



# Spatial analysis of agri-environmental policy uptake and expenditure in Scotland



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## ABSTRACT

Agri-environment is one of the most widely supported rural development policy measures in Scotland in terms of number of participants and expenditure. It comprises 69 management options and sub-options that are delivered primarily through the competitive 'Rural Priorities scheme'. Understanding the spatial determinants of uptake and expenditure would assist policy-makers in guiding future policy targeting efforts for the rural environment. This study is unique in examining the spatial dependency and determinants of Scotland's agri-environmental measures and categorised options uptake and payments at the parish level. Spatial econometrics is applied to test the influence of 40 explanatory variables on farming characteristics, land capability, designated sites, accessibility and population. Results identified spatial dependency for each of the dependent variables, which supported the use of spatially-explicit models. The goodness of fit of the spatial models was better than for the aspatial regression models. There was also notable improvement in the models for participation compared with the models for expenditure. Furthermore a range of expected explanatory variables were found to be significant and varied according to the dependent variable used. The majority of models for both payment and uptake showed a significant positive relationship with SSSI (Sites of Special Scientific Interest), which are designated sites prioritised in Scottish policy. These results indicate that environmental targeting efforts by the government for AEP uptake in designated sites can be effective. However habitats outside of SSSI, termed here the 'wider countryside' may not be sufficiently competitive to receive funding in the current policy system.

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## 1. Introduction

### 1.1. The common agricultural policy

The European Common Agricultural Policy (CAP) will undergo reforms post 2013 in order to adapt to evolving environmental and economic challenges (COM, 2012a). Alongside the continued economic crisis there is uncertainty about how the balance of environmental and economic issues will be addressed both at the European and national level (Hodge, 2012). The Rural Development Programmes (RDP) (COM, 2012a) are prominent policy mechanisms within the CAP that are designed to meet this challenge. RDPs for the programming period 2007–2013 are based on

Strategic Guidelines set by the European Commission, and have three core objectives known as Axes. Whereas Axes 1 and 3 promote 'competitiveness' and 'diversification' in rural areas, Axis 2 focuses on 'improving the environment and the countryside by supporting land management'. This includes a number of policy 'measures', which act as instruments for integrating environmental considerations into economic decisions.

### 1.2. The Scottish rural development programme

Each EU Member State, [in line with the three Axes], has developed its own RDP based on national priorities, with budgets set accordingly (COM, 2005). Scotland's RDP is considered to have an "essential role in sustaining land-use systems that contribute to the survival of local communities and which are crucial to the delivery of environmental benefits, including the delivery of biodiversity targets and the maintenance of unique landscape character" (Scottish Government, 2008, p.13).

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Consequently, the Scottish Government has allocated over £1 billion to environmental policy measures within the RDP 2007–2013 programming period (Scottish Government, 2008). The 'environmental' budget for Scotland's RDP is spread across eight different delivery mechanisms known as schemes, illustrated in Fig. 1. Between 2007 and 2010 the Rural Priorities (RP) scheme received the highest committed expenditure in comparison to the seven other schemes, at £260.7 million (Scottish Government, 2010).

The RP scheme is unique in comparison to the other delivery schemes in that it works as a competitive process where the eligibility of rural land managers to receive funding is based on a scoring system. The scoring system assesses the contribution of projects, amongst other eligibility criteria, to quantified national and qualitative regional targets both of which link to the EU strategic guidelines and objectives (Scottish Government, 2011a). The RP scheme has five environmentally centred measures, including agri-environmental expenditure (AEP) as summarised in Table 1. AEP is outlined in the Council Regulation (EC) No 1698/2005 (COM, 2005), and is a broad categorisation of numerous land management strategies known as 'options'. In Scotland there are 69 options and sub-options for the AEP measure. These options range from wetland management to bird species conservation; all options have the common aim of creating, conserving and improving habitats and biodiversity within Scotland (Scottish Government, 2008). The number and specificity of options under Scottish the AEP measures contrasts with other EU Member States, with broader options based, for example, on overall biodiversity protection rather than specific species or habitats (Poláková et al., 2011). For Scotland, the array and the number of options are tailored to varying needs due to the diversity of Scottish landscapes (Scottish Government, 2008; Poláková et al., 2011).

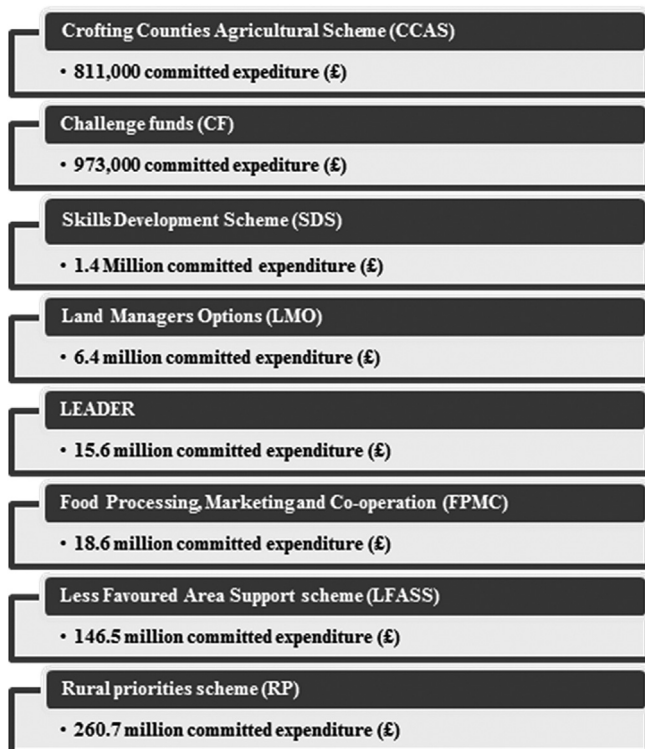


Fig. 1. The eight delivery mechanisms of Scotland's RDP, in order of committed expenditure, from 2007 to 2010 (Scottish Government, 2010a).

### 1.3. Evaluating policy measures

The Scottish Government is obligated to evaluate and monitor the performance of the RDP through the Common Monitoring and Evaluation Framework (CMEF) (COM, 2006). Data on both the number of participants with contracts (uptake) and expenditure of RDP measures are required in the form of the CMEF quantitative indicators (COM, 2006). Performance can be appraised by comparing these indicators to output indicators, which are nationally pre-set Axes and measure targets (COM, 2006). Such evaluation may identify 'implementation deficits', describing the gap between policy intentions and actual outcomes (Weale, 1992; Winter, 1996; Wilson and Hart, 2000). For instance, from 2008 until 2011, AEP had the highest uptake and expenditure across the RP measures from each of the Axes; receiving 39% of the total expenditure for RP (total £ 158 million) and 77% of the total contracts (total 15,322), far exceeding the AEP number of holdings output target by 135% (Scottish Government, 2008). These figures indicate that AEP adoption is meeting policy expectations. Yet the level of aggregation of these targets and whole measure analysis does little to allow a deeper understanding of what AEP management activities are being adopted and across which land and farm types.

Further assessment of option adoption, however, demonstrates a large disparity between uptake and expenditure among the 69 options under the RP scheme's AEP measure. For example from 2008 to 2011 the option 'supplementary food provision for raptors – hen harriers' had only 1 applicant and a committed spend of £5380. In contrast the 'open grazed or wet grassland for wildlife' option had the highest uptake with 2011 beneficiaries, and over £30 million in committed spend (Scotland's RDP Scottish Government data, 2007–2011). Yet assessing if levels of individual option uptake and expenditure are meeting policy objectives is challenging in the absence of quantifiable targets that do not go beyond the measure itself. Additionally, Potter et al. (1993) argue that "the precision with which target groups or target land are identified will be critical in their success or failure" (p.199).

It is equally challenging, therefore, to assess policy performance regionally because policy priorities are less clear at this level. The spatial distribution of AEP clearly differs across Scotland, e.g. Fig. 2 shows the variation in expenditure across the eleven Regional Project Assessment Committees (RPAC) regions of Scotland for AEP. These eleven regions also have varying proportions of Scotland's total UAA (Utilised Agricultural Area). Expenditure could reasonably be assumed to be linked to the proportion of UAA within a region. However, as Fig. 2 demonstrates, this is not necessarily the case. For example the Highland RPAC secured a relatively low percentage of funds relative to the proportion of its UAA while the Grampian RPAC is the opposite.

Variation in expenditure across regions, when UAA is accounted for, raises inequity issues for the targeting of expenditure and uptake for AEP. Justification of regional budgets and their targeting performance is uncertain, since in spite of regional targets being established per RPAC, these are qualitative and fairly unanimous across the regions (Scottish Government, 2011a; RSPB, 2011).

Thus, indicators of uptake and expenditure have only limited use in policy assessment. With national targets and regional priorities in the RP scheme, it is only possible to assess if broad objectives are being met (Scottish Government, 2011a). However, an understanding of the determinants of uptake and expenditures would improve policy evaluation. An analysis of the influences of spatial variability on the uptake and expenditure of RDP measures for instance, would provide insights into 'how' and 'where' these priorities are being met.

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