RURAL ECONOMY AND LAND USE PROGRAMME

RESPONSE TO THE WELSH ASSEMBLY GOVERNMENT CONSULTATION DOCUMENT:

'A Living Wales – a new framework for our environment, our countryside and our seas'

December 2010

INTRODUCTION

The work of the Rural Economy and Land Use Research Programme (Relu) is particularly relevant to the Welsh Assembly Government's ambition to build a new, integrated framework for the sustainable management of the environment, countryside and seas of Wales, based on an ecosystems approach. This is because the Relu research programme:

- provides a rounded economic, social, and environmental perspective on land use, focusing on the challenges facing agriculture and rural areas, and offering new evidence, tools and approaches for policy development and implementation; and

- promotes interdisciplinary research between social and natural sciences and emphasises the importance of actively engaging diverse stakeholders in research.

With a budget of £25 million over the period 2004 -11, Relu has supports 85 research projects, involving 500 researchers from over 40 disciplines. Most Relu projects have been completed and their findings are now being published in the scientific literature. Relu is supported by UK Research Councils (Economic and Social, Biotechnology and Biological Sciences, and Natural Environment), Defra and the Scottish Government.

To give policy-makers ready access to Relu research findings Relu has produced a series of publications, primarily targeted at the policy community within government, public bodies and civil society organisations, bring together the latest scientific evidence from Relu projects:

- 21 concise Policy and Practice Notes, summarising for individual projects the findings of most relevance to policy development and delivery;

- 12 Briefing Papers providing in-depth treatment of specific issues, including Implementation of the Water Framework Directive *(Relu Briefing Paper 11)*, the Reform of the Common Agricultural Policy (*Relu Briefing Paper 12*), and Encouraging Local Action *(in press*);

- two Consultants' Reports providing an overview of Relu research on integrated land management in the UK, and on challenges for land use policy in Scotland.

These publications are referenced in the text, listed in full at the Annex, and can be downloaded from http://www.relu.ac.uk/news/. **They are commended to the Welsh Assembly Government as offering up-to-date evidence and ideas to inform the development of the Natural Environment Framework**.

Details of all Relu research projects can be found at http://www.relu.ac.uk/research/).

This response to the consultation draws on relevant **Relu publications and research projects**, with links provided to more detailed results where appropriate. It first

- presents a proposal for a written charter which would help the WAG and its partners to define, explain and support the new Natural Environment Framework; then

- addresses each group of consultation questions in turn.

A WRITTEN CHARTER FOR THE NATURAL ENVIRONMENT FRAMEWORK

Wales is one of very few countries in the world to have a duty of integrated sustainable development written into its constitution, with a formal statutory framework in place underpinning the Government's work on sustainable development[1]. The sustainable development scheme *One Wales One Planet* envisages Wales with healthy, functioning ecosystems that are biologically diverse and productive and managed sustainably, and expects the main outcome to be that the land, freshwater and marine environment is best managed to provide the services of food, wood, water, soil, habitats and recreation[2].

In achieving this vision it is unlikely, as the consultation acknowledges, that any of the inherited systems or priorities for managing the environment in Wales will emerge without significant proposals for change. Justifying and explaining the need for change to everyone whose participation and support is required, and then implementing the changes will be no easy task. The consultation document and its background materials are an excellent start to the process. This should be followed by a clear articulation of the shared, joint responsibilities for implementing the changes that will secure a sustainable future for the environment of Wales.

The Natural Environment Framework could be defined and supported by a written charter, re-framing the relationship between the public and private interest in land, setting out the rights, responsibilities and expectations of land managers and how these can be delivered through a combination of the market, voluntary self-regulation and action, state regulation, and actions supported by public incentives. The charter would promote collaborative action in both the private and public interest, enable important legislation to be refreshed and consolidated, and encourage both individual and collective innovation. The charter could similarly re-frame the rights, responsibilities and expectations of the public sector and civil society.

The written Charter for the Natural Environment Framework would:

- **Establish a new set of aspirations for, and expectations of, the public sector, private sector and civil society in relation to our natural environment.**
- **Significantly shift thinking among many players in many different sectors, creating an enabling framework for individual and collaborative action.**
- **Promote an *integrated* approach to managing the natural resources of Wales, so that all the dimensions of policy options are fully considered before decisions are made.**
- **Set out the rights, responsibilities and expectations of land managers and how these can be delivered through a combination of the market, voluntary self-regulation and action, state regulation, and public incentives.**

[1] Government of Wales Act 2006, Section 79.

[2] WAG (2009) *One Wales: One Planet*, the Sustainable Development Scheme of the Welsh Assembly Government

BUILDING THE EVIDENCE BASE

What new forms of information and evidence do we need to help us to focus on ecosystems and their services?

Collaborative land management - understanding the drivers and constraints

There is clearly a need to co-ordinate public investment in land management if ecosystem services are to be delivered effectively, as shown by evidence from Relu projects. **We need to find effective ways to co-ordinate land management actions at scales larger than a single farm,** appropriate for delivering the priority ecosystem services in that area, and to develop evidence-based policy mechanisms which incentivise land managers to act as a community, rather than simply as individuals.

One obstacle to collaboration among land managers is that agri-environment schemes are usually delivered through voluntary agreements with *individuals*, within legal frameworks which respect and uphold their private property rights and freedom of choice. Improving collaboration will mean finding ways to incentivise farmers to act as a *community*, rather than as individuals. Simply designing new schemes and delivery mechanisms will not in itself be enough. Joint participation may often depend on convincing farmers that the individual benefits will strongly outweigh the costs of collaboration, both perceived and real.

In many parts of the EU collaboration is an integral part of everyday agriculture, covering co-operative purchasing of inputs, sharing of machinery, worker training, harvesting and storing of produce, and marketing of crops and other products. If farmers in Wales already collaborate successfully to maximise rewards from the market, through farmers' markets, and food marketing schemes, why should they not also work together to secure rewards from the CAP for the provision of environmental public goods? One Relu project showed that farmers were willing to work together to secure agri-environment agreements if they considered that this would help to ensure the continued viability of their individual farms.

One way of encouraging collaboration might be to **reward farmers for voluntarily tackling local land management issues as a group**, agreeing co-ordinated actions across several farms, and delivering these through group agreements. Group contracts with graziers associations have already been used successfully for commons in Wales. Two Relu projects have promoted the wider use of such approaches (*Relu Policy and Practice Note 14,* www.soas.ac.uk/relu/), which could help to:

- Bring together farmers and, importantly, other stakeholders within a target area chosen at a scale (parish, catchment, landscape type) appropriate to the natural resource focus (soil conservation, water quality, farmland birds).

- Foster negotiations on changes in land use and management to deliver a range of ecosystem services at the chosen scale.

- Identify locations which could most efficiently and sustainably provide different ecosystem services, using computer models and secondary data (e.g. tools such as Participatory Geographical Information Systems).

- Encourage deliberation on scientific evidence, and critical knowledge from local land managers and others, with the aim of delivering locally appropriate solutions.

- Improve efficiency and effectiveness of public funding, by informing and validating the menu of ecosystem services to be rewarded in the area, and advising on targeting.

- Reconfigure existing incentives, or create new ones, to deliver the desired combination of ecosystem services as cost-effectively as possible.

This approach could lead to the **channelling of financial support from public funds through local groups, rather than through agreements with individual farmers**. There are parallels with the approach adopted by community 'land care' groups and programmes in other countries. This approach could also be applied to other resource management challenges which depend, for their ultimate success, on co-ordinated action beyond the farm scale. (*Relu Briefing Paper 12.)*

Resolving conflicts between different environmental objectives

A Relu study of floodplain management illustrates the benefits of a more integrated approach to decision making. It showed that if floodplains are used to store water at certain times of year, this can destroy the eggs or chicks of ground-nesting birds and set back farmland bird conservation work. Equally, maintaining high water levels in the soil and in ditches can reduce flood-storage capacity and in turn affect the extent to which flood managers can control the retention and release of water to avoid flooding downstream settlements. **Taking a holistic approach illuminates such conflicts between environmental objectives and assists in developing policy options to maximise the combined output of ecosystem services**. (*Relu Policy and Practice Note 15).*

How might we best align collective scientific and monitoring effort towards an approach focused on ecosystems?

Moving towards **'payment by results'** rather than 'payment by prescription' **will require the development of cost-effective technologies to monitor the provision of ecosystem services**. In the meantime, agri-environment schemes could specify and monitor desired outcomes rather than prescribing inputs (e.g. 'a sward of a certain composition and height' rather than 'the timing and density of grazing'). Farmers would become more involved in delivering quality environmental goods, and able to check and adjust management practices themselves. (*Relu Policy and Practice Note 14*).

How do we ensure that the full range of expertise is drawn on in accordance with the principles for ecosystem management, including different earth and social sciences?

The key principle of Relu research has been to bring together project based research teams, where **members drawn from a wide variety of environmental and social science disciplines work together**, and have access to advice and input from land managers, community leaders and policy makers.

The benefits of this fully integrated approach are not just in more holistic research findings, but an increased understanding by team members of the different viewpoints, concerns and land management experience of other members. Working together on a project over a period of many months **fosters both long lasting appreciation of the need for more effective communication between different actors, and facilitates the contacts needed to achieve this**.

Relu commends this approach, which is particularly well suited to the scale at which it would operate within Wales.

How do we provide the information tools that decision-makers, landowners and planners can apply locally?

It is very important to provide readily available and easily understand information about the environment and the effects of land management. Straightforward frameworks help to make sense

of complex interactions, and enable sensible choices to be made between options. The value of tools and approaches which help people work effectively together towards shared goals must not be underestimated. **Communication and decision-support tools** which Relu projects have developed and tested include:

- ***The 'Ecosystem Health Report' card***, which is a map-based graphic and data table that 'scores' water-quality parameters for each monitoring point within a catchment. The card facilitates discussion about actions to tackle diffuse pollution, and repeating the scoring helps to monitor outcomes. (*Relu Policy and Practice Note 7*).

- ***A 'kite' tool,*** used in the management of water pollution risks, is graphic tool that maps four variables on a scale of 1-10 on its own axis (microbial burden, transfer potential, infrastructure, and obstacles to risk management). The colour of the resulting polygon shows the overall risk (red, amber, green), while the shape indicates priorities for mitigating actions. *(Relu Policy and Practice Note 4*).

- ***Computer-based Participatory Geographical Information Systems (PGIS)*** can create spatial models and simulations; integrate local knowledge with scientific research; provide an agreed basis for wider discussion; encourage the sharing of incidental information, and help to evaluate the impact of changes. (*Relu Policy and Practice Note 18).*

Several Relu projects have developed and used ***scenarios*** to prompt new thinking among different interests. One project engaged local people in developing two scenarios for managing peatlands, for UK food security, or for carbon storage and wildlife. The scenarios prompted discussion about opportunities and threats from climate change and future options for sustainable actions. (*Relu Policy and Practice Note 17*).

Models can stimulate engagement, improve understanding, aid deliberation of options, inform targeting, and support policy decisions. Relu projects have used models in many different contexts, including:

- Bringing together economic and hydrological models to consider the costs and benefits of different ways of reducing diffuse pollution, and then examining the impacts of changes in key drivers over time. (www.uea.ac.uk/env/cserge/research/relu/index).

- Using data from a sample of different types of upland farms to model how farm income, land use and biodiversity might change under six policy scenarios. *(Relu Policy and Practice Note 13*).

- Modelling how key biodiversity indicators (weed and bird populations) respond to management changes. (www.relu.ac.uk/research/projects/SecondCall/Sutherland.htm).

- Bringing together different tools, including cost-benefit techniques, deliberative methods, and qualitative and quantitative analyses, to create a 'big picture'. (*Relu Policy and Practice Note 15.)*

What are the implications for future goals or targets?

We must continue to develop life-cycle analysis techniques and apply these, while recognising that policy decisions must also take account of economic and social considerations. Freshness of food seems to be more important to consumers than precise provenance, so more emphasis needs to be applied to freshness rather than food being 'local'. We need more accurate global databases, to enable greater sophistication in life-cycle analyses, and to promote greater openness about the underlying assumptions.

Relu research underlines the value of **accurate and comprehensive life-cycle analysis in helping to make sustainable use of finite resources** and to reduce our environmental footprint both at home and abroad. But choices between different options must take account of all dimensions, not just environmental, but economic and social too. Although progress is being made in developing life-cycle assessments for natural resources, more work is needed to improve the quality of the data used, their sophistication, and fairness in treating very diverse production systems, for example by:

- Developing more precise and accurate databases of land use and emission factors for different agri-ecological zones.

- Establishing a single, easily accessible global database of all the data needed to determine carbon footprints for farm products.

- Publishing all the assumptions behind carbon footprints used in labelling schemes, so that it is clear which impacts have (and have not) been considered.

- Distinguishing between different phases of the life cycle, including the user phase (e.g. to show consumers that the relatively high footprint of products such as coffee reflects carbon usage in the home, rather than the actions of producers in developing countries).

These challenges have been illuminated by a Relu study of the relative carbon footprint of vegetables consumed in the UK but grown (a) in UK glasshouses, (b) in Spain and driven here, or (c) in Africa and flown here. Perhaps surprisingly, the energy costs of growing a crop in heated glasshouses in the UK may in fact exceed those of growing it in a field in Africa and flying it here. The overseas trade will bring important economic and social development benefits to the growers in Africa, and the food will also be fresh (importantly, the research showed that 'freshness' is what consumers particularly value about 'local food'). This study suggests that policy-makers need to think carefully about the wider implications of carbon labelling before introducing such approaches to guide consumers. Without careful assessment, these could have serious, and often unfair, implications for developing countries which export food crops. While developing countries could take practical steps to reduce their carbon footprint, by increasing yields, and by carrying out more processing locally (so that goods could be transported by sea rather than by air), accounting methods also need to be refined (for example by including both the carbon sequestered under bush crops such as coffee, and the carbon embedded in machinery used in developed countries). (*Relu Policy and Practice Note 11.)*

VALUING ECOSYSTEMS

What is the societal value of ecosystem services in Wales?

Which services could be captured financially and how?

An 'ecosystem services' approach is deliberately holistic, recognising the value of all the diverse ecosystem services provided by any one area of land - whether 'provisioning', 'regulating', 'cultural' or 'supporting'. All existing and potential ecosystem services should be regarded as legitimate, and be fully reflected in decision-making. This approach also usefully emphasises that real environmental limits must be respected if land is to continue to provide a wide range of ecosystem services into the future.

The values which society today places on different ecosystem services are reflected in current market interventions and environmental legislation, and in associated policy and funding mechanisms which incentivise specific services, or regulate damaging activities. For example, food production has been valued more highly than biodiversity, landscape beauty, water quality or other services; this is still reflected in the relative balance of funding for Single Farm Payments and agri-environment schemes. **A more balanced approach to priorities between different ecosystem services in future would lead to a shift in such relationships**.

Relu projects show that adopting an approach which recognises the societal value of ecosystems services will help policy-makers to:

- Identify and quantify the range of services provided by land and water under different management options, drawing on evaluations of diverse data sets for any one area.
- Understand the synergies and trade-offs between the different types of benefits and costs associated with different options for land and water management.
- Reconcile competing objectives with policy measures which reward land managers for providing environmental public goods that are not rewarded by markets for food, fibre and energy.
- Appreciate how benefits and costs are distributed among different public and private interests, facilitate dialogue among them, and show what can and cannot be achieved through collaborative working.
- Design and promote new forms of land and water management that can deliver intended outcomes more cost-effectively.
- Design targeted policies that reward land and water managers for providing a wider range of beneficial services, within a single framework.
- Support the 'joining-up' of hitherto fragmented policy objectives and funding mechanisms.
- Adapt polices to future challenges (political, economic, social, technological, legal and environmental), incorporating new knowledge as it becomes available.

How do we best factor costs and benefits into decision-making?

Relu projects have adopted several approaches in attempting to value ecosystem services. However, it is clear that valuation techniques for non-market benefits have weaknesses, and may be better used to inform rather than determine decisions. **A pragmatic suggestion is that the appropriate value to place on any desired service is the cost of the intervention which brings about the specific action or change in behaviour required.** Adopting this approach could lead to payments for the provision of environmental public goods which reflect the true cost of providing different ecosystem services rather than the opportunity costs of farming the land. (*Relu Policy and Practice Note 14*).

Are there further opportunities within current or future EU policy, such as CAP?

EU law provides the framework for most UK policy and practice in relation to management of natural resources, particularly the Common Agricultural and Fisheries Policies, and the Water Framework, Habitats, Birds and (proposed) Soil Directives. The UK also plays a role in developing international policy, including conventions on Biodiversity and Climate Change, and on world trade negotiations.

Established policy frameworks that will require adaptation to deliver an effective ecosystem services approach to current and future strategic challenges include:

- **The Common Agricultural Policy**: in particular, strengthening agri-environment schemes to enable comprehensive and effective delivery of critical ecosystem services that are environmental public goods and not delivered through markets.

- **The Common Fisheries Policy**, and **UK fisheries legislation**: in particular, improving protection of wild fish stocks and developing alternative sources of fish protein (e.g. through sustainable forms of fish-farming).

- **The Water Framework Directive** and associated **water quality legislation**: in particular, delivering integrated, catchment-scale collaboration among the diverse interests involved in land and water management. *Relu Briefing Paper 12* sets out relevant findings from Relu projects to inform the current debate on CAP reform, and *Relu Briefing Paper 11* emphasises the need to improve engagement, policies and governance arrangements to facilitate successful implementation of the Water Framework Directive in the UK.

- **Soil policy**: in particular, developing strategic policies to protect soils and improve their management, so that they are better able to deliver a wider range of ecosystem services, including producing food, alleviating flooding, and cycling nutrients.

- **The Habitats and Birds Directives** and **UK legislation for biodiversity**: in particular, developing traditional approaches, based on designating 'hot-spots', into a whole-landscape approach, with more emphasis on creating habitat networks and restoring biodiversity.

From small-scale beginnings in the 1980s, agri-environment schemes have developed over the last 25 years as a largely effective way of broadening the focus of rural land management to include protecting and enhancing natural assets, alongside the continued production of food. Relu projects offer particularly **useful insights into agri-environment schemes**, which are relevant to other land management polices too, including forestry.

The new Glastir scheme will be an important policy tool in delivering the ecosystems services approach, and bringing together support for agricultural and forestry management, activities which are now much more closely linked since the decoupling of agricultural support shifted the balance

of land use decisions at farm level. The first Glastir agreements will take effect in 2012 or 2103, shortly before the next CAP reform is implemented. The start of next Rural Development Programming period of 2014-20 will provides a golden opportunity to review and refine the design of Glastir, in the light of two years' experience of implementation.

Drawing on Relu findings, **key recommendations for future agri-environment policy and delivery** in Wales are:

- **Increased, secure funding for delivery of environmental public goods**: agri-environment schemes should be retained as a key mechanism for delivering environmental policy within the CAP. A radical increase in funding is required to fulfil their new, wider role in delivering environmental policy commitments and ecosystem services, whilst at the same time safeguarding the continued provision of biodiversity and other environmental benefits which been achieved on land that has been under agri-environmental management for many years. Agri-environment measures should be allocated a higher proportion of the CAP budget and be supported at a higher rate of EU co-financing. Payments to farmers should be at a level which ensures that desired environmental public goods will continue to be provided following any changes to the Single Farm Payment from 2014. Payment calculations should reflect the real costs of delivering public goods, both on the more productive land and on the large areas of land in Wales where unprofitable farming is providing high levels of ecosystem services and public goods.

- **Ecosystem services approach**: agri-environment schemes should be explicitly designed and implemented within the framework of an ecosystem services approach to the delivery of environmental public goods. Glastir is intended to support an ecosystems services approach, with targeted options covering the management of water, soil carbon, biodiversity, landscape and historic features. Delivering these services coherently and cost-effectively at farm level will require significant input of time and effort to reconcile the varied demands on land, set priorities, and identify and tackle conflicts. (*Relu Policy and Practice Note 15*).

- **Land management at the right scale**: the menu of land management options, in any one area, should be based on a systematic assessment of all the environmental public goods which could be provided by farms in that area. Management prescriptions should be tailored, as far as possible, to local conditions, and uptake targeted at the most appropriate scale (e.g. 'catchment' for water quality, or 'landscape' for farmland birds). (*Relu Policy and Practice Notes 13 and 14*). The existing map-based approach to delivery of the targeted element of Glastir could be developed, using GIS, to focus management at the scale appropriate for the delivery of different combinations of public goods.

- **Involving stakeholders in scheme design and delivery**: advice from local farmers and other stakeholders on scheme options, delivery, and how to co-ordinate action between farmers can be of great value. Their advice should have a more prominent role in the process of designing, delivering and reviewing agri-environment schemes. More use should be made of tools to support deliberation on objectives and priorities, and to help resolve conflicts. Participatory Geographical Information Systems offer one useful approach to this. *(Relu Policy and Practice Note 18).*

- **Promoting collaborative approaches**: The scale at which scheme agreements are planned, negotiated, funded and delivered should shift, over time, from the *individual* farm to the local *community* of farms. Key considerations in making this shift include:

- Rewarding farmers fairly for the additional benefits and costs of collaborative action, and ensuring that farmers outside agreements cannot negate the work of those within them. (*Relu Policy and Practice Note 14* and Waterton *et al*, 2006)

- Building on experience and precedents from elsewhere in Europe, where collaborative agri-environment agreements have been successful (e.g. in the Netherlands).

- Improving cost-effectiveness and landscape scale benefits for wildlife by co-ordinating agri-environment management spatially across several farms. (*Relu Policy and Practice Note 13*).

- Improving water quality by co-ordinating agri-environment management on farms across the catchment. (www.lancs.ac.uk/fass/projects/loweswater/ and www.soas.ac.uk/relu/).

- **Addressing emerging challenges:** agri-environment schemes should have the both the scope and funding capacity to address the challenges of climate change, biodiversity loss and water quality, for example by:

  - Promoting carbon storage through land management that prevents the loss of soil carbon, especially in the uplands, and increases the rate at which carbon is taken up from the atmosphere. It will be important to ensure that the benefits of this are not offset by increased emissions of other greenhouse gases. (*Relu Policy and Practice Note 14*).

  - Encouraging integrated pest management by creating habitats to harbour predators which will eat pests (biocontrol), adopting complementary nutrient and soil management practices, and supporting these with new technologies such as biopesticides). This will also help to ensure that chemical pesticides are used only when they are really needed. (*Relu Policy and Practice Note 10*).

  - Improving water quality, for example by using streamside fencing to reduce faecal contamination of water by livestock. This will reduce public health risks of pathogens in drinking and bathing water, and in shellfish. (*Relu Policy and Practice Note 4*).

  - Responding to threats, for example by restoring landscape features damaged by diseases and pests *(Relu Policy and Practice Note 16*).

- **Reviewing support for conversion to organic systems in areas of highly-productive farmland**. A more environmentally effective use of agri-environment support might be to focus on creating networks of land managed primarily for biodiversity around intensively managed fields on conventional farms. The benefits could be enhanced by using 'no-till' or 'low-input' management. (Gabriel *et al*, 2010).

- **Providing formal agri-environment training**, targeted on novel or technically-difficult options, as an integral part of all schemes, to improve their overall environmental effectiveness. This will help farmers to understand scheme objectives, and support them in exercising their land management skills (see www.ceh.ac.uk/farmcat/).

- **Sharing experience of payment calculations with other Member States,** with the aim of establishing consistent practices which provide appropriate rewards for the long-term provision environmental public goods, recognising the full costs of such provision.

Which economic tools could be most effective in securing long-term sustainable decision-making?

Securing the long-term delivery of environmental public goods will require agri-environment schemes to incorporate, or be supplemented by, **new contractual mechanisms to secure land management that delivers environmental public goods over periods of decades rather than years.** This will be particularly important in managing carbon, and in restoring, re-creating or linking wildlife habitats.

There are novel policy mechanisms that could be employed for securing long-term management of land for environmental purposes, including those that have been used successfully in other countries. New research has an important part to play. Relu projects have shown, for example, that water suppliers in the UK, and elsewhere, have purchased water-gathering grounds to protect them from pollution. This approach could be extended to the **purchase of groundwater catchments**. Alternatively, water companies are seeking to protect water resources by working directly with land managers, and more than 100 **catchment management schemes** and investigations are testing this approach. The results could inform efforts to move away from 'end-of-pipe', energy-intensive, engineered solutions to providing high quality of drinking water. (www.soas.ac.uk/relu/, OFWAT 2009).

Mechanisms more commonly used in other parts of the world include the **public purchase of long-term easements or covenants** restricting land use, or **sale-and-leaseback** arrangements. **Payments for Ecosystem Services (PES)** are voluntary transactions between land managers and individuals or groups which benefit from the services provided. A new Relu project will evaluate the Westcountry Rivers Trust's WATER project, which aims to develop a market-based catchment restoration scheme. (www.relu.ac.uk/research/projects/Fourth%20Call/Smith.html). Another approach, used in England by the National Forest, is **a tendering process for land managers** to specify what services they will provide, at what cost, over what period, and then bid competitively for a share of the funds. There may also be opportunities to **raise funds for land management from consumers** (as visitors and tourists) and through local community and charity initiatives. (*Relu Policy and Practice Note 14* and www.see.leeds.ac.uk/credit).

Economic tools are not always focused directly on land management. Other European countries have a long history of supporting farming systems marketing **very high quality food and other products,** which are widely associated with vibrant forms of rural regeneration. Providing similar support in the UK could help kick-start and sustain a range of businesses based on the sustainable management of natural resources, bringing many other benefits (e.g. sustaining rare livestock breeds, local food chains, highly-valued wildlife habitats, and traditional landscapes). One Relu project looked at the niche market opportunities being exploited by a new generation of farm entrepreneurs, and by long-standing farm businesses. These focused on the production and marketing of products such as 'salt-marsh lamb', using traditional farming systems based on unimproved pastures. The policy implications of this project may be of wider application in driving smarter, greener growth. (*Relu Policy and Practice Note 3*) Supportive policy measures could include:

- Providing agri-environment and other Wales RDP support to promote such shifts in farming systems.

- Developing labelling systems based on product, place or process (like those in France and Italy) to encourage and support specific products such as salt-marsh lamb.

- Providing targeted support to set up producer groups and support collaborative production, processing and marketing.

- Aligning management options under agri-environment schemes with the requirements of quality production schemes, for example for management of species-rich grasslands.

- Developing the links between sustainable farming practices, landscape quality and product marketing (e.g. through the Grazing Animals Project, Wildlife Trust projects, and other producer, food and community group initiatives, including projects focused on game, such as venison). (*Relu Policy and Practice Note 3*).

In the energy sector, the introduction of energy feed-in tariffs has provided a significant incentive to micro-energy generation schemes. Similar mechanisms could be used to encourage the development and uptake of other new technologies. New green business opportunities for farms will come from unmet potential in the renewable energy sector. Support for **small-scale anaerobic digestion schemes**, often on farms, in Austria, Germany and Denmark has resulted in high levels of energy production and many other benefits for rural communities (www.ad4rd.soton.ac.uk/). Government targets for generating electricity from biomass will stimulate establishment of **low-input perennial biomass crops such as short-rotation coppice willow and *Miscanthus* grass**. A Relu project developed GIS tools to integrate the evidence for decision making, mapping land suitability and appraising sustainability for these new crops. (*Relu Policy and Practice Note 9*).

REFRESHING REGULATORY AND MANAGEMENT APPROACHES

How do we best link the various regulatory and management mechanisms to achieve an integrated approach? How can we do this in the most efficient, effective way given the financial constraints?

There are nine main policy mechanisms that have been used to differing extents to protect and enhance natural assets over the past 20 years, but there have been criticisms about a lack of coherence in their design and delivery:

- *Providing information, advice and training*: e.g. the Codes of Good Agricultural Practice for water, soil and air; nutrient management plans, and the Catchment Sensitive Farming Programme.

- *Promoting voluntary action*: e.g. the Voluntary Initiative for Pesticides.

- *Offering incentives:* e.g. annual management payments and capital grants under the agri-environment schemes.

- *Levies charges, and taxes:* e.g. levies on farm produce to contribute towards marketing and research work, and charges for abstraction licences.

- I*nvesting in infrastructure*: e.g. by the water industry (drinking water, sewerage), the Government (managing flood risk), and developers (sustainable urban drainage).

- *Regulating land management* through statutory designations and rules: e.g. Nitrate Vulnerable Zones, Sites of Special Scientific Interest and CAP cross-compliance.

- *Regulating built development* through land-use planning: e.g. at various spatial levels.

- *Purchasing or leasing property rights* in the use and management of land: e.g. easements or covenants under which farmers accept restrictions on how they manage land in return for payment.

- *Purchasing land outright*: to enable direct control of its use and management, instead of seeking to work through existing owners and managers of land.

The Natural Environment Framework provides an opportunity to improve coherence of policy mechanisms at both UK and EU levels within a new, integrated policy framework that is designed to adapt to changing needs and circumstances.

Relu projects have examined how several policy mechanisms currently operate, and how they might be improved. Relu Briefing Papers on the Water Framework Directive **(***Briefing Paper 11*), and the Common Agricultural Policy (*Briefing Paper 12*), and many of the Relu Policy and Practice Notes (see Annex) draw on research findings to provide evidence to support the development of policies for land, water and biodiversity and also, importantly, to develop delivery tools and approaches.

We face multiple, incremental environmental challenges including biodiversity loss and water quality, alongside climate and demographic change. All have political, economic, social, technological, legal and environmental dimensions, and if we are to tackle these challenges with the support of and active involvement of land managers, we must **move towards an Engage-Deliberate-Decide approach to decision making** (instead of Propose-Announce-Defend), to engage people more effectively. This has to be done by means of more integrated thinking within

EU, UK and Wales policy frameworks. Only by taking all these dimensions into account can we find effective ways forward.

Land-use planning policy in particular needs to broaden policies that now focus on protecting agricultural land essentially for its provisioning role into policies that in future recognise the value of the safeguarding the much wider range of ecosystem services that rural land provides, alongside food production; and embedding the ecosystems services approach within the development planning and control framework. (www.relu.ac.uk/research/projects/Fourth%20Call/Scott.html).

These land use planning decisions cannot be effectively tackled by the traditional linear path of diagnosis, development of preferred options by experts, public consultation, a political decision, and implementation. The more sophisticated approach of 'Engage-Deliberate-Decide' will be needed if organisations and individuals, including land managers and local communities, in particular, are to be engaged effectively in tackling the challenges.

How far would the current framework of regulation and management need to adapt to meet these new goals?

There is an opportunity to developing a stronger role for local authorities across Wales in managing natural resources, building initially on the *One Wales One Planet* spatial planning concept of a networked environment region in south east Wales, which will focus on connecting habitats, allowing wildlife to adapt to climate change, making the landscape more accessible and providing eco-system services.

Adopting and applying the good practices developed by Relu projects will help enablers, such as individual activists, community groups, local elected councillors and local authorities, to take a lead in encouraging and supporting local action to support the delivery of ecosystem services.

Relu has examined the role of local authorities in managing water resources, but the opportunities could also apply to the management of biodiversity and other natural resources. Individual or groups of local authorities could, at a catchment level, co-ordinate, plan and integrate the actions of all public sector players, voluntary organisations and businesses; they could influence priorities and targets within their area, collect and publish data to support actions and monitor success. They could lead and manage engagement with local people, provide training and networking opportunities, stimulate and support locally-led initiatives, and 'join-up' implementation among different interests within their areas, and with other authorities and stakeholders working in the same catchment. *(Relu Policy and Practice Note 20*).

Local authorities will face some challenges in taking on these roles. There may be a need to strengthen capacity and capability, which will be difficult at a time of financial restraint. Legislative changes may also be needed to give local authorities sufficient powers to take on a larger role in managing natural resources. They may also have to reposition their relationships with other public bodies. Nevertheless, local authorities are well placed to be instrumental in promoting beneficial change, through their ability to provide a strong local focus for exchanging ideas and information, developing partnerships, and encouraging collaboration.

REFRESHING PARTNERSHIP MECHANISMS

How do we ensure all the various stakeholders and sectors can shape the implementation of the framework positively?

Rural communities are well placed to lead localised policy-making and action, need focused help and support to do so. The Local Government Information Unit has recently promoted four principles for local leadership on environmental projects: '*setting a long term vision, promoting community engagement, attracting investment, and progressive partnership*' (Lee, 2010). These can also be adapted to apply to economic and social concerns.

Relu research has demonstrated a wide range of tools and approaches to promote shared understanding and collaboration and new approaches for partnership working, especially at a local level. Many Relu projects, particularly those focused on managing land and water, have drawn actively on the ideas, knowledge and experience of local people. The projects have built significantly on established approaches for engagement, going beyond 'consultation' or 'participation' by emphasising 'deliberation', 'co-creation', and 'learn not tell'.

Recommended good practice for engagement, distilled from Relu experience, includes *(Relu Briefing Paper 11)*:

- Targeting specific local issues at an appropriate scale (neighbourhood, parish, catchment, or landscape), and engaging people from the outset, when challenges are first being aired, not after the research, analysis and action plans have already been finalised.

- Bringing together the key players in the area (land managers, local interests and public bodies) also looking for and involving any outsiders who could help.

- Being clear about the specific objectives for involving people, and seek to understand and share their different perspectives, priorities and motivations.

- Combining, and encouraging respect for, different types of expertise (including scientific data and models, and local knowledge and ideas).

- Using face-to-face meetings, field workshops and discussions to develop trust and share information; having independent skilled mediators or facilitators to lead, if necessary, to promote common understanding and defuse any conflicts.

- Using Geographical Information System tools to aid discussion and create an agreed understanding of problems, opportunities and constraints, informed by local inputs.

- Getting people to co-create and deliberate on 'as is' and 'to be' models and scenarios, and to develop innovative proposals adapted to local conditions. Using dialogue to inform and validate actions, and seeking funding to deliver these.

- Ensuring shared and open access to data to help everyone understand the issues, and to measure impacts and monitor success.

- Continuing with active engagement over time, with regular reviews and adaptation to take account of new information, always recognising that it often takes substantial time to build the trust and understanding needed for successful collaborative working.

Engaging local stakeholder groups in tackling environmental issues is not always straightforward, particularly where there may be a history of conflict between the players. Examples of **approaches used** by Relu projects **to engage local people include**:

- ***Competency groups*** to integrate scientific knowledge and local experience. By working together to incorporate local knowledge of floods in a standard flood risk model, local people and scientists were able to explore scenarios, discuss costs and trade-offs, identify and deliberate on options for action, and deliver widely-owned solutions that were more likely to be implemented. The local participants brought a wide range of knowledge and expertise to the discussions, and the involvement of independent facilitators was important in promoting constructive dialogue. (http://knowledge-controversies.ouce.ox.ac.uk/ and Ryedale Flood Research Group, 2008)

- ***Community catchment management***, where researchers explored a complex diffuse pollution problem, affecting a lake, with local farmers, tourist businesses, and public bodies. A community group promoted surveys of local practice, and the installation of a buoy on the lake to monitor water quality. The feedback and data are helping local people to take decisions which should deliver a range of benefits. (www.lancs.ac.uk/fass/projects/loweswater/)

How do we build a common view of the true significance of `green and blue infrastructure` of Wales and a language to describe it that communicates well with the wider public?

[Please see also the response to the question on information tools in the section on the Evidence Base, above.]

A*wareness-raising among users* can promote positive environmental messages. Examples from other countries include signs in the Hudson River catchment which remind visitors, every time they cross a tributary stream or watershed, that any waste will end up in the iconic Hudson River estuary. Similarly, signs are used in the Netherlands to inform visitors that access to trails is just one of several local ecosystem services, alongside water supply protection, biodiversity and flood risk alleviation.

How might we improve current stakeholder and delivery arrangements to meet the new challenges? How can we do this in the most efficient, effective way given the financial constraints?

Mobilising the time, energy and skills of **volunteers** could bring significant benefits in managing natural resources. For example, anglers, fishing clubs and fishery managers have a wealth of knowledge about particular water bodies and an active interest in safeguarding water quality and improving fisheries. Harnessing this potential requires both effective communication with volunteers and support for them, for example with training. There is scope to expand the work of Rivers Trusts, and of local initiatives such as RiverCare (www.rivercare.org.uk/), which actively engage local communities in monitoring, managing and enhancing the water environment, particularly in towns. (*Relu Policy and Practice Note 21*).

More formal structures, such as **community action groups, trusts and co-operatives,** could be modelled on the environmental co-operatives in the Netherlands which bring together farmers and other local people to implement large scale environmental management projects on farmland. A new Relu project will take this work further, studying the scope for collective contracts within agri-environment schemes. (www.relu.ac.uk/research/projects/Fourth%20Call/Franks.html)

What are the appropriate partnership vehicles to take forward the ecosystems approach?

We have a once in a generation opportunity to shift thinking away from a short-term 'winner takes all' approach to resource management, towards **a holistic approach, whereby decisions are based on the long view and driven by a desire to optimise the yield of ecosystem services from any one area.** We could move away from a focus on influencing the management of individual parcels of land, without reference to the wider landscape, towards one where proposed actions are viewed in the context of local synergies and trade-offs, and actions are planned and managed at the most appropriate scale for the ecosystem services involved. This is a scenario in which land management contracts would be negotiated with groups of land managers, rather than individuals, promoting collaborative action to deliver benefits which are greater than the sum of the parts. It would value and draw on the knowledge and expertise of people who understand their local environment, discourage "silo" thinking within the public sector and adapt readily to new evidence and changing conditions.

This could be achieved by:

- **Providing communities with official environmental information**, in accessible formats, which enables them to 'own' local challenges, to tackle them, and to monitor success.

- Promoting **civil society organisations as collaborative partners for public bodies**, on an equal footing, recognising their valuable roles as providers of local information on the environment, and of skills and expertise, and as promoters of voluntary action.

- Providing **support as necessary to build the capacity and capabilities of civil society organisations** so that they can play enduring roles in the new organisational structures.

- Providing better **information for individuals on how lifestyle choices impact on their health and on natural resources** (food, water, carbon, biodiversity).

A better shared understanding of environmental challenges and, so far as possible, a shared view of the actions needed to tackle them, among land managers, rural and urban communities, businesses, and voluntary organisations, would provide a firm basis for collaborative action in all our interests.

We need **more integrated thinking about the implications of one course of action for other policy objectives and better connections between public bodies, policy areas, regions, local authorities, generations and countries.** Relu research has focused on bringing different disciplines together to study what have traditionally been conceived as single-issue problems, and on engaging local people and communities. This has underlined the need for *more integrated thinking* about the implications of any one course of action for other policy objectives. Policy-making and policy delivery needs to become much more 'rounded', 'joined-up', 'networked' and 'holistic' - but without falling into 'paralysis by analysis'. The key requirement will be to make better *connections*, for example between:

- **government departments**: between the WAG departments and non-departmental bodies responsible for the environment, planning and land use.

- **policy areas**: the links between the environment and the health of individuals, and the public as a whole, in an ageing and largely sedentary population.

- **regions**: the significant environmental and social inequalities between different parts of the country must be reflected and addressed in policy-making. (*Relu Policy and Practice Note 12*).

- **local authorities**: protecting water quality and water resources within catchments, safeguarding soil from mis-management, and restoring biodiversity through green infrastructure, corridors and networks, will require much greater collaboration between local authorities, because natural resource units are not defined by political boundaries.

- **generations**: we must take the interests of future generations into account in our decisions today, by building resilience into ecosystems so that they can continue to deliver a range of sustainable public goods, even under significantly-changed environmental, social and economic conditions.

- **countries**: there is scope to learn from experience overseas, not only in Europe, but also from Australasia, North America and elsewhere, in managing natural resources within modern democracies.

Current arrangements for managing the water environment underline the need to develop integrated approaches. The many activities and functions which impact on water quality at a catchment scale include: spatial planning, highways, surface water, storm water, waste management, domestic septic tanks, water supply, sewerage, land drainage, agri-environment schemes, stream corridor management, plus monitoring and research. Yet these fall under many different organisations with diverse remits and responsibilities. Successful catchment management will require great efforts to improve horizontal and vertical coordination, and collaboration, between many players. (www.soas.ac.uk/relu/). Local authorities, the Environment Agency, the water companies and OFWAT all develop relevant appraisals and plans, but tend to run on asynchronous cycles, have different priorities, and share limited information. The development of river basin management plans may stimulate a more coherent approach, helped by new tools, such as Water Cycle Studies, which deliberately take an integrated approach in assessing the impacts of planned growth on the water environment. (*Relu Briefing Paper 11*).

Which are the key sectors and policy areas that would need to reflect the new approach?

The key sectors that need to reflect the new approach are **agriculture, forestry, water resources and fisheries**; and the key policy areas are **spatial and development planning, rural land management, environment, GHG and renewable energy**, and **health**.

One illustration of the critical need for much closer integration of different strands of policy is provided by the debate on human health and the environment. Several Relu projects have examples of the benefits of taking a cross-sectoral approach to policy decisions and their impacts:

- People are being encouraged to eat more fish, but this threatens declining wild stocks. Fish farming provides an alternative but faces criticism for pollution, poor welfare standards, and using wild fish as a source of fishmeal for the farmed fish. Small-scale inland aquaculture systems could offer a sustainable solution to the need for fish protein in human diets, provided these systems are properly integrated with other local food chains, and use low-carbon energy sources. This would also offer a valuable business opportunity for farmers and other rural people. *(Relu Policy and Practice Note 2*).

- Withdrawing harmful pesticides from the market protects human and environmental health, but can present a challenge for the effective control of farm pests and diseases. This is an opportunity to develop biopesticides, which are naturally occurring substances, microorganisms, and ‘signal’ chemicals produced by plants that all help to

control pests. This demonstrates that 'high-tech' can also be 'green', and that we should use all the technology at our disposal to promote environmental benefits. (*Relu Policy and Practice Note 10*).

- Pathogenic microorganisms in livestock waste may pose significant risks to public health if they contaminate coastal bathing waters, food or drinking water. Farmers may not appreciate that their management of livestock waste or slurry on land upstream, several miles away from main rivers and the coast, could have such impacts. Policies for environmentally sustainable livestock management should take account of this public health dimension. (*Relu Policy and Practice Note 4.)*

- Improving public awareness of health risks in the natural environment could usefully encourage greater personal responsibility. For example, targeted information on the risks of infection with *E. coli* and tick-borne Lyme disease, and how these risks can be minimised would help people to enjoying the countryside more safely, without causing undue anxiety. (www.abdn.ac.uk/reluecoliproject/ and www.forestresearch.gov.uk/fr/INFD-77CEKT).

REFRESHING INSTITUTIONAL ARRANGEMENTS

It is not appropriate for Relu to comment on the detailed questions for the Environmental Delivery Bodies Review, but responses to earlier questions have illustrated the importance of an integrated approach to land management for ecosystem services, that involves the full range of stakeholders, irrespective of the institutional arrangements.

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ANNEX

Relu Briefing Papers

Copies may be downloaded from: www.relu.ac.uk/news/briefings.htm

1 Setting the research agenda
2 Rural economy and land use futures
3 The unfolding research agenda
4 The UK rural economy and land use debates
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6 Common knowledge? An exploration of knowledge transfer
7 What is Relu?
8 Land to mouth: exploring the links between sustainable land use and the food we eat
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4 Safe recycling of livestock manures
5 Stakeholder participation in the management and communication of food chain risks
6 Implications of a nutrition driven food policy for the countryside
7 Catchment management for the protection of water resources: The ecosystem health report card
8 Regional rural land use: a time for fresh thinking
9 Assessing the social, environmental and economic impacts of increasing rural land use under energy crops
10 Overcoming market and technical obstacles to alternative pest management in arable systems
11 Comparative merits of consuming vegetables produced locally and overseas: Fair and evidence-based carbon labelling
12 Social and environmental inequalities in rural areas
13 The sustainability of hill farming
14 Sustainable uplands: reshaping land use policy for our hills
15 Integrated management of floodplains
16 Policy-making for animal and plant disease: a changing landscape?
17 Sustainable uplands: learning to manage future change
18 Collaborative frameworks in land management: a case study on integrated deer management
19 Bovine tuberculosis: a problem for farmers, conservationists and policymakers
20 The changing role of local government in managing water resources
21 Angling in the rural environment

Relu Consultants' Reports

Copies may be downloaded from: www.relu.ac.uk/news/ConsultantsReports.htm

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