Informing the development of the Common Agricultural Policy (CAP) post-2013

June 2013
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Rural Policy Centre

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1 This document has been compiled by Dr Davy McCracken (Reader in Agricultural Ecology and Team Leader Sustainable Ecosystems, Land Economy and Environment Research Group) and Dr Jane Atterton (Researcher, Rural Policy Centre), with input from several SRUC colleagues. For more information on SRUC’s Rural Policy Centre please see: http://www.sru.ac.uk/ruralpolicycentre. Production of this document was partially funded by the Scottish Government Rural Affairs and the Environment (RESAS) Portfolio Strategic Research Programme 2011-2016: Programme 1 (Environmental Change) and Programme 2 (Food & Rural Industries) For more information please see: http://www.scotland.gov.uk/Topics/Research/About/EBAR/StrategicResearch/future-research-strategy/Themes/ThemesIntro.
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1. Introduction

Recent data from the Scottish Government shows that, with the exception of dairy farms, the direct support received in 2009/10 by Scottish farmers exceeded the farm business income (FBI) per full time equivalent (FTE). This demonstrates that the majority of Scottish farmers would be generating negative FBIs were it not for support payments. It is therefore no surprise that for the majority of Scottish farmers (as for many others across the 27 EU Member States), the forthcoming reform of the EU Common Agricultural Policy (CAP) is uppermost in terms of concerns about the future of their businesses.

The publication of the European Commission’s communication ‘The CAP towards 2020: Meeting the food, natural resources and territorial challenges of the future’ in November 2010, set in motion the current round of negotiation, discussion and debate on the future of the CAP after 2013. This time around, the reform of the CAP is taking place at two distinct but intrinsically linked levels. Firstly, the budget for the CAP to apply for seven years from 2013 is currently being negotiated. Economic and political pressures look likely to result in a reduction in agricultural spending (from a current level of around 40% of the EU budget), certainly in real terms if not in the actual rate. Secondly, a planned overhaul of the distribution mechanism for CAP payments is due to be implemented in 2014. The objectives for this element of reform can be simplified to three main aims; completing the decoupling of support from production levels started in the 2003 reforms; achieving more equitable payments across all member states; and providing more transparency and legitimacy with regard to the payments made to farmers.

Given the number of potentially competing objectives that need to be taken into account in the CAP reform debate, it is vitally important that those involved are well informed about ongoing research and consultancy activities. This document sets out recent and ongoing activities undertaken by SRUC staff at Scottish, UK and EU levels to inform the development of the CAP. It is structured according to a number of key themes. Contact information for staff is provided at the start, and throughout the document there are useful links to further information.

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2 Scottish Government (2011) Economic Report on Scottish Agriculture, Scottish Government: Edinburgh. For more information, see: [http://www.scotland.gov.uk/Publications/2011/06/15143401/0](http://www.scotland.gov.uk/Publications/2011/06/15143401/0). According to Scottish Government figures, the average Farm Business Income (FBI) across all farm types for 2009/10 was £34,366, a 12% reduction on the previous year. The FBI represents the return to unpaid individuals (usually the farmer and his or her family) for their input to the business including capital invested. The FBI can therefore be expressed per unpaid full time equivalent (FTE) to give an indication of income level per person. On average this equated to £23,740 per FTE in 2009/10.

3 For more information, see: [http://www.sruc.ac.uk/info/120159/rpc_blog/35/why_is_cap_reform_so_important_to_scottish_farmers](http://www.sruc.ac.uk/info/120159/rpc_blog/35/why_is_cap_reform_so_important_to_scottish_farmers)

About SRUC

Scotland’s Rural College (SRUC) was formed in 2012 by the merger of Barony, Elmwood and Oatridge Colleges with the Scottish Agricultural College (SAC), and is one of Europe’s largest Higher Education Institutions specialising in leading-edge innovation and sustainable development in agriculture, land-based industries and the rural sector. Our ambition and focus are on developing our work at local, national and international levels, combining research with education and commercial consultancy to world-class standards.

A cornerstone of SRUC is our internationally respected research, which seeks to address the major challenges of growing global demand for food, climate change and dwindling natural resources. Drawing on this foundation of cutting edge research, much of SRUC’s emphasis is on knowledge transfer and exchange. A large part of the business is devoted to the education of over 8,000 students, through combining high quality relevant courses and excellence in teaching and support. Our consultancy services for farm and rural business work closely with both education and research to provide leading edge advice and consultancy on topics such as diversification, crops, livestock, business management, food and drink and veterinary services. Our researchers regularly organise and attend conferences and seminars to discuss ongoing applied research work with key stakeholders, including policy-makers, industry, researchers and practitioners.
## 2. SRUC Staff Contact Information

<table>
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3. Land use change

Proposed changes to farm payments and greening measures in the CAP post-2013 are likely to have a major impact on farmers’ production decisions. In turn, this will have a profound impact on land use, farm structure, production and agricultural markets. A considerable amount of work is being undertaken by SRUC researchers to examine the impacts of these changes on land use.

Recent SRUC activities include:

- **Assessing the potential for undesirable ‘land abandonment’ (or land use change) to result from further CAP reform or trade liberalisation.** Contract conducted for Defra and involving a European consortium led by SRUC. This study assessed the extent of change across Europe under removal of Pillar 1 support payments and trade liberalisation. It was found that such reforms would have a particular impact on livestock grazing farms situated in the more marginal areas of Europe. However, although farmland biodiversity would likely be reduced in those areas, other environmental issues (relating to nutrient surpluses, GHG emissions and soil erosion) would likely improve. The study concluded that untargeted, rather general agricultural policy measures which maintain land in production are likely to be an ineffective and inefficient way to address the perceived negative consequences of abandonment. Instead a more holistic approach to rural development is required, tailored to the specific context within each area. A *Land Use Policy* paper providing an overview of the findings is available [here](#).

- **Assessing changing livestock numbers in the Scottish uplands.** Work funded by SRUC. The 2008 ‘*Farming’s Retreat from the Hills*’ report highlighted significant declines in the sheep and cattle sector across much of Scotland, particularly in the hills, islands and uplands where alternatives to extensive beef and sheep farming systems are very limited. The 2011 ‘*Response from the Hills: Business as usual or a turning point?*’ report examines changes since 2008 as financial returns to beef and sheep have improved and farm level restructuring following the decoupling of CAP support has been completed. This report confirms that recent trends in sheep and beef cow numbers across Scotland have largely continued, although the rate of decline fell sharply and looks to have stabilised in 2010, with some evidence of localised increases. The report also explores the dependence on ruminant livestock

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farming in Scotland (compared with the rest of the UK and Europe), creating a particular vulnerability to decline in red meat livestock numbers, the potential for land abandonment, and potential wider negative implications for biodiversity and local rural communities from lost multiplier effects and the renewed interest in technical efficiency in agriculture.

- **The Changing Role of Hill Farming in Scotland.** This PhD project, funded by SRUC, examined the role of hill farming in the context of change, by investigating how hill farmers respond to changing policy, what other stakeholders expect from the hills\(^8\), and how hill farmers may have to adapt their farming system in response to these changes and expectations\(^9\). The research found that the continuity of hill livestock farming is threatened as hill farmers are vulnerable to policy and market changes. There is also a strong diversity in hill farming systems and farmers’ motivations and management styles, which is important to take into account when formulating policies. Integration of different land uses and productions could be one economic option for these areas, but a set of measures, perhaps including livestock-linked subsidies that recognise the diversity of hill farmers, is needed.

Ongoing SRUC activities include:

- **Examining the impact of a number of flat rate payment scenarios on different Scottish farm types.** An optimising Scottish farm level model, ScotFarm, has been developed at SRUC for this purpose. Flat rate payment scenarios will be used, taken from the work carried out at the James Hutton Institute. Farm types are determined by using the Farm Accounting Survey 2010 database. The model will generate changes in land use and farm structure for each of the study farm types.

- **Analysing the effect of greening of CAP payments.** This work will also be carried out using the ScotFarm model. As proposed, greening measures will require farms to change their land use in one way or the other. At this stage, as a number of greening measures are still under negotiation, an analysis of the impact of such measures on Scottish agricultural landscape will be beneficial for policy makers.

- **Determining the viability indices for Scottish farms.** This work has been commissioned by the Scottish Government and is using Farm Accounting Survey data (1990-2010) to identify vulnerable farms under existing policy scenarios.

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4. Agricultural production

The next round of CAP reform will alter the situation for livestock farmers in Scotland as historic payments give way to area-based payments that may be conditional on a minimum stocking rate and other aspects of land management. Such arrangements may have particular significance for both intensive and extensive sheep and suckler cattle farming systems in Scotland. In parallel to this, food production systems need to change to produce more food in a sustainable manner (i.e. sustainable intensification). Both CAP reform and sustainable intensification policies may impact on profit levels and on animal health and welfare.

Recent SRUC activities include:

- **2012 Conference: A Bright Future for Scottish agriculture after CAP reform?** This event was funded by the Scottish Government's Rural and Environment Science and Analytical Services Division Strategic Research Programme Theme 4 (Economic Adaptation) and Theme 5 (Food). Attended by almost 100 participants, including policy-makers and industry representatives, this conference aimed to discuss alternative ways that Scottish agriculture may be able to adapt to the proposed 2013 reforms whilst remaining productive and profitable. A briefing on participants' knowledge of CAP reform and optimism about the future of Scottish agriculture, the conference programme, and the speakers' presentations are all available to download [here](#).

- **Power in Agriculture.** This work was commissioned by the Oxford Farming Conference in 2011-12. The project explored where the economic, political and natural resource power currently lies in world agriculture, how that might change in the future and what it means to British farmers. The study found that the global power balance is shifting as a consequence of the globalisation of markets and the growth of transnational corporations. The UK punches above its weight in terms of global power, providing both opportunities and threats. The report is available [here](#).

- **Review of the Agricultural Sector in Argyll & Bute including Arran and the Cumbraes (2004 – 2011).** This report was commissioned by a regional land use partnership to improve the understanding of agricultural holdings and quantify the importance of agricultural activity to the region. Evidence was collected to raise awareness of farming issues, promote and develop farming and crofting initiatives and facilitate co-operation and collaboration between the land-based agencies - ultimately to mould the future ‘Agricultural Strategy for the Argyll Area’ document.

- **Future of Agriculture in the South of Scotland – baseline and strategy report.** Commissioned by the South of Scotland Alliance and the Forestry Commission. This work explored industry reaction to the proposed CAP changes, the potential impact of changes in CAP support on the region and on specific sectors, and highlighted

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potential solutions. The study found that, after stripping out the Single Farm Payment, the profitability of farming in the region is lower than other comparable regions of the UK, leaving the region particularly vulnerable to flattening of area payments under CAP reform. Regional priorities were highlighted to moderate the scale and rate of change of CAP reform and to boost agricultural output through greater competitiveness. Making more effective use of rural development funding under the SRDP offers the potential to support the agricultural sector and key funding priorities were highlighted.

Ongoing SRUC activities include:

- **Predicting the implications of CAP reform for the management of sheep and cattle farms in Scotland.** A farm planning model has been developed to explore how farmers might adapt to CAP reform. The objective is to predict the impact of CAP reform on flock size, stocking density, grazing management, profit per head and farm profit for specialised breeding sheep farms, specialised breeding suckler cattle farms and mixed sheep and cattle farms. Bio-physical and financial data from specialised breeding suckler cattle, breeding sheep and mixed enterprises are being analysed and used in the model. The preliminary results indicate that various factors, including changes to the CAP (e.g. the stocking rate rules) may encourage flock expansion on some farms (i.e. there is potential for indirect re-coupling of subsidy to production). Such expansion may stretch scarce resources and hence negatively impact on sustainable production (i.e. have negative environmental, animal health and welfare consequences). Other interactions between CAP rules, farm management responses and environmental impacts are being analysed.

- **Sustainable intensification and animal welfare in cattle and sheep farming systems.** Previous research in SRUC suggested that the profits of hill sheep farms might be improved by expansion, extensification and decreased labour input per ewe. Animal welfare was better served by greater intensification. To explore these trade-offs, the above mentioned farm planning model is being modified and used. Preliminary results show that in most cases the optimum stocking rates predicted by the model were lower than actual figures, hence lower predicted farm gross margins. Despite the lower predicted stocking rates, in most of the farms the total farm labour costs were estimated to be higher than the actual farm labour costs. Results reveal the potential conflicts between intensification (expanding flock size) for greater profit and higher food security on the one hand and, diminishing scarce resources such as high quality land, feed and labour, which are essential in providing the five freedoms of animal welfare, on the other.
5. Agri-food supply chains

The effects of the CAP on farmers’ production will have implications in terms of several aspects of the food supply chain, including the procurement of raw materials, food safety, food miles, the efficiency of domestic food production and, ultimately, the competitiveness of different food sectors. There has been increasing interest in different aspects of agri-food supply chains across Europe recently because a more market-oriented CAP will leave agricultural producers needing to become more involved with supply chains for the marketing of their products, and because there are concerns about the functioning of the European food supply chain, particularly because the decline in agricultural commodity prices in 2008 did not translate into lower food prices at producer and consumer levels.

Recent SRUC activities include:

- **The Implications of CAP reform (IMCAPT).** Funded by the Scottish Government Environment and Rural Affairs Department. This project aimed to identify and evaluate the economic implications of CAP reform, and the major influences on agricultural production and supply, with particular attention paid to the Scottish red meat, milk and cereal supply chains.

- **Estimating the impacts of Pillar 1 reform.** Defra funded. This project modelled the effect of the Single Farm Payment on agricultural production and land use and the impact of its elimination, the expected environmental impacts of Pillar 1 reform, and advised on budget requirements for funding the agri-environment programme under Pillar 1.

Ongoing SRUC activities include:

- **Analyses of collaborative agri-food supply chains.** Initiated under the EU project FOODCOMM (Key factors influencing economic relationships and communication in European food chains), which ran from 2006-2008, this work is continuing under the Scottish Government Research Programme 2011-2016. The overall objective of the work has been to analyse the role (prevalence, necessity and significance) of economic relationships and communication in selected food chains and to identify the economic, social and cultural factors which influence co-ordination within these chains.

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12 More information is available here: [http://www.sruc.ac.uk/info/120460/think_local](http://www.sruc.ac.uk/info/120460/think_local).
• **Resilient food supply chains.** Ongoing work in the Scottish Government Rural Affairs and the Environment Portfolio Strategic Research Programme 2011-2016 is focusing on analyses of how short food supply chains operate and what the success factors are, what factors are required to develop resilient agri-food supply chains, and sectoral analysis of different Scottish products, such as barley, beef and soft fruits.

• **Think Local**

The Scottish Government is working in collaboration with SRUC to set up ‘Think Local’, a £2.5 million initiative to deliver funding for targeted support and advice to develop local food marketing, food tourism, farmers’ markets, food festivals and events. The initiative also includes collaboration with Scotland Food and Drink, the Scottish Agricultural Organisations Society (SAOS) and SFQC (Scottish Food Quality Certification).

6. **Sustainable intensification**

Influential policy and academic circles are beginning to explore the concept of Sustainable Intensification (SI). This concept aims to meet the multiple aspirations of society, in terms of securing and increasing yield, as well as the functional and cultural benefits that society values (e.g. mitigation of climate change, reduction in diffuse pollution, and protection of biodiversity).

There are also emerging global research and policy agendas based on the sustainable management of agricultural land and its synergies with the production of multifunctional benefits from these landscapes. This aligns with the requirements of a number of countries and international bodies which are searching for land management solutions aimed at balancing socio-economic and ecosystem service management provision. Exploring SI issues is a central pillar of SRUC research on understanding farmer adoption of productivity technologies under policy change scenarios.

Recent SRUC activities include:

• **Exploring the concept of SI for Scottish Agriculture.** Funded by SRUC. This discussion document examines the general framework for SI and the barriers to its implementation. It argues that Scotland needs to adopt its own definition of SI to increase the desirability of this technology to Scottish farmers. The report is available here.  

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• *Constructing an Index of SI for Scottish Agriculture*. This work was undertaken as part of the Scottish Government Rural Affairs and the Environment Portfolio Strategic Research Programme 2011-2016, Theme 4 Economic Adaptation. This working paper adopts a novel approach to understanding the economic, environmental and social factors behind SI. It constructs an index for 42 Less Favoured Area (LFA) Scottish Beef farmers over the period 2000 to 2011. The work found very little progress towards either sustainability or intensification during this period. The Briefing is available [here](#).  

Ongoing SRUC activities include:

• *Perceptions of SI*. This PhD work is being undertaken as part of the Scottish Government Rural Affairs and the Environment Portfolio Strategic Research Programme 2011-2016, Theme 4 Economic Adaptation. It aims to explore how farmers and members of the agro-food supply chain perceive intensification and sustainability in order to identify how best to implement this technology.

• *SI: the Pathway to Low Carbon Farming*. This three day international conference is being organised by SRUC’s Carbon Management Centre and will take place in Edinburgh in September 2013. Further details are available [here](#).

7. Innovation

In future, there are some real challenges to which agriculture will need to respond in innovative ways in order to ensure that they are turned into opportunities. These include: the need to feed a growing population using a limited area of land on which there are multiple demands; the possible removal of subsidies, meaning that farmers (and other rural actors) will have to be innovative in responding to alternative schemes (such as rural development plans); the growing cost and limited supply of fertiliser requiring the breeding of crops that are less reliant on bagged fertiliser; and climate change, which is acting as a driver to produce more from less land and to develop tolerant and adapted crops. Supporting innovation is an intrinsic aspect of a KTE organisation such as SRUC. Our substantial programme of work examines both the demand for innovation and analyses the process of innovation itself, with a particular focus on identifying the barriers to adoption of innovations across the agricultural sector and exploring how they might be overcome.

Recent SRUC activities include:

• *CAP Reform, Innovation Union and Europe 2020: Interconnections, opportunities and future direction*. Funded by SRUC’s Rural Policy Centre. This project explored the relationship between the overarching Europe 2020 Strategy, CAP Reform and Innovation Union, with special emphasis on potential opportunities

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17 For more information, see: [http://www.sru.ac.uk/homepage/403/carbon_management_centre_international_conference](http://www.sru.ac.uk/homepage/403/carbon_management_centre_international_conference)
and challenges for the agricultural sector. The briefing from the project is available here.18 Aligned with SRUC’s Innovation Programme, the Rural Policy Centre has published two further briefings on innovation and KTE19. Both briefings are available here.

- **The Uptake of Animal Health Planning in Scotland.** Undertaken as part of Scottish Funding Council (SFC) funding support to SRUC. There are a number of barriers to the uptake of animal health planning in Scotland, including a lack of clarity about the purpose and poor coordination between the stakeholders involved. This work explored the barriers to uptake and suggests a number of solutions, including simplifying health planning systems, improving collaboration and communication between the actors involved, and increasing and standardising data recording. The briefing is available here.20

- **EBVs in the Scottish sheep sector.** Undertaken as part of Scottish Funding Council (SFC) funding support to SRUC. Outlines the results of an innovation systems approach to discuss the barriers to uptake of EBVs and genetic selection techniques within the Scottish sheep sector. Suggested solutions include: the need to improve objectivity in carcass quality assessment, improved knowledge exchange between all actors and updates to the recording system. A Briefing on this project is available here.21

- **Rural Development for Scotland: How can the new SRDP deliver?** Conference funded by the Scottish Government’s Rural and Environment Science and Analytical Services Division Strategic Research Programme Programme 1 (Environment). Over 100 delegates attended this event which focused on a number of key issues raised in the Scottish Government’s SRDP 2014-20 Working Groups, including fostering innovation and collaboration, and achieving better targeting and additionality. Key messages from the conference included the need to balance clarity

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and the simplicity of schemes, funding instruments etc. with flexibility, and the need to target and improve value-added from spending. The conference programme, presentations and posters, and a briefing summarising the key messages from the event are all available here\textsuperscript{22}.

Ongoing SRUC activities include:

- **Innovation Programme**: Support to SRUC from the SFC is funding a variety of activities as part of the significant programme of work on innovation. This includes: further workshops focusing on nitrogen use efficiency and water use; a joint PhD with AgResearch New Zealand on dairy reproductive planning; understanding the impact of future technologies on agriculture and society; social network analysis to understand regional change within respect to innovators and other sectors of the farming population.

8. Efficiency

The European Commission’s EU 2020 strategy is “A strategy for smart, sustainable and inclusive growth”, and includes a commitment to achieving “Sustainable growth – promoting a more resource efficient, greener and more competitive economy.” European agriculture has a key role to play in helping Europe meet the 2020 Strategy objectives. Increasing efficiency is an essential aspect of increasing farm competitiveness. The CAP, and its support payments, has significant impacts on efficiency and growth and recent reforms will affect the magnitude by which efficiencies can be realised.

Recent SRUC activities include:

- **Dairy farming efficiency, innovation and the price of milk.** Research undertaken within the Scottish Government Rural Affairs and the Environment Portfolio Strategic Research Programme 2011-2016, Theme 4 Economic Adaptation. Analysis of a panel of English and Welsh dairy farmers from 2001-2010 showed that productivity has tended to stay stable over time, with an average growth rate of 1% per annum for this sector, although there were large fluctuations in 2004-2006. Technical efficiency and scale efficiency show little change over the decade, while technical change seems the most radically affected by CAP reform. In general it seems that lower prices inspire adoption of technical innovation while higher prices inspire changes in structures to gain economies of scale. The briefing is available here\textsuperscript{23}.

- **Relative Efficiency of UK Farms.** Funded by Defra. The work measured technical efficiency by farm type within the UK and across a number of EU countries (the UK, Holland, Belgium, Denmark, Ireland, Germany, Spain, Italy, Poland, Hungary and


France). Most countries demonstrated a high level of technical efficiency across all farm types, indicating that, on average, farms operate near best practice levels. All Scottish farming types have farms that are on the technical efficiency frontier, meaning that they are operating at their optimal activity levels. A briefing summarising the work on this project is available here\(^{24}\).

- **Raising the competitiveness of Scotland’s agri-food industry.** This work was undertaken as part of the Scottish Government Rural Affairs and the Environment Portfolio Strategic Research Programme 2011-2016. Productivity growth in Scottish agriculture has been reducing over the twenty years since 1989, with the rate of slow down increasing over time. This reduction predominantly reflects a large fall in output growth. At the farm level, a more mixed picture emerges, with a downward trend in the rate of efficiency of the specialist sheep sector, for example. The study highlights a number of drivers of productivity which are particularly relevant for Scotland, and discusses a number of areas which need to be explored further by both researchers and industry. The report is available here\(^{25}\).

Ongoing SRUC activities include:

- **Developing supply chain efficiency measures.** As part of the Scottish Government Rural Affairs and the Environment Portfolio Strategic Research Programme 2011-16, researchers are developing supply chain efficiency measures.

- **Eco-efficiency approaches to agriculture.** Collaborative research work on developing eco-efficiency approaches to agriculture with SLU-Sweden.

- **Mitigation technologies on sustainability and efficiency.** Modelling work is ongoing to understand the impact of mitigation technologies on sustainability and efficiency.

9. ‘Greening’ the CAP

Over the past 25 years, the integration of environmental concerns within the CAP has been characterised by the introduction of cross-compliance in Pillar 1 and a gradual increased emphasis on agri-environment measures within Pillar 2. These elements have been supplemented in current reform debates by the proposed introduction of green direct payments in Pillar 1. The aim is to extend a basic level of environmental management to the majority of farmland in Europe, but the proposals have been criticised for being both too demanding and too weak. At the same

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time, the Pillar 2 budget is facing a net reduction over the next programming period. If the significant environmental and climate change challenges facing the EU are to be addressed effectively, then there is a need for both Pillar 1 and Pillar 2 to be used to help address those challenges.

Recent SRUC activities include:

- **MEACAP: Impact of environmental agreements on the CAP.** European Commission funded STREP (Specific Targeted Research Project). Coordinated by the Institute for European Environmental Policy and conducted in partnership with SRUC and seven other European Institutes. Aspects of the recommendations arising from this project (e.g. making it mandatory for all farms across the EU to have, or establish, at least 7% of the farm’s utilised agricultural area as Ecological Focus Areas) were included by DG Agriculture in 2011 in their suggestions for CAP reform beyond 2014 and are thus influencing the process of policy change. The SRUC Policy Briefing on this work is available [here](#).

- **Influencing the development of European policy on High Nature Value farming systems.** The findings from a number of projects, conducted in collaboration with others, have led to the European Commission making it mandatory that all 27 EU Member States put a policy priority on High Nature Value (HNV) farming systems (i.e. farming systems of proven high nature conservation importance). Such systems currently cover nearly one third (i.e. 30% or 52 million ha) of the EU 27 total agricultural area. Hence the research has the potential to lead to a significant amount (c. €10 to €16 billion per year) of future CAP spend being directed at supporting HNV farming systems. The SRUC Policy Briefing on this work is available [here](#).

- **Alternative payment approaches for non-economic farming systems delivering environmental public goods.** UK Land Use Policy Group-funded project consortium led by SRUC and involving the Institute for European Environmental Policy and Johann Heinrich von Thünen Institut. The growing agenda on the environmental and social benefits of maintaining farming production, particularly in areas where farming is ‘non-economic’, has led to increasing policy focus on how these systems can be maintained. Non-economic farming systems tend to be extensive, managing larger proportions of land under rough and common grazing and, as a result, are generally low income or non-economic operations. However, they also tend to be environmentally valuable given the large tracts of land under less intensive management. This study examined the rationale for supporting such farming systems and compared the possible impacts of a change in payment mechanisms on these farms. The SRUC Research Briefing on this work is available [here](#).

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Ongoing SRUC activities include:

- **The High Nature Value farming concept throughout the EU27 and its maturity for financial support under the CAP.** Contract for DG Environment led by the Institute for European Environmental Policy in association with the European Forum for Nature Conservation and Pastoralism.

- **Ex-ante evaluation of the Scotland Rural Development Programme 2014-2020.** Contract for Scottish Government involving a consortium led by Agra CEAS Consulting and involving SRUC and Collingwood Environmental Planning.

10. **Climate change mitigation and adaptation**

The relative distribution and amount of CAP Pillar 1 payments significantly influence agricultural land use patterns and the type and characteristics of farms in the EU. As a consequence, changes in the payment structure are expected to alter agricultural greenhouse gas emissions and the climate change adaptive capacity of both individual farmers and the food production system. In addition, the cross compliance regulations and the Rural Development Programmes provide opportunities to introduce compulsory and voluntary regulation promoting adaptation and mitigation activities.

Recent SRUC research activities include:

- **Implications of proposed CAP reforms for climate change action in Scotland.** This work was undertaken within the Scottish Government Rural Affairs and the Environment Portfolio Strategic Research Programme 2011-2016, Theme 4 Economic Adaptation. Addressing climate change features prominently as a greening objective in DG Agriculture's initial proposed changes to the CAP. Moreover, beyond the CAP, there is a goal of mainstreaming both adaptation and mitigation throughout the EU budget. The SRUC Policy Briefing discussing how the proposed changes may affect actions on climate change in the agricultural sector in Scotland, broken down by the policy aims of mitigation and adaptation, is available [here](#). A presentation on the topic is available [here](#).

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• **Impacts of the Scotland Rural Development Programme on Greenhouse Gas Mitigation.** This project was undertaken for ClimateXChange and assessed the impact of current SRDP measures on greenhouse gas mitigation. It found that most SRDP measures provide benefits across a range of indicators of greenhouse gas savings and reduced nutrient losses. Carbon sequestration and reduced nitrous oxide emissions are the most common benefits arising from SRDP measures. This report covers environmental benefits (mostly related to GHG mitigation). However, the wider environmental, social and economic impacts of measures also need to be taken into consideration. The report is available on the ClimateXChange website.³¹

Ongoing SRUC activities include:

• **Farming for a Better Climate.**³² Funded by the Scottish Government and delivered by SAC Consulting. It is estimated that agriculture and related land use is responsible for around 20% of Scotland’s greenhouse gas emissions. To help farmers identify what they can do to contribute towards Scotland’s interim target of a 42% reduction in emissions by 2020, based on 1990 levels, Scottish Government has funded the Farming for a Better Climate initiative. SRUC is working with four volunteer farmers, other local farmers and industry specialists to identify and demonstrate mitigation measures applicable to beef and sheep, dairy and arable farming sectors. The measures explored under the initiative have the potential to lead to direct financial benefits as well as reduce emissions and are grouped into five key actions areas: energy and fuel; development of on farm renewable; locking carbon into soils and vegetation; optimising fertiliser, slurry and manure use; and managing livestock and storage of livestock wastes. Reports from the meetings can be found here.³³

• **Greenhouse Gas Platform Research Programme.** SRUC is contributing to a large UK programme of research (funded by Defra) aimed at improving our reporting and mitigation of greenhouse gases. Work is divided into sections that focus on nitrous oxide, methane and the inventory structure. Sites across Scotland and the rest of the UK are used to explore how typical farming activities contribute to the emissions of greenhouse gases and how variations in management can be used to achieve GHG mitigation. Early results from the programme have highlighted the opportunities to align efficient management practices with GHG mitigation. An overview of the programme is available from the GHG platform website.

• **An Integration of Mitigation and Adaptation options for sustainable Livestock production under climate Change (ANIMALCHANGE).** Funded by DG Research, this INRA-coordinated project involves a wide range of partners drawn from across the globe. The overall aim of the project is to provide a vision of the future of the livestock sector under climate change in Europe, Africa and Latin America. An overview of the project is available here.³⁴

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³¹ For more information, see: [http://www.climatexchange.org.uk/](http://www.climatexchange.org.uk/).
³² For more information, see: [http://www.sruc.ac.uk/climatechange/farmingforabetterclimate/](http://www.sruc.ac.uk/climatechange/farmingforabetterclimate/).
³³ For more information, see: [http://www.sruc.ac.uk/info/120200/climate_change_focus_farms](http://www.sruc.ac.uk/info/120200/climate_change_focus_farms).
³⁴ For more information, see: [http://www.animalchange.eu/](http://www.animalchange.eu/).
• **Sustainable management of agricultural soils in Europe for enhancing food and feed production and contributing to climate change mitigation (SMARTSOIL).** Funded by DG Research, this University of Aarhus coordinated project involves a wide consortium of European partners. The aim of the project is to develop an innovative approach to assess the impact of C management on crop productivity, soil organic C stocks and other ecosystem services. An overview of the project is available here[35].

11. **Agri-environment schemes**

Agri-environment measures are designed to encourage farmers to protect and enhance the environment on their farmland by paying them for the provision of environmental services. Agri-environment schemes were first introduced into EU agricultural policy during the late 1980s as an option to be applied by Member States. Since 1992, the application of agri-environment programmes has been compulsory in Member States’ rural development plans, though any involvement in agri-environment schemes remains optional for farmers. In order to be effective, agri-environment measures need to be targeted and applied at a scale appropriate to helping address the environmental concern being tackled.

Recent SRUC activities include:

• **An analysis of the potential effectiveness of a Payment-by-Results approach to the delivery of environmental public goods and services supplied by Agri-Environment Schemes.** Contract conducted for Land Use Policy Group/Scottish Natural Heritage and led by Macaulay Institute in association with Pareto Consulting and SRUC. This desk-based study concluded that payment-by-results schemes can improve the environmental targeting of agri-environment measures in comparison to the payments based on management prescriptions. However, the payment-by-results approach needs further testing through the implementation of prototypes at a local level and the incorporation of specific outcome-based elements (such as bonus payments) into standard prescription-based schemes. A Knowledge Scotland overview of the findings from this project is available here[36].

• **Estimating the scale of future environmental land management requirements in the UK.** Contract conducted for Land Use Policy Group and led by ADAS in association with SRUC. This study estimated that the minimum cost of meeting publicly defined environmental objectives in the UK would be just under £2 billion per year. This is more than three times the funding currently available from existing CAP Pillar 2 allocations, but still less than the total current UK spend on Pillars 1 and 2 combined. The scale of need is hardly surprising bearing in mind that most of the environmental services required by wider society (including the management of carbon, water, biodiversity and landscapes) are currently unrewarded by conventional


markets. A *Knowledge Scotland* overview of the findings from this project is available [here](#)\(^{37}\).

- **Turning population ecology into conservation strategy: development of a natural care scheme for red-billed choughs in Scotland.** Project led by University of Glasgow and University of Aberdeen and funded by the UK Natural Environment Research Council (NERC) and supported by Scottish Natural Heritage (SNH) and RSPB Scotland. The findings from this project (building on long-term research into the ecological needs of the red-billed chough on the Hebridean island of Islay) have been used by the Scottish Government and SNH to encourage farmers on the island to use existing SRDP prescriptions to help maintain chough on their land. SNH are also using the findings to develop chough-specific measures for potential inclusion among the current and future SRDP options available in the Argyll area. A *Knowledge Scotland* overview of the findings from this project is available [here](#)\(^{38}\).

- **The potential for improving the biodiversity value of intensive grasslands.** Scottish Government funded and involving SRUC and The Game & Wildlife Conservation Trust. This research focused on assessing the biodiversity benefits gained from fencing off watercourses to prevent diffuse pollution entering the water in a dairy farming dominated landscape in Ayrshire. The majority of such riparian margins are too narrow to have biodiversity or diffuse pollution benefits. Any such margins established in the future need to be both wide and subject to occasional grazing or cutting management in order to improve the use that can be made of them by invertebrates and foraging farming birds. A *Journal of Applied Ecology* paper highlighting the findings is available [here](#)\(^{39}\).

Ongoing SRUC research activities include:

- **The implications of implementing biodiversity enhancement and diffuse pollution mitigation at a catchment scale.** Scottish Government-funded and involving SRUC Research and SAC Consulting and complementing research being undertaken at the James Hutton Institute.

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- **The ecology of yellowhammer and other granivorous songbirds on grassland-dominated farms in south-west Scotland.** PhD funded by SNH, The Game and Wildlife Conservation Trust and SRUC.

- **Evaluating the cost-effectiveness of biodiversity measures in Scotland.** Contract for Scottish Government involving a consortium led by SRUC and involving University of York and Pareto Consulting.

### 12. Rural economies and communities

Current discussions in Brussels suggest that Pillar 2 budgets will face considerable reductions, likely to be 10-20% in Scotland. The EU has set six priorities for rural development (to replace the three axes in the current programme) and has proposed the establishment of a Common Strategic Framework, which will be transposed into Partnership Contracts at national level, which will seek to strengthen the coordination and integration of EU policies for the delivery of the Europe 2020 Strategy. LEADER will continue to constitute a minimum spend of 5% of the total Pillar 2 budgets of Member States, while it is proposed that the LEADER approach be used across all EU funds, based on a common approach with a single set of rules, using the term Community-Led Local Development (CLLD).

Recent SRUC activities include:

- **Rural Scotland in Focus Reports (2010 and 2012).** Funded by SRUC. These biennial reports provide a fast-track to a range of evidence and commentary on the key characteristics of rural Scotland, how these are changing, and the implications of these changes. The reports are produced by a multi-disciplinary team of SRUC researchers and are published through SRUC’s Rural Policy Centre. Themes in the 2010 report included rural population and economic trends, the ownership of assets by rural communities, the impacts of climate change on rural Scotland, water quality, and farmland and upland biodiversity. The 2012 report revisited some of these themes (including demography and economic trends) and also explored the role of towns in rural Scotland, the importance of the private and third sectors, the availability of and demand for next generation broadband, and the implications for rural Scotland of a low carbon future. The 2012 report concludes that specific characteristics make rural Scotland different from urban Scotland, therefore policies must be ‘tailored’ to rural Scotland. Both reports are available to download [here](#).

- **Organisation and facilitation of workshops at the 2012 Scottish LEADER Conference.** Work undertaken for the Scottish Government. SRUC staff facilitated and wrote-up four parallel workshop sessions at the Conference, which focused on the future of LEADER in 2014-20. Key messages included: the need for administration to be kept as simple and proportionate as possible to ensure that LEADER promotes innovative local development; reduce the stifling impact of audit

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Ongoing SRUC activities include:

- **2014 Rural Scotland in Focus Report**: SRUC staff are currently scoping the themes to be covered in the 2014 Report, due for publication in Summer 2014.

- **LEADER – looking forward to the next Programme.** SRUC researchers are working with Moray LEADER to help identify learning from the current LEADER programme to feed into the design of the next Programme. SRUC researchers are also working with Blake Stevenson to evaluate the Aberdeenshire and Cairngorms National Park LEADER Programmes. In both projects, work is exploring what has worked well and the reasons why, in order to feed into the design of future LEADER programmes.

- **Capacity for Change (C4C).** This programme (2011-13) is funded by Dumfries and Galloway LEADER\(^{42}\), and seeks to address capacity-raising and community resilience in communities who have not engaged previously in such programmes. SRUC researchers are monitoring and evaluating C4C throughout its implementation, from pre-planning through to post-completion. The research component of the C4C initiative was undertaken as part of the Scottish Government’s Strategic Research Programme ‘Governance and decision-making for community empowerment’ 2011-2016 and it aims to assess the contribution of C4C to community resilience\(^{45}\). A framework will be developed to help identify social and economic outcomes associated with C4C-type project investments\(^{44}\). Evaluation of C4C will provide useful data for the development of Dumfries and Galloway LEADER's post-2013 strategy and business plan. Early findings indicate that resilience is multi-scalar, multi-sectoral, interdependent and in flux over time.

- **Ayrshire 21.** This programme is funded until December 2013 through the Ayrshire LEADER programme, and managed by the three Ayrshire councils. It aims to

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\(^{43}\) For more information, please do to: [http://www.knowledgescotland.org/briefings.php?id=310](http://www.knowledgescotland.org/briefings.php?id=310).

encourage local action across rural Ayrshire. It will work with 21 communities who do not have a strong history of bidding for LEADER funds to develop rural community action plans, build sustainable skills and capacity for subsequent community action, and to build a strong Ayrshire-wide forum to attract investment in the future. The work is being carried out by the Scottish Community Development Centre, SRUC, Coalfields Regeneration Trust, STAR Development Group, Alan Jones Associates and Ailsa Horizons. SRUC is contributing to the monitoring and evaluation component of the project.

13. Farmer and land manager behaviours and attitudes

Agricultural systems are dynamic, since producers and consumers are continuously responding to changes in crop and livestock yields, food prices, input prices, resource availability. This volatility is largely due to factors that farmers have no, or little, control over; such as weather conditions, extreme weather events, outbreaks of disease and pests. The CAP is designed to help protect farmers throughout the EU from such external shocks and does so by influencing prices, outputs and farmers' incomes. Currently the CAP provides a level of income security to farmers as well as a 'cross compliance' framework for sustainable management of the environment. It is, however, recognised that making permanent changes to long established habits takes time, even when change is perceived as necessary. Hence there is a need to provide appropriate advice and support to farmers in order to help them recognise any production or environmental issues they may be facing and understand how best to address those issues.

Recent SRUC activities include:

- **Managing conflicting objectives.** Funded by the Scottish Government. Farm businesses are multifunctional and profit generation has been found not to be the primary goal of many farm managers. For example, ethical issues such as animal welfare or environmental care often take precedence over profit in farmer decision choices. However financial pressures on farm businesses make it increasingly difficult to sustain such choices and are making it more difficult to meet societal demands of the industry where there is market failure; that is, where the decision choice that maximises farm profit and societal benefits do not coincide. SRUC undertook a case study examining these conflicts, highlighting some of the undesirable unintended consequences of policy directed at single issues.

- **Farmer attitudes to different risks.** Funded by AQMeN and Scottish Government. A wide variety and number of risks must be managed within farm businesses. Commonly, farmer decisions (which manifest in their behaviour) are a matter of selecting the least risky option with one risk being weighed up against another. This study found that farmers do not view all risks as equal – an assumption widely made in current research. This work is being taken forward into new decision

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models being developed as part of the Scottish Government Rural Affairs and the Environment Portfolio Strategic Research Programme 2011-16.

- **Evaluation of the Young Entrants Support Scheme and TAG (a project supporting farmers to use new technologies in livestock production).** These studies in Wales provided insights into farmer responses to policy interventions and barriers to adoption of innovations that have potential to improve business performance. The knowledge gained is informing new models of farmer decision making being developed in SRUC’s Future Farming Systems Group⁴⁶.

Ongoing SRUC research activities include:

- **Veterinary and Advisory Service (VAS) Programme.** The VAS programme is commissioned annually by the Scottish Government to meet a range of statutory obligations and to assist with achieving a competitive and dynamic industry. As part of this programme, SRUC provides expertise and advice in many areas including: economic information and CAP reform updates, new entrants, crop health monitoring, bee health and husbandry, climate change issues, farm diversification, pollution control, food marketing, farm woodland and conservation and organic farming. This expertise is delivered to farmers and other land managers through meetings, workshops, training courses and publications. SAC Consulting Veterinary Services also collect data from diagnostic material submitted to the network of eight SAC Consulting Veterinary Disease Surveillance Centres, providing information on the current health and disease status of farmed livestock. Further information about the VAS programme can be found here⁴⁷.

- **Why don’t all farmers take up ‘win-win’ measures for climate change and environmental goals?** This work is funded by SRUC’s Carbon Management Centre and involves a review of evidence from multiple disciplines to identify why some farmers and land managers are reluctant to take up greening measures or actions to mitigate climate change that offer financial savings or rewards. Two policy briefs are will be published shortly, as well as a forthcoming academic article in Nature Climate Change⁴⁸. These publications offer psychological and evolutionary evidence against the assumption that farmers and land managers should act in economically rational ways in order to maximise self-interest. Future research and interventions should be focussed to investigate the following propositions: (1) that increasing the visibility and prestige of environmentally successful behaviours will aid social learning amongst farmers, (2) that framing behaviour change messages to emphasise stewardship, rather than financial benefits, of measures will facilitate cooperation for environmental goals, and (c) that farmers will be more resistant to reforms that are at odds with traditional symbols of ‘good farming’.

⁴⁶ For more information, see: [http://www.sruc.ac.uk/info/120060/future_farming_systems](http://www.sruc.ac.uk/info/120060/future_farming_systems).
⁴⁷ For more information, see: [http://www.sruc.ac.uk/info/120415/scottish_government_vas_programme](http://www.sruc.ac.uk/info/120415/scottish_government_vas_programme).
- **Effective Knowledge Transfer and Exchange (KTE).** SRUC organises and delivers a wide variety of KTE activities. These provide end-users with information and knowledge that will enable better decision choices. The internal evaluation programme for these activities provides information on good practice in KTE to improve the effectiveness of communication of science to end-users and stakeholders. A policy briefing will be published through the RPC shortly.

- **Understanding factors influencing farmer decisions.** This project, funded by the Scottish Government Rural Affairs and the Environment Portfolio Strategic Research Programme 2011-16 is examining factors influencing decision choices. This is crucial to understanding how they may respond to policy interventions given that they are managing complex systems with interdependent parts and competing objectives. A model of farmer decision making using a new approach to investigate how they resolve choice dilemmas is being designed and Farm Accounts Scheme (FAS) data is shortly to be analysed to gain new insights into the resilience of farm businesses.

14. CAP 2014 and beyond

There is much still to debate on the future of the CAP post-2014 and SRUC will continue to inform these debates through its research, education, knowledge exchange and consulting activities. However, even after agreement is reached and a reformed CAP is implemented, SRUC will continue to work on relevant topics at a Scottish, UK and wider European level in order to assess how well they are working and what impacts they are having. This work will inform the next reform of the CAP, due for implementation in 2020.
15. Useful Links

Research work conducted by SRUC staff is disseminated through a variety of sources. An important ‘hub’ for information on the range of work being undertaken by SRUC staff is the Rural Policy Centre (RPC) which publishes briefings and reports and organises high-profile events on all aspects of the CAP reform debate. The RPC’s publications are organised into five key themes: Support to Agriculture, Changing Environment, Food Futures, Health and Wellbeing and Thriving Communities.

Other Useful Links:
- SAC Consulting
- SAC Consulting Food and Drink Team
- SRUC Carbon Management Centre
- February 2012 ‘A bright future for Scottish agriculture after CAP reform?’ Conference
- November 2012 ‘Rural Development for Scotland: How can the new SRDP deliver?’ Conference
- SRUC Farm Management Team

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49 For more information, see: http://www.sruc.ac.uk/ruralpolicycentre.
50 For more information see: http://www.sruc.ac.uk/info/20005/sac_consulting.
51 For more information see: http://www.sruc.ac.uk/info/120103/food_and_drink.
52 For more information see: http://www.sruc.ac.uk/info/120173/carbon_management_centre.
53 For more information see: http://www.sruc.ac.uk/info/120403/rpc_events/737/a_bright_future_for_scottish_agriculture_after_cap_reform_cap_conference_summary.
54 For more information see: http://www.sruc.ac.uk/info/120403/rpc_events/721/rural_development_for_scotland_can_the_new_srdp_deliver.
55 For more information, see: http://www.sruc.ac.uk/farmmanagement.