

ABSORB is a collection of briefings summarising socio-economic research conducted by staff at the Macaulay Land Use Research Institute (MLURI) and the Scottish Agricultural College (SAC), including research commissioned by the Rural Social and Economic Research Team in the Scottish Government Rural and Environment Research and Analysis Directorate (RERAD).

The publication has two main aims:

- To increase awareness within the wider scientific and policy community of the socio-economic research carried out at these organisations.
- To facilitate greater interaction and collaboration between researchers at MLURI and SAC.

This issue of ABSORB begins with a Foreword from Alan Renwick, Manager of the Land Economy and Environment Research Group (LEERG) in SAC. The first section highlights some of our research on Sustainable Economic Growth. Research conducted by PhD students is the subject of the second section. The issue concludes with current news and information about the two research groups.

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# FOREWORD

**Alan Renwick**

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This edition of ABSORB focuses on sustainable economic growth. The Scottish Government placed this at the heart of the National Performance Framework.

Through highlighting examples of our research it shows how social scientists from the MLURI and SAC are undertaking research that can make a positive contribution to the achievement of this goal.

Of course, developing our understanding of what sustainable economic growth actually means provides many challenges for researchers and policy makers alike. As we come out of the worst recession for generations, it is not surprising that the focus of many is on economic growth. However, there has long been concern that simple measures of economic growth are inadequate in assessing the true wellbeing of a country. Moving away from measures such as Gross Domestic Product (GDP) may be seen as an important component of improving our understanding of sustainable growth, but

this leaves many challenges in terms of what should take its place. Some argue that we should 'green' our national accounts – that is adjust them to more accurately take account of the environmental impacts (both positive and negative) of growth. Others are concerned that reducing inequalities in society is as crucial as growth itself in ensuring sustainable development. Yet others suggest that measures such as quality of life and happiness are actually more important than income growth itself. Social scientists from the MLURI and SAC are currently involved in developing research for the next five year period for the Scottish Government in which improving our understanding of what is meant by sustainable economic growth will form a key part. This includes gaining a better understanding of why some rural areas are more successful than others, the importance of decision making structures in enabling growth and how we can break the apparent link between economic growth and greenhouse gas emissions.

Our research is not only undertaken in Scotland, but across the globe, including within developing countries. Investigating economic activity within such countries is vital, not only to address poverty alleviation, but to do so in a manner that will sustain the natural resources many of these countries depend on.

globe. However, perhaps more important than the topics themselves, is the training and understanding that many are gaining by working on projects that cross scientific disciplines. Both the MLURI and SAC are committed to research approaches that integrate different scientific disciplines and PhD studentships are an important component of strengthening this ethos in both institutions. We feel that only by working across disciplines are we able to begin to tackle the major challenges facing rural areas into the future and we aim to train scientists to be ready and able to meet these challenges.



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This edition of ABSORB also showcases the work of PhD students from across the two institutions. It is clear that a wide range of interesting and important topics are being examined by students originating from across the



# SUSTAINABLE ECONOMIC GROWTH



## What is Sustainable Economic Growth?

**Dominic Moran,**

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Increasingly economists and politicians are reflecting on this question, with many concluding that conventional growth as reflected in the National Accounts (i.e. the Gross Domestic Product or GDP), is a poor reflection of “true” growth or any reliable picture of national wellbeing. This is hardly surprising given that growth accounting conventions were developed in an era when the environment was not thought of as a real capital asset. So, given what we know now, might it be time to revise the way we think about growth?

In short, GDP measures the value of all we produce in an economy. Lots of things that we consider valuable do not show up on the annual account, so for example, the annual flows of services from many stocks of ecosystems and natural assets are not counted and therefore apparently do not contribute to growth or wellbeing. Worse still, much of the conventionally measured growth can be at the expense of our natural resource base. We can potentially increase annual GDP by relentless construction on habitats, by over-harvesting our forests and fish stocks, or even perversely through major pollution incidents, which require lots of spending on cleanup efforts. But the damage or depreciation to these asset stocks will compromise the value of longer-term service flows from them. At the limit, a stock goes extinct and there are no flows from it for future generations. It follows then that any depreciation of natural assets should be recorded in the

way the accounts already record depreciation of man-made capital.

So how well are we really doing when the largely non-market environmental stocks and service flows are factored into the accounts? The answer is that most adjusted measures of growth suggest that we are not doing as well as we might think in terms of conventional growth. At this point however, political enthusiasm for adjusted measures of growth is often muted. The reason is that many of the powerhouses of conventional growth and employment are often simultaneously responsible for environmental costs that are convenient to overlook. Thus, energy generation and manufacturing produce greenhouse gases that damage stocks of clean air. Agriculture, though a small percentage of conventional growth, generates huge positive landscape values and negative impacts on water and air. Demonstrating these impacts in an account and netting them back to the responsible sectors would be a first step on a sustainable growth path. But there is still much debate and research needed on how to measure, value and record these impacts.

So, while sustainable economic growth sounds like a winning mantra, actually implementing an economic definition raises a number of awkward political trade-offs, but this should not stop research posing relevant questions about non-market costs and benefits and from

pursuing more fundamental research on the relationship between growth and happiness. Indeed, the focus on individual happiness and social cohesion is an advance on research on adjusted growth, which focuses largely on production impacts. It is conceivable that we could yet steer a more sustainable production pathway for us all to feel no better off. It turns out

that sustainable growth might also have much to do with what and how we consume. In other words, sustainable economic growth has more to do with our own behaviour than we might think.

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# Realising the Potential Contributions of Scotland's Rural Land to Delivering Sustainable Economic Growth

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As part of the preparation of the Land Use Strategy for Scotland, three externally funded projects were undertaken in 2009. One, led by MLURI and supported by SAC, examined how the full potential of the rural land use sector to sustainable economic growth might be realised. The Land Use Strategy should essentially build on complementarities to support the Scottish Government's overarching aim of sustainable economic growth and aim to reduce conflicts which inhibit its achievement.

It rapidly became apparent to the research team that there was not a complete data set which would enable them to assess the extent of land use conflict and complementarity. The team drew together all available written evidence and used participatory GIS approaches with key informants in different areas of Scotland to identify where the greatest complementarities exist and

where there were conflicts. The evidence regarding these conflicts and complementarities remains fragmentary and to a degree judgemental.

It was evident when we spoke to key informants that they did not use a conventional economist's lens of positive and negative externalities when considering conflicts and complementarities. They looked at supply chain connections and policy contradictions as key issues, which do not fit the neat economic model.

The table below summarises what we consider to be the eight top conflicts and complementarities. Agriculture is implicated as a cause of several conflicts, particularly relating to green-house gas emissions and threats imposed on water quality and biodiversity. Agriculture is also however the driver of a highly positive connection to the Scottish food and drink industry and the provider of highly

valued tourism and recreational landscapes. Low intensity moorland management was seen as essential in protecting carbon stocks. Additionally, the threat of bricks and mortar development over farmland was identified as a conflict at a time when food security is moving up the policy agenda.

Renewable energy was also seen as an arena of both conflict and complementarity. Large-scale energy developments were seen as intrusive and conflictual whereas smaller scale developments and the use of waste in energy production were seen as complementary to rural land use.

Natural resource dependent tourism was seen as beneficial in terms of employment opportunities but both tourism and lifestyle migration are associated with high carbon footprints.

Deer were seen as a potential

problem both in terms of their impact on habitats and their role in road traffic accidents. Equally however, the extensive landscapes of sporting land management were recognised as a valued green infrastructure for tourism and recreation. Further, the growing importance of rural land as green space which might enhance health was recognised, particularly in more accessible places.

A final conflict identified by many key informants was conflicting policies. It is hoped that the imminent Land Use Strategy will provide a unified and joined up approach that to date has been lacking.

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Conflicts – negative impacts	Complementarities – positive impacts
Greenhouse gas emissions from intensive agriculture	Raw material supply to food and drink industry, including scope for strengthening local food sector
Water quality and biodiversity reduction (and flood risk increase) from intensive agriculture	Carbon sequestration from forestry (including wood energy supply chains)
Loss of high quality farmland to urban (housing, industry etc) and infrastructure use	High quality environment including HNV farming, forestry, sporting and conservation land creates resource for tourism, recreation and living space
Intrusive effect of wind energy on landscape	Protection of peat by low intensity agriculture, conservation or sporting use
Impact of deer on forests, farmland and road traffic accidents	Small-scale renewables compatible with most other land uses and provide jobs
Impact of tourism on rural carbon footprint	Community ownership builds social capital and develops regenerative and resilient approach to rural land use
Demand for high quality landscapes creates long distance commuting, housing market pressure and high carbon footprint	Health enhancement through quality tourism and leisure space on rural land, especially peri-urban areas
Tensions between different policy agendas (aesthetics vs energy efficiency in building design; agriculture vs forestry; productive land vs infrastructure)	Constructive 'disposal' of waste products (sewage, animal waste etc) into renewables production



# The Importance of Technical Efficiency in Measuring Sustainable Economic Growth

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Improving technical efficiency, the rate at which physical inputs are converted into physical outputs, has been of interest to policy makers for a number of decades. The debate around sustainable economic growth within the agricultural sector must encompass an understanding of how physical efficiency has changed and its impact on the wider economy and society. Agricultural efficiency represents an indicator of resource use, which addresses issues surrounding the extent to which food production could feasibly be increased, and in what areas, as well as helping to address environmental questions related to inefficient resource use.

Scotland's economic performance is generally considered 'unspectacular' and agriculture, as a primary industry, plays its part in driving productivity gains throughout the supply chain. The first step is to measure technical efficiency growth, the second is to encourage factors which support positive efficiency growth. Researchers at SAC are leading a DEFRA funded project which aims to address how technical efficiency has changed across both the UK and selected EU regions. Econometric approaches to measuring efficiency and, more importantly, the characteristics which lead to efficient production have been an increasing interest to

researchers over the last 20 years. The focus has been on measuring farm level efficiency relative to a production frontier, which represents the limits of farming technology within a sector at a particular time. Most analyses have focused on single regions with no inclusion of other farms from elsewhere. The aim of this project is to develop an understanding of resource usage across sectors and regions. It will also investigate the characteristics which drive efficiency growth, using standard socio-economic variables, but also other physical and regulatory constraints, e.g. nitrate vulnerable zones, across these regions.

The research uses FADN (Farm Account Data Network) as the basis for estimating the changes in trends and to understand the impact of specific drivers on growth. Figure 1 shows initial results from the Scottish region for various farming types. Clearly, some negative impact can be observed from the switching to decoupling within the cropping farming types, but some recovery is shown up to 2007.

The livestock sectors are reasonably flat throughout this period, perhaps reflecting the longer production cycles of these enterprises. However, it is apparent that all sectors are following a variable trajectory and understanding the impacts of both the external and internal drivers of these changes is an important outcome of this research. Further work will focus on explaining these changes not only for Scotland, but in comparing the relative performance against other UK and EU sectors.

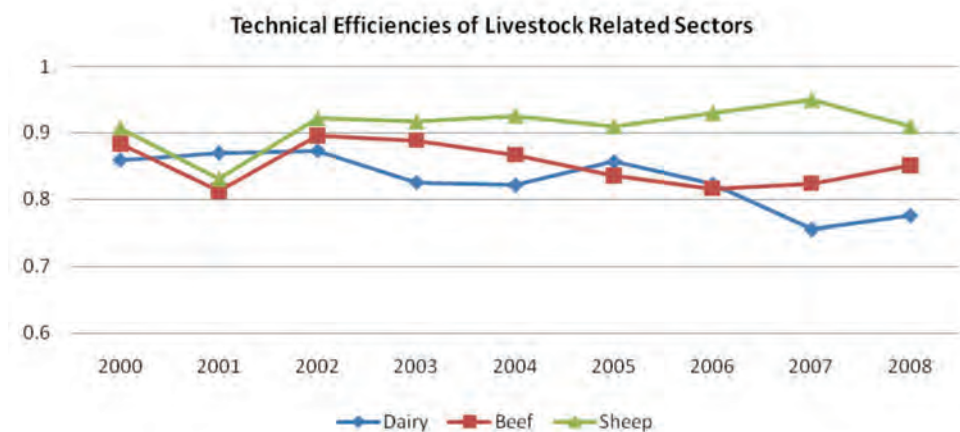
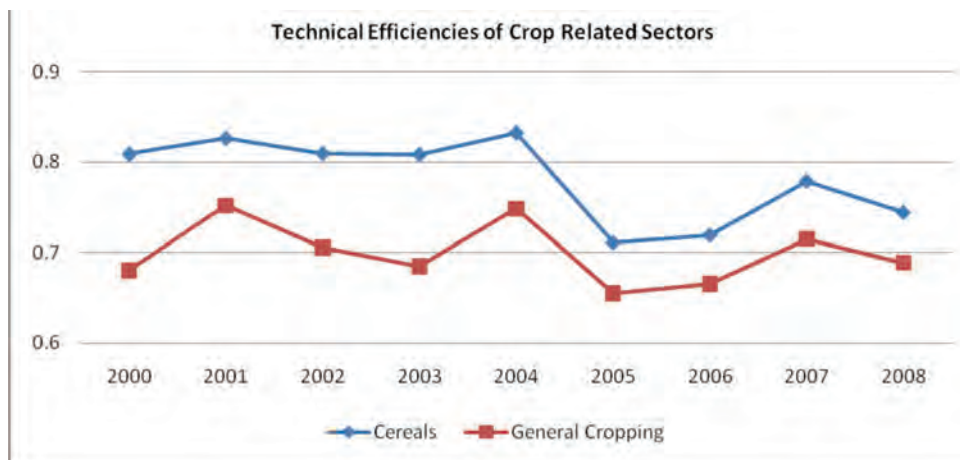


Figure 1: Technical Efficiency Indexes for Various Scottish Cropping and Livestock Sectors, 2000 to 2008

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## Building Ecosystem Service Research Capacity in Semi-Arid Africa (BESSA)

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The BESSA (Building Ecosystem Service Research Capacity in Semi-Arid Africa) project, funded by NERC/ESRC/DFID<sup>1</sup> in their ESPA (Ecosystem Services for Poverty Alleviation) research initiative has two aims. The first is to establish a network of researchers and the second is to create a research agenda focused on developing methodologies and tools to analyse tradeoffs and synergies between different ecosystem services to address poverty alleviation in semi-arid Africa.

Many of the world's poorest people live in marginal and degraded ecosystems and are dependent on the natural resource base available for food demands and livelihood generation. Understanding the relationships and feedback mechanisms between poverty and natural resource use is therefore crucial to the development of ecosystem-based approaches for management of the environment. Such approaches would ideally enable people to increase the productivity and/or profitability of their natural capital such as land and forests without further degrading the natural resource base. Improved ecosystem management can also provide alternative sources of livelihoods if its benefits are acknowledged by local, national or global beneficiaries, for example via the so-called payments for ecosystem services (PES) mechanisms. A successful PES scheme relies on sound biophysical evidence of the practices that can restore ecosystem health, as well as an understanding of the socio-economic factors that can drive these practices. Much also needs

to be understood regarding governance principles and the design of appropriate reward mechanisms in order to ensure that PES schemes are efficient yet equitable, fair and credible. The BESSA project is a partnership between the MLURI, the Plant and Soil Science Department at the University

environmental services assessment and laying the foundations for a PES scheme. Participants, drawn from our project partners and their networks came from across Africa including geographers, foresters, hydrologists, soil scientists, and environmental and agricultural economists.

technologies that enhance water quality. Preliminary socio-economic assessments have also taken place; a household survey was recently completed that provides useful baseline information regarding poverty, well-being and agricultural production.



of Aberdeen, the World Agroforestry Centre (ICRAF) in Kenya, the Centre for Environmental Economics and Policy in Africa (CEEPA) at the University of Pretoria in South Africa and the Biomechanical & Environmental Engineering Department at Jomo Kenyatta University of Agriculture and Technology in Kenya.

The project launched in Spring 2009 with two weeks of training, field visits and practical workshops focused on building capacity for integrated

Since the launch, we have been engaged with our partners in case study activities in the Sasumua catchment in Central Kenya. The Sasumua dam at the upper ridges of the Aberdare Mountains provides the city of Nairobi with 20% of its fresh water; however intensive human activity within the dam's watershed is causing sedimentation and water contamination. We are working to develop a strong biophysical evidence base that can support future schemes to reward farmers for adopting tools and

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<sup>1</sup> NERC – Natural Environment Research Council, ESRC – Economic and Social Research Council, DFID – Department for International Development

# PhD RESEARCH



## Improving our Understanding of Agritourism

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A combination of agriculture and tourism underpins and sustains many rural areas across Europe and around the world, and increasingly 'agritourism' is seen as an opportunity to respond to the challenges faced by marginal agricultural enterprises. It is difficult to determine the economic importance of agritourism as a sub-sector of rural tourism, or as a proportion of individual farm economies, but indications suggest that it is growing in prominence with farmers and policy-makers. However, there has been a relative silence on the implications of running productive farm and tourism enterprises together – particularly from the perspective of agritourism providers and tourists themselves.

This research aims to improve our conceptual understanding of agritourism through the examination of provider and tourist perspectives in Scotland. In pursuit of this aim we have developed an original conceptual typology for defining agritourism based on analysis of the literature (Phillip et al., 2009). We have also conducted field work in Scotland to strengthen the typology and investigate provider and tourist motivations, experiences and understandings of agritourism. The agritourism typology is based on three characteristics of agritourism identified from the literature. These are: whether or not the product is based on a 'working farm'; the nature of contact between tourists and agricultural activity; and the degree of authenticity in tourist's

experience. By systematically considering agritourism products according to these three discriminators, products can be identified as one of five discrete agritourism types.

The agritourism typology was used as a sample frame to select a range of agritourism providers for twenty-five in-depth qualitative interviews in five areas across Scotland, which was followed by twenty-two interviews and 349 self-completion questionnaires to gain the tourist perspective in the same locations. Data analysis

looks like (e.g. whether it includes animals or attractive landscapes) or what tourists do (e.g. whether tourists are involved in agriculture). But for others, agritourism is defined by the value of its outcomes, such as its ability to strengthen links between food production and consumption or its capacity to increase public understanding of agriculture.

An important outcome of this research will be its capacity to bridge gaps between theory, practice and policy. The typology provides a consistent framework to support both academic

Phillip, S., Hunter, C., & Blackstock, K. (2009).

A typology for defining agritourism. Tourism Management (In Press)

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is currently ongoing, however preliminary analyses based on the provider's perspective demonstrate how providers assign importance to different aspects of agritourism.

For example, some providers characterise agritourism on the basis of what the product

and market research of the phenomenon internationally, and findings from the empirical investigation can be used to inform rural development and tourism policy in Scotland for the future.



# How Important is the Use of Consumer Information on the Success of Food SMEs

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The food and drink industry plays an important role in the Scottish economy, accounting for about 25 per cent of the Scottish output. An important characteristic of the industry is that most of the companies operating in it are small or medium enterprises (SMEs). This feature represents a challenge for any Government strategy aiming to expand the food and drink sector and increase its competitiveness. This is because SMEs normally face constraints in terms of resources, which hampers their access to different types of innovation and market intelligence.

This PhD is motivated by a joint project between SAC and University of Kent. The project provides consumer information to SMEs, eliminating one of the barriers SMEs face. It goes beyond this joint work on providing information, however, to ask the question: do those SMEs that are using information for their business show a better performance than those that are not? The implications of

this question are clear: if the answer is positive then provision of consumer information is a straightforward tool to improve the situation of the sector. If the answer is negative then, as consumer information is a well known tool used by large enterprises for their businesses, there is the need to identify what factors in SMEs may be hampering the effectiveness of consumer information.

In terms of the methodology, a survey to food sector SMEs in Scotland was carried out and a sample of approximately 300 food sector SMEs was assembled. In addition to variables related to the use of consumer information, the survey included data regarding the characteristics of the enterprise. Success in the SMEs was measured as a combination of turnover growth and whether the firm perceived that its brand was well known to consumers.

Given the possible feedback from growth to the use of consumer information (i.e. successful firms are the ones that invest in the use of consumer information); a simultaneous regression model was proposed. In the model the use of consumer information affects the firm success and the latter also has the possibility to affect the use of consumer information. Hausman-type tests are expected to be used in order to analyse whether the simultaneity is present. The model also considers other variables, such as characteristics of the firm (e.g. number of employees, the region where it operates, type of products produced or sold, culture of the firm) and background of the owner or manager (e.g. age, gender, education, knowledge of customers).

This PhD will provide evidence about whether or not the use of consumer information is

important for the success of SMEs. If the model is found to be simultaneous and information is important for success, then it means that once entering into a growth path, firms will continue investing in access to consumer information. If no simultaneous effect is found, but use of information has an impact on the firm growth, then this result implies that there is the need to encourage firms to invest in the purchase of consumer information (or find those constraints that prevent it). Finally, if no relationship between consumer information and success is found, there is a need to explain the differences in the effect of consumer information between SMEs and large firms<sup>1</sup>.

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<sup>1</sup> For further information regarding this research topic please see ABSORB 3 – [www.macaulay.ac.uk/projects/absorb-3.pdf](http://www.macaulay.ac.uk/projects/absorb-3.pdf)



# Probing How Local Culture, Institutions and Individual Views can Affect Conservation Outcomes

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My PhD research was focused on community-based conservation in developing countries, looking at how aspects of local culture and institutions can influence conservation outcomes.

Hotspots of biodiversity tend to be found in poorer countries, where the state of natural resources is also often directly linked with human well-being. Working with local communities is often seen as key to achieving successful and equitable conservation outcomes, but existing projects have often been unsuccessful.

I began by carrying out a systematic review of existing

case studies in the academic literature, following a transparent and objective method for selecting the case studies, and extracting the information they contained. By using statistics to analyse the resulting table of information, I found that conservation project success was linked to the supportiveness of local institutions (for example, non-corrupt governing councils) and also more likely when projects made an active effort to engage with local culture and institutions. For example, success was impossible for a project which built its headquarters on a site locally perceived to be associated with bad spirits!

In the second component of my work I focused in on one case study in the poor rural Republic of Kalmykia, in Russia. The ethnic Kalmyks have a Buddhist Mongolian heritage and I used qualitative analysis of semi-structured interviews to probe how people perceived environmental issues, and if Buddhist teachings could really influence environmental behaviours. I came to understand that in the ex-Soviet collectivist culture, very few saw themselves as having any personal responsibility for tackling the environment, but the teachings did encourage people to undertake actions such as careful litter disposal and water-course cleaning.

views about nature (for example it was appropriate to feel emotional attachment to animals) influenced commitment to pro-environmental behaviour as much as factors such as caste, religion, livelihoods and poverty.

The diverse strands of my study demonstrate that multiple aspects and levels of community can be relevant to understanding pro-environmental behaviours. I'd argue that those working for sustainable resource institutions in all countries should better understand and adapt to the context of the societies and communities that they work with.

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The final part of my work focused on a site in Nepal. Firstly, I used focus group discussions with local people to

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*multiple aspects and levels of community can be relevant to understanding pro-environmental behaviours*

reveal a multitude of drivers for natural resource use, influenced by cultural preferences linked to caste, as well as practical needs. I was also interested in how individual views might influence pro-environmental behaviours, using a questionnaire survey. This showed that individual





# Q Methodology and its Application in a Developing Country

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Farm diffuse pollution can cause polluted runoff and has a significant impact on water quality. Control of diffuse pollution is difficult as it often involves complex transport and transformation processes via different avenues. For a few decades Best Management Practices (BMPs) have been introduced for restoring and protecting the surface water quality at a watershed level. However, in the promotion and marketing of voluntary approaches the prediction of farmers' behaviour is based on the assumption that it is unboundedly rational and constrained by profit maximisation goals. Consequently, there is a surprising lack of research concerning behavioural responses to environmental policy instruments. This suggests that more research needs to be focused on identifying underlying attitudinal positions that may explain alternative behavioural responses.

To investigate any existing attitudinal differences, the study applies Q methodology which can be used to identify



subgroups of farmers based on their perceptions about BMPs. The case study is based in the Ping river basin, northern Thailand and looks into citrus cultivation. It is considered to be a particularly interesting case for two main reasons. First, the Ping River is the largest river basin in northern Thailand. It is strategically important in terms of its upland location, population density, economic integration, and as a cultural centre, but it is facing increasing competition from alternative water uses. Second, along the

river are citrus farms, which have been discharging pollutants into the river for many years and this discharge has resulted in degraded water quality.

The use of Q methodology has revealed four groups based on farmers' perceptions about BMP adoption. The first group is conservationist, who are pragmatic, moderately progressive and environmentally favourable. The second group is traditionalist who tends to resist adoption. This is signalled by a lack of self-confidence and

narrow-minded views towards policy changes. The third group is disinterested. This group recognises a state of natural resource degradation but shows signs of distinctive demand for short-term returns. The last group is risk-averse who are market-sensitive and refrain from adoption because of fear of losses. These discourses indicate differences between the ways in which farmers view BMP adoption and how they might therefore be encouraged to adopt practices aimed at reducing diffuse pollution. The bottom-up results from Q methodology are expected to provide policy makers with tailored information for environmental policy development.

**Acknowledgement:**

This work was carried out with support from the Economy and Environment Program for Southeast Asia (EEPSEA).

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## Ecology of Granivorous Passerines in Grassland Dominated Agricultural Landscapes

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Some of the latest ideas in SAC in collaboration with the University of Glasgow, Game and Wildlife Conservation Trust (GWCT) and Scottish Natural Heritage (SNH) is undertaking a study of granivorous farmland passerines in a grassland dominated agricultural landscape in Ayrshire, south-west Scotland. Farmland bird species have undergone declines in recent years. These are often attributed to agricultural intensification, although the precise mechanisms are poorly understood. This study is focusing on yellowhammer which has decreased by over 50% in twenty-five years. To reverse this decline, we need to understand how this

species utilises the landscape to allow development and implementation of appropriate management strategies.

Yellowhammers' habitat use and foraging requirements are being studied. To date, differences in distribution and abundance have been found at the four study sites. The reasons for this are being investigated by comparing farm management and habitat availability. Vegetation type and structure, invertebrate and seed availability are being assessed at foraging locations selected by yellowhammers and compared with otherwise similar non foraging locations. Individuals have been colour ringed to

study movement and survival. Information gained will help guide future conservation policy for granivorous passerines.

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## Contribution of the Rural Land Use Sector to Greenhouse Gas Neutral Regions

**Diana Feliciano**

**Rural and Regional Economics, SERG, MLURI, Craigiebuckler, Aberdeen, AB15 8QH**

Scotland is a small country with a contribution of around 0.2% to the global greenhouse gases (GHG) net emissions in 2000 (Scottish Executive, 2006). Despite this small input, the Scottish Government is committed to work in partnership with the UK Government and other devolved administrations in developing and implementing the UK's response to climate change.

forestry and conservation, plays an important role in the management and budgeting of GHGs, mainly because different land uses can act as both a source of GHG emissions and as a sink / reservoir for CO2.

It was due to a recommendation of an investigation undertaken by Aberdeenshire Council's Scrutiny and Audit Committee during November and December 2006, that Aberdeenshire Council has committed itself to become a carbon neutral organisation in the short to medium term (by 2020) and for Aberdeenshire to become a carbon neutral region in the medium term (by 2030). It is also recommended that possibilities of a similar commitment by

neighbouring councils and their partners should be explored (Aberdeenshire Council, 2007).

The overall aim of this study is to explore both the potential of rural land uses to reduce GHG net emissions and possibilities of rural land use to act as a cost-effective sink for CO2 in the North East of Scotland (Aberdeen, Aberdeenshire and Moray).

**Supervisors:**

Colin Hunter (University of Aberdeen), Bill Slee (MLURI) and Pete Smith University of Aberdeen)

**To find out more contact**

**Diana Feliciano**

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## Land Use Planning in Scottish River Basins

**Heather Smith**

**Society, Institutions and Governance, SERG, MLURI, Craigiebuckler, Aberdeen, AB15 8QH**

Some of the latest ideas in sustainable water governance – such as integrated water resource management – promote greater integration in decision making. The EU Water Framework Directive (WFD), seen by many as a ‘Sustainability Directive’, places particular emphasis on integrating water management and land use planning – a vision that fits comfortably within these broader water governance paradigms.

However, the implementation of this vision involves bridging separate policies, institutions

and cultures of practice. There is limited understanding of how this might be accomplished, or what it means in practical terms for key stakeholders (particularly land use planners).

My research project is examining this integrative vision in a real world setting – the emerging relationships between the WFD’s river basin management planning (RBMP) framework and the land use planning system in Scotland. The project’s approach draws from interpretive policy analysis, which considers how different

stakeholders attach different (sometimes contradictory) meanings to policy objectives, potentially hindering their implementation. The approach also considers the influence of institutions, cultures, values, and other social factors, on how these different interpretations emerge. The project’s main methods are analyses of key policy documents, as well as in-depth interviews, primarily with land use planning staff from local governments and public agencies. Early results show how different understandings of wider socio-political agendas,

like sustainable development, are significantly affecting stakeholders’ perceptions of the RBMP/planning relationship, as well as their own roles and responsibilities within that relationship.

**Supervisors:**

Kirsty Blackstock (MLURI) and Gill Wall (University of Aberdeen)

**To find out more contact**

**Heather Smith**

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## The Concepts of Wilderness and Rewilding



**Koen Arts**

**Values, Choices and Behaviour, SERG, MLURI, Craigiebuckler, Aberdeen, AB15 8QH**

My PhD is focussing on cultural aspects of wilderness and rewilding. The first section adopted a cultural-historical approach to look at a Dutch natural area.

By combining a general history of the concept of wilderness with a local land use history of the Hoge Veluwe National Park, paradoxes inherent to present-day wilderness conservation were identified. Consequences for wilderness restoration practices were also addressed. The second part, which is currently ongoing, entails a discourse analysis of reintroduction debates in Scotland. What kind of language

and which arguments were/are being used by proponents for reintroducing white-tailed eagle, beaver and lynx to Scotland? For the final part of the PhD I am planning to use in-depth interviewing to answer questions about perceived boundaries of the wild.

**Supervisors:**

Anke Fischer (MLURI) and René van der Wal (University of Aberdeen).

**To find out more contact**

**Koen Arts**

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## Ecological Effects of Land Use Decisions in the Lunan Catchment, Scotland

**Eleonore Guillem**

**Resource Economics and Biodiversity, LEERG, SAC, West Mains Road, Edinburgh, EH9 3JG**

Recent changes in agricultural policies raise questions concerning the impacts on ecological indicators, in particular populations of birds. This research provides a framework to integrate social, economic and ecological disciplines by using agent-based modelling (ABM) techniques.

ABM allows a complex system to be modelled by considering simulated individuals at a number of spatial and temporal scales. Rules for human behaviours were developed from a quantitative social survey. A typology of farmer types was

developed for those operating in the Lunan Catchment based on their perceptions and reactions towards the environment and to wildlife habitats. Through a set of different Common Agricultural Policy-based scenarios, land use change and agri-environmental scheme participation is explored spatially. Built from an intensive literature review and field surveys, it was found that based on ecological requirements birds interact within this changing environment and obey behavioural rules. By capturing farmer behaviour and response to policy change, this research

intends to explicitly forecast the dynamics of landscape change, and measure the resulting impact on bird populations. Ultimately, the aim is to promote new policy recommendations to improve ecological efforts directed towards Scottish agriculture.

**Supervisors:**

Andrew Barnes (SAC), Alan Renwick (SAC) and Mark Rounsevell (University of Edinburgh)

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**Eleonore Guillem**

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## People's Perceptions of Invasive Non-native Species

**Sebastian Selge**

**Values, Choices and Behaviour, SERG, MLURI, Craigiebuckler, Aberdeen, AB15 8QH**

Invasive non-native plant and animal species (INS) are considered to be an important threat to biodiversity. Besides undermining the target of halting the loss of biodiversity by 2010, INS also pose a threat to human health and wellbeing, and to the economy. However, worldwide, approximately 99% of all crops and livestock are intentionally introduced plants, animals, and microbes.

Obviously there are costs as well as benefits associated with non-native species. Even though it is increasingly acknowledged that the focus should only be on the invasiveness of species, meaning the detrimental impact, the nativeness also seems to play an important role in the discussion. Nine focus group discussions with a wide range of stakeholders

including the general public, and three personal interviews were conducted to gain insight about the driving forces in the debate about INS. Results indicate that the debate about INS is highly influenced by values participants hold about biodiversity. In addition, participants frequently linked the discussion about INS to human moral standards posing interesting questions of environmental ethics. Concluding from the insight gained we suggest a relabeling and redirecting of the debate on INS.

**Supervisors:**

Anke Fischer (MLURI) and René van der Wal (University of Aberdeen)

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**Sebastian Selge**

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## A Farm-based Approach for Developing Greenhouse Gas Marginal Abatement Cost Curves for UK Agriculture



**Vera Eory**

**Resource Economics and Biodiversity, LEERG, SAC, West Mains Road, Edinburgh, EH9 3JG**

The UK's target of reducing greenhouse gas emissions by at least 80% by 2050 means that cost-effective pathways to achieve emission reductions must be found and implemented in all sectors of the economy, including agriculture, land use, and forestry.

A bottom-up marginal abatement cost curve analysis was carried out by the SAC in 2008. The aim of my research is to improve this exercise by adding more layers of interest

to it, including social costs and benefits, more details on forestry and sensitivity analysis. This research will adopt a farm-based approach by coupling existing biophysical and economic models.

**Supervisors:**

Dominic Moran (SAC), Kairsty Topp (SAC) and Matthew Williams (University of Edinburgh).

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**Vera Eory**

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# NEWS

## Socio-Economic Research Group (SERG), MLURI

### APPOINTMENTS

Ten new members of staff have joined SERG. Four researchers: **George Dyer**, who is interested in agricultural and rural development policy, and socio-environmental and economy-wide modelling; **Katrin Prager**, an interdisciplinary social scientist with an interest in the interaction between social and ecological systems, and institutions and governance in landscape and environmental management; **Liz Dinnie**, a sociologist, who is interested in individual and collective behaviour, and community structures; and **Kerry Waylen**, a social researcher in natural resource management who has recently completed her PhD within SERG and Imperial College London. Three research assistants: **Carlos Galan-Diaz** an environmental psychologist with a particular interest in behavioural change, cognition, emotion, well being and social science in general; **Adekunle Ibiyemi** who specialises in Geographical Information Systems; and **Sue Morris**, who is interested in the areas of governance, institutions and public participation, with particular focus on devolution in Scotland and globalisation, and on qualitative methods, have joined the group to support research activities. **Antoinette Kriel** has also joined as a temporary research assistant; she is undertaking a sandwich placement for 12 months as part of her undergraduate degree in environmental science. Two PhD students have been appointed. **Diana Feliciano**, who previously worked as a research assistant in SERG, is undertaking research which aims to improve the understanding of the contribution of the rural land use sector to greenhouse gas neutral regions, and **Sander Van der Jagt**, who is researching the role of attention, working memory, and restorative processes in environmental preference.

### NEW CONTRACTS

#### Rural Land Use Study 1

Project funded by Scottish Government

**Contact: David Miller**

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#### Rural Land Use Study 2

Project funded by Scottish Government

**Contact: Bill Slee**

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#### UR Flood

Project funded by European Commission

**Contact: Kirsty Blackstock**

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#### SPIRAL: Science-Policy Interfaces for Biodiversity: Research, Action and Learning

Project funded by European Commission

**Contact: Anke Fischer**

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#### Reindeer Herding and Commodification of the Outfields and Commons in Southern-Sami Areas

Project funded by Norwegian Research Council

**Contact: Katrina Brown**

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#### Forest and Climate Change: a Socio-Economic Perspective

Project funded by Forestry Commission

**Contact: Maria Nijnik**

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#### The Contribution of Multi-stakeholder Partnerships to Sustainable Landscape Management (Landscape Partners)

Project funded by FP7 - PEOPLE - Marie Curie Actions, Intra-European Fellowship (IEF)

**Contact: Katrin Prager**

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### STAFF ACTIVITY

Kirsty Blackstock has joined the National Ecosystem Assessment project led by DEFRA, supporting work on cultural services, Mountains, Moorlands and Heath Habitat chapter; Freshwater Habitat chapter from August 2009 through to March 2011.

She has also joined the steering group for DEFRA's demonstration test catchments, providing social science input to this project that runs from June 2009 - May 2011. This feeds into the ongoing development of DEFRA's Virtual Observatory project that starts in March 2010, led by Marc Stutter in the MLURI Catchment management group.

**Contact: Kirsty Blackstock**

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Various MLURI staff will be contributing to a European Commission FP7 project entitled REFRESH: Adaptive strategies to mitigate the impacts of climate change on European freshwater ecosystems, a four year project which started in March 2010. It is concerned with the development of a system that will enable water managers to design cost effective restoration programmes for freshwater ecosystems at the local and catchment scales that account for the expected future impacts of climate change and land use change in the context of the Water Framework and Habitats Directives.

**Contact: Kirsty Blackstock**

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Katrina Brown, Rachel Dilley and Keith Marshall have won a national journal award for their research into the effect of movement on people's appreciation of landscapes. Their published paper entitled "Using a head-mounted video camera to understand social worlds and experiences" is the winner of the Sociological Research Online SAGE Prize 2009. The paper can be found here: [www.socresonline.org.uk/13/6/1.html](http://www.socresonline.org.uk/13/6/1.html)

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# NEWS

"Carbon Capture: Sequestration and Storage". Issues in Environmental Science and Technology, 2009, by R E Hester and R M Harrison (eds) is now published by The Royal Society of Chemistry, Cambridge. This publication includes a chapter by Maria Nijnik, presenting the results of analysis of opportunities for terrestrial carbon sequestration and storage in forests to mitigate climate change. More information is available at [www.rsc.org/Shop/books/2009/9781847559173.asp](http://www.rsc.org/Shop/books/2009/9781847559173.asp)

**Contact: Maria Nijnik**

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Over the past 4 years members of SERG have been carrying out research looking at the implementation of the Scottish Outdoor Access legislation in the Cairngorms National Park (CNP) by observing the workings of the Cairngorms Local Outdoor Access Forum (CLOAF). From this has stemmed a Participatory Video project exploring a subject of particular concern within the outdoor access debate: taking access with dogs. Here we worked collaboratively to seek out a wide range of perspectives on dogs and outdoor access,

including dog owners, land managers, recreational users and access professionals. Key to the approach was allowing the participants to portray these perspectives in their own words, for example, the benefits of taking dogs into the outdoors, the challenges involved in putting 'responsible' access into practice in different situations, and various ideas for managing problems that arise. The result is a 12 minute film (completed in February 2010) called 'Dogs and Outdoor Access', which can be viewed at: [macaulay.ac.uk/videos/CLOAF/](http://macaulay.ac.uk/videos/CLOAF/)

The aim of the film is to stimulate debate, encourage mutual understanding between different user viewpoints, and to inform policy. It is being disseminated to various audiences (e.g. countryside rangers, dog trainers, Local Authority access officers) by those involved in the film's production, the CNPA, CLOAF members and MLURI.

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## Land Economy and Environment Research Group (LEERG), SAC

### APPOINTMENTS

There have been several staff changes within SAC's Land Economy and Environment Group recently. **Dominic Moran** has taken up the post of Science Leader in Sustainable Rural Systems. He will be coordinating interdisciplinary work across SAC. **Andrew Barnes** has been promoted to the role of head of the resource economics team. **Andrew Midgley** has recently moved from the Rural Policy Centre to join the Rural Society research team.

### NEW CONTRACTS

#### Environmental Impacts of CAP Reform

Project funded by DEFRA

**Contact: Alan Renwick**

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#### Impact of reform of agricultural and trade policy on land abandonment in Europe

Project funded by DEFRA

**Contact: Alan Renwick**

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#### Report on technical efficiency of UK agriculture

Project funded by DEFRA

**Contact: Andrew Barnes**

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#### Review of the value of public goods from agriculture

Project funded by Scottish Government

**Contact: Alistair McVittie**

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### STAFF ACTIVITY

#### The Economics of Ecosystems and Biodiversity

The Economics of Ecosystems and Biodiversity [TEEB] is a global study co-funded by the United Nations Environment Programme that attempts to value biodiversity and the conservation of ecosystems. SAC is involved in the D0 and D2 reports. One of the key interim findings of TEEB is that the cost of policy inaction, i.e. business-as-usual, might imply welfare losses equivalent to 7% of GDP by 2050. SAC is to contribute to the next stage of the quantitative analysis in the Phase II work which attempts to provide further and improved estimates of changes in the value of ecosystem service provision. The analysis is to integrate bio-physical modelling with environmental economic valuation, based on scenarios of policy action/inaction which are to be developed through consultation with policy-makers the world over.

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**Website: [www.teebweb.org/](http://www.teebweb.org/)**

#### Options for Developing Ecosystem-Based Marine Management [ODEMM]

ODEMM is a four-year EC-funded Framework Programme 7 [FP7] project coordinated by the University of Liverpool which is to apply the Ecosystem Approach to marine ecosystem management. In an integrated approach, options are to be developed and then evaluated from marine ecological, institutional, political and economic perspectives and the results set up in a user-friendly, internet-based expert model. SAC is leading the economics work package which is to value the costs and benefits of policy options. This economics work package has EC funding of circa €1 million.

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# Who are we?



## The Macaulay Land Use Research Institute, Socio-Economic Research Group

[macaulay.ac.uk/science/socioeconomics/](http://macaulay.ac.uk/science/socioeconomics/)

The Macaulay Institute is an international centre for research and consultancy on the environmental and social consequences of rural land use. The Institute has a strong emphasis on bringing scientists from different disciplines together to carry out interdisciplinary research. The socio-economic research group (SERG) within the Institute can be described under three broad themes: society, institutions and governance; rural and regional economics and values, choices and behaviour. The activities of members of the group frequently unite around a particular project and many people work under more than one theme.

### For further information contact

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## The SAC Land Economy and Environment Research Group

[sac.ac.uk/research/lee/](http://sac.ac.uk/research/lee/)

SAC is an innovative, knowledge-based organisation, supporting the development of land-based industries and communities. Within SAC the Land Economy and Environment Research Group (LEERG) is one of the largest groupings of social, economic and environmental researchers focusing on agricultural and wider rural issues in the UK. The aims of the Group are to be:

An internationally recognised applied social, economic and environmental research unit and leaders in the development of interdisciplinary social, biological and environmental research.

The activities of the Group are split into four broad research areas:

- 1 Rural Development and Food Marketing
- 2 Bio-economics and Rural Strategy
- 3 Resource Economics and Biodiversity
- 4 Systems Analysis

### For further information contact

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