting her and Philip Lowe 11 September http://www.ft.com/cms/s/0/98e72728-5fc0-11dc-b0fe-0000779fd2ac.html
	RICS Land journal	Water pressure – article on the Relu project on WFD in Sept/Oct issue (by Anne Liddon) (RES 227-25-0024)
	RCUK newsletter	Relu research informs land use policy and Relu research highlighted in flooding review
October	Relu Newsletter	July – September 07
	ESRC website	Disease and Distress in the Countryside by Arild Foss in current news section, quoting Graham Medley and Abigail Woods, referencing their Relu work and also Lancaster led Relu project
	BBSRC business	Making connections in rural economy and land use research and Warwick HRI – three years down the track citing two Relu research projects
	Innovations report website	Bureaucracy threatens farmers' green revolution http://www.innovations-report.de/html/berichte/agrar_forstwissenschaften/bericht-93997.html Biopesticides project. (RES 224-25-0048)
	Scenta website	Red tape and green fields http://www.scenta.co.uk/Engineering/1708324/red-tape-and-green-fields.htm Biopesticides project. (RES 224-25-0048)
	Social Sciences News from ESRC	Autumn issue no 67 First ever interdisciplinary research into animal and plant disease And Biofuels to transform landscape biofuels project. (RES 227-25-0020)

	BBC News 24	10 October Call to breed fish in farm barns http://news.bbc.co.uk/1/hi/scotland/tayside_and_central/7037234.stm (RES 222-25-0066)
	BBC Scotland	Reporting Scotland; Tilapia research interview 10 October. (RES 222-25-0066)
	BBC Radio Shetland	Tilapia research – interview 10 October (RES 222-25-0066)
	Scotland on Sunday	21 October Could exotic fish provide economies of scale for struggling Scots farmers? http://news.scotsman.com/topics.cfm?tid=15&id=1678452007&format=print (RES 222-25-0066)
	Scottish food and drink website	http://www.scottishfoodanddrink.com/view_item.aspx?item_id=52934&list_id=list1-7161&list_index=221 (RES 222-25-0066)
	Dundee Evening Telegraph	Pioneering Ecoli project 11 and 12 October (RES 229-25-0012)
	Press and Journal	Experts launch Ecoli project 12 October (RES 229-25-0012)
	Journal Metro Scotland	Experts launch Ecoli project 12 October (RES 229-25-0012)
	BBC Radio Aberdeen	Experts launch Ecoli project 12 October (RES 229-25-0012)
	BBC NE Scotland News	Experts launch Ecoli project 12 October (RES 229-25-0012)
	Manchester Evening News	Experts launch Ecoli project 12 October (RES 229-25-0012)
	The Herald	Experts unite to solve Aberdeen bug boom 16 October (RES 229-25-0012)
	Aberdeen Evening Express	Experts launch Ecoli project 12 October
	Dundee Courier and Advertiser	Experts launch Ecoli project 12 October (RES 229-25-0012)
	BBC Wales S4C	Taro Naw Tuesday 16 October Current affairs programme takes a look at the renaissance in buying and sourcing locally-produced food, featuring Gareth Edwards-Jones. (RES 224-25-0044)
	RCUK newsletter October	Unlocking change in the food chain conference
	On line specialist news sites	Protecting our beaches – article on Livestock Waste project on safe recycling of livestock waste featured on a range of specialist news websites during September 2007 http://www.sciencedaily.com/releases/2007/09/070903204950.htm http://www.medicalnewstoday.com/articles/81345.php http://www.terradaily.com/reports/Protecting_Our_Beaches_999.html

		http://presszoom.com/print_story_140793.html http://marineanimalnews.blogspot.com/2007/09/protecting-beaches-from-agricultural.html http://www.firstscience.com/home/news/breaking-news-all-topics/protecting-our-beaches_35843.html http://www.scenta.co.uk/Home/1704012/key-to-cleaner-beaches.htm http://www.scienceworlds.co.uk/experts.cfm?faarea1=theme1.contentItem_show_1&cit_id=4626 http://www.nerve.in/news:25350088590 http://www.theuonline.com/Chadwick-University.php http://www.thew2o.net/archive.html?id=68 http://www.brightsurf.com/news/headlines/32598/Protecting_our_beaches.html http://allmedicalnews.com/medical_news_comments/protecting_our_beaches_uk.html (RES 224-25-0086)
November	Relu Briefing Paper No. 7	What is relu?
	Relu Policy and Practice Note No. 1	The Role of Regulation in Developing Biological Alternatives to Pesticides
	RICS Land journal	"Uplands under pressure" – article on Upland futures project, Nov/Dec issue (by Anne Liddon) (RES 227-25-0001)
December	Daily Telegraph	Worship for bog almighty 15 December article about Uplands Futures project. (RES 227-25-0001)
	RCUK Newsletter	Relu launches new policy and practice note series
	Britain in 2008 (ESRC magazine)	The UK's Food p 9-11, citing relu food chain projects Extreme Weather p 15 citing relu "Knowledge controversies" project on flooding Planning for a land with a changing climate article by relu Director Philip Lowe on rural land use. (RES 227-25-0018)
	Food Ethics Magazine of Food Ethics Council	How should we farm animals in 2050? series of personal views including Henry Buller Winter 2007, vol 2 issue 4 (RES 224-25-0041)
	PSA News	Working with Biological Scientists by Wyn Grant www.psa.ac.uk (RES 224-25-0048)
	The Times	Never mind organic feel the foodprint article citing Relu projects The Times 31 December http://www.timesonline.co.uk/tol/life_and_style/food_and_drink/real_food/article3114744.ece (RES 224-25-0073 and RES 224-25-0044)
	BBC News	Evan Fraser (Upland Futures Project) was interviewed by BBC national news to discuss implications of locally sourced food. Broadcast on Breakfast TV and 6 o'clock News on 20 December

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

January	Regions and Regionalisation in and beyond Europe Colloquium, Lancaster University, Institute of Advanced Studies
	Integrated Rural Water Management-European Research Area-NET, Workshop, London
February	Ageing and Rural Communities Conference, Queen's University Belfast
March	CPRE Conference (David Miliband speech on Land Use), Royal Society
	ESRC Festival of Social Science 2007, Relu Debates on Power and Responsibility: Who Decides : You Decide, Royal Academy of Engineering, London - 9 Mar: *"The environment would be fine, if only scientists were in charge"* - 12 Mar: *"Consumers cannot be left to themselves to decide what to eat"* - 14 Mar: *"Farmers should be responsible for controlling livestock diseases"*
April	Joint UKERC/Relu Bioenergy Research Roadmap workshop, Oxford
May	ReluLARCI Conference "Research on Rural Resource Management an the Rural Economy: Addressing the Local and Regional Dimension", Royal Society of Edinburgh
June	Workshop on The Social and Material Practices of Agriculture, Farming and Food Production, Centre for Science Studies, Lancaster University
	UKERC Annual Assembly 2007, Cambridge
	Penn State/USDA Project: Design and Evaluation of Public Policies for Rural Development: An EU/US Comparison, Imperial College London
July	CPRE Seminar *"Population Pressures and the Countryside"*, London
	Defra workshop *"England 2050: Trends and Pressures on Land Use"*, Reading
September	BA Festival of Science, York, 9-15 September
	Special Relu Session at BA Festival of Science, York, 9-15 September: *"Working Together Across Disciplines: Challenges for the Natural and Social Sciences"*
	Relu Seminar by Professor Clare Hinrichs (ESRC-SSRC Relu Fellow), Pennsylvania State University **"***Boundary Work in Interdisciplinary Research on Sustainable Food Chains"*, Newcastle
	International Interdisciplinary workshop. *"Can Interdisciplinary Research Produce 'Good' Knowledge?"*, Durham University
October	Academy of Social Sciences Knowledge Transfer Conference, London
	Science in Society End of Programme Conference, London
	"Biopesticides - The Regulatory Challenge", Relu Project Conference, Warwick
	Relu Farm Modelling Workshop, Sheffield
November	Northern Rural Network workshop *"Developing the Regional Food Economy"* Beamish, Co Durham
	Relu Conference *"Unlocking Change in the Food Chain"*, London
December	*"Quantifying Biophilia"*, Wildlife Conservation Research Unit, University of Oxford

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	£818k of co-funding during 2007
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 29 of Relu research projects involve collaboration with other Research councils and have active stakeholder engagement
Amount of external funding for joint research (excluding joint Research Council projects)	£818k of co-funding during 2007
Number of users placed with research programme	5 + visiting fellows
Number of researchers placed in user organisations	8 work shadowers

Annex E: MATTERS FOR ATTENTION
(*Confidential*)

Annex F: DIRECTOR'S ACTIVITIES SELF ASSESSMENT
(*Confidential*)

Annex G: DIRECTOR'S OFFICE BUDGET
(*Confidential*)