

REVIEW OF AGRI-ENVIRONMENT SCHEMES – MONITORING INFORMATION AND RESEARCH AND DEVELOPMENT RESULTS

0 EXECUTIVE SUMMARY

Objectives of the study

- 0.1 This report presents a review of monitoring information on agri-environment schemes in England and the key results of research and development studies on agri-environment issues. The principal objective of the study has been to collate information that will contribute to:
- assessing the overall impact of agri-environment schemes, particularly in relation to their stated objectives;
 - understanding the performance of the schemes with respect to associated policy drivers, such as the UK Biodiversity Action Plan (UK BAP); and
 - effective implementation and development of agri-environment schemes.
- 0.2 The agri-environment schemes reviewed in this report are the:
- Environmentally Sensitive Areas (ESA) Scheme
 - Countryside Stewardship Scheme (CSS)
 - Habitat Scheme
 - Moorland Scheme
 - The Arable Stewardship Pilot Scheme (ASPS)
- 0.3 A brief summary of the evolution of agri-environment policies and schemes in England and elsewhere in the UK and EU is given as context for the analysis of the performance of the schemes. Performance of the schemes is firstly assessed in relation to their own objectives for maintaining and enhancing biodiversity (habitats and species), landscapes and the historical environment. This analysis is based on the results of an extensive Ministry of Agriculture, Fisheries and Food (MAFF) commissioned programme, principally carried out by ADAS on ESAs, and ADAS, Centre for Ecology and Hydrology (CEH) and Cheltenham and Gloucester College of Higher Education on CSS. These studies have produced a vast dataset and over 100 reports, including individual biological, landscape, and historic environment assessment reports for each ESA and reports for each landscape type included in CSS, as well as various special topic and overview reports. The adequacy and appropriateness of the monitoring of scheme performance is also discussed in this review.
- 0.4 Brief reviews are made of the provision of public access and the socio-economic performance of the schemes, which assess whether the objectives

of the schemes are being met, the value of the benefits produced and the effectiveness and efficiency of their delivery mechanisms.

- 0.5 This report then identifies key conclusions from agri-environment related research and assesses the degree to which resulting recommendations have been acted on within agri-environment schemes in England. The assessment principally uses previous reviews of MAFF commissioned research on the conservation and management of species, habitats, landscape and archaeological features that are the focus of agri-environment schemes.
- 0.6 The report concludes with a comparative evaluation of the schemes and a holistic assessment of their achievements and their value for money. It was not within the scope of this study to provide detailed recommendations for the development of agri-environment policy and schemes. However, some potential options for improving the performance of the existing schemes are provided in a summary table.

Evolution of agri-environment policies and schemes in the UK

- 0.7 The development of agri-environment schemes was initially a response to concern over the impacts of agricultural changes on valuable habitats, species and landscapes in the UK and Europe. Initially concern was focussed on the loss of uncultivated semi-natural habitats of high ecological value, such as moorlands and wetlands, which were increasingly being brought into agricultural production. Subsequently, concern has focussed on the impacts of agricultural change on the farmed countryside. In the lowlands, most impacts have resulted from farming intensification (e.g. increased mechanization, farming specialisation, fertiliser, herbicide and pesticide use). In the uplands, drainage, liming, fertiliser use and reseeded led to the loss of moorland and unimproved grassland and the conversion of hay fields to silage. However, more recently the most significant change has been a substantial increase in stocking rates. As a result overgrazing has become the principal environmental concern in the English uplands.
- 0.8 These agricultural changes have had widespread environmental impacts, affecting the biodiversity, landscape, archaeological and historic value of the farmed and unfarmed countryside. The effects on bird populations, especially in the lowlands, are well documented through long-running bird census data, which indicate that farmland bird populations have declined considerably over the past 50 years and particularly between the mid 1970's and mid 1990's. These observed declines in birds are likely to reflect a wider decline in biodiversity on farmland, and hence bird populations have been adopted by DEFRA as one of the "*Better Quality of Life*" indicators. Available data indicate that similar or greater declines have been noted in plants and insects of arable habitats.
- 0.9 The impacts of agricultural change upon landscape character and quality are less easy to measure objectively. However, some datasets indirectly indicate the scale of the landscape changes that have occurred in the last fifty years. Key features of landscape such as woodland cover and hedgerows have shown marked changes in particular. Between 1947 and 1972 30% of trees and small woodland cover was lost throughout England, though more recently trends have reversed. Similarly, considerable hedgerow loss

occurred up until the 1990's, although the Countryside Survey 2000 showed that these losses had been halted and there was some evidence that they had been reversed by 1998. In many upland areas dry stone walls are characteristic features of the landscape, but many of these have fallen into disrepair.

- 0.10 Anecdotal evidence of the impacts on the historic value of the countryside was confirmed by the Monuments at Risk Survey completed in 1995. This sample survey suggested that over 22,500 monuments, or one per day, have been destroyed in England since 1944 whilst others had been significantly damaged. Agriculture was identified as a principal cause of destruction and damage.
- 0.11 Agri-environment policies and schemes in England were developed in response to such environmental problems and were subsequently incorporated as an element of CAP reform. The first national agri-environmental measures in the UK were introduced in 1987 to implement EU Council Regulation 797/85, using the powers introduced by the Agriculture Act 1986. That Act also required Ministers to introduce a monitoring programme for the schemes. The measures were designed to prevent loss of habitat and landscape features from intensification in targeted ESAs, which were selected because of their particular value and vulnerability. Further expansion of ESAs, under Regulation 2078/92, applied the same mechanisms to more areas in the UK.
- 0.12 Five Stage I ESAs (Broads, Pennine Dales, Somerset Levels and Moors, South Downs and West Penwith) were designated in 1987. Further ESAs were designated in three further stages: Stage II ESAs in 1988 (Breckland, Clun, North Peak, Suffolk River Valleys and Test Valley); Stage III ESAs in 1993 (Avon Valley, Exmoor, Lake District, North Kent Marshes, South Wessex Downs and South West Peak); and Stage IV ESAs in 1994 (Blackdown Hills, Cotswold Hills, Dartmoor, Essex Coast, Shropshire Hills and Upper Thames Tributaries). The schemes have subsequently been reviewed and relaunched in five-year cycles, with revisions being made as appropriate.
- 0.13 The original objective of the scheme was *“To help conserve those areas of high landscape and/or wildlife value which are vulnerable to changes in farming practices, by offering payments to farmers willing to maintain or introduce environmentally beneficial farming practices”*. However, following the first review of Stage I and II ESAs the scope of the scheme was extended beyond simply maintaining existing habitats. Scheme objectives were redefined as *“To maintain and enhance the landscape, wildlife and historic value of each area by encouraging beneficial farming practices”*.
- 0.14 Other revisions included a re-appraisal of the monitoring programme, the setting of specific objectives for each ESA and the incorporation of options for preparing conservation plans, which were designed to provide incentives for carrying out capital works.
- 0.15 Farmers with eligible land in ESAs are offered a ten-year agreement that provides an annual payment in return for following a prescribed set of farming practices. The scheme is structured into tiers of management, with

Tier 1 generally aimed at the retention and maintenance of existing wildlife, landscape and historic environment value by preventing further agricultural improvement. It is the higher tiers that normally aim to maintain more valuable habitats and landscapes, to enhance them or to create new habitats through active management. Supplements are also available for some tiers, which can be used to upgrade management measures.

- 0.16 The Countryside Stewardship Scheme (CSS) was initially launched as a pilot scheme in 1991, by the Countryside Commission. The scheme aimed to provide incentives to landowners, farmers and other land managers to take specific measures to conserve, enhance or re-create important landscape types and to provide for public enjoyment of them. CSS originally targeted and identified specific management objectives for five particular types of landscape with others added over the following three years of the pilot phase.
- 0.17 CSS responded to a need for environmental measures across the wider countryside to balance the concentration of incentives on ESAs. Therefore it was not restricted to designated areas, but was potentially open to all land managers in England. However, acceptance was not automatic - the scheme was discretionary and had a fixed budget, so applications were selected according to their potential to deliver scheme objectives.
- 0.18 Ten-year agreements were offered to landowners under which annual revenue payments were provided for following prescribed management practices, with supplements for additional work over and above annual management. The scheme also included measures for the provision of new or improved public access and capital payments were available for a wide range of one-off works.
- 0.19 In 1996 responsibility for management of CSS was transferred to MAFF, but its general aims, objectives, operation and landscape types covered changed little. Its aims were to:
- sustain the beauty and diversity of the landscape;
 - improve and extend wildlife habitats;
 - conserve archaeological sites and historic features;
 - improve opportunities for countryside enjoyment;
 - restore neglected land or features; and
 - create new wildlife habitats and landscape features.

The landscape types and features targeted over the years have varied slightly, but are now: arable farmland (introduced in 2002), chalk and limestone grassland, coastal areas, countryside around towns, field boundaries, historic features, lowland heath, new access, old meadows and pastures, old orchards, uplands and waterside land. Specific targets for landscape types and features are also set for each county.

- 0.20 The Habitat Scheme was established by MAFF in 1994 to create, protect and enhance wildlife habitats by removing land from agricultural production and encouraging environmentally sound land management practices. Three options were provided: saltmarsh, water fringe and former set-aside land.

Participants entered into a ten or twenty-year agreement, depending on which option within the scheme was chosen. The former set-aside land option was closed to new entrants in 1997 and the remaining options were closed to new applicants in 1999. Certain elements of the Habitat Scheme were incorporated into CSS.

- 0.21 The Moorland Scheme was established by MAFF in 1995 with the objective of protecting and improving the upland moorland environment. It was open to participants in Less Favoured Areas (LFAs) who could enter at least 20 ha with at least 25% heather. Five-year agreements were offered which included a reduction in grazing and a number of other conditions. Uptake was low, so the scheme was closed in 1999 and replaced by enhanced upland options within CSS.
- 0.22 The Arable Stewardship Pilot Scheme (ASPS) was established in 1998 and ran for three years. The objective was to assess different arable management options for conserving and enhancing farmland biodiversity. The scheme's particular aims were to provide feeding and breeding sites for declining farmland birds, to encourage the establishment of a range of arable plants (as well as improving plant diversity) and to provide habitats for a wide range of mammals, insects and spiders. The pilot scheme was launched in the West Midlands and East Anglia (to test areas with different soil and farming systems) and offered payments, through five or six-year agreements, to participants to manage arable land under five main options that aim to encourage wildlife. Despite some limitations, monitoring results indicated that the pilot scheme was delivering biodiversity benefits, and selected options have now been incorporated within CSS.
- 0.23 The most recent CAP reforms in 1999 allowed redirection of support for agriculture and an increase in expenditure on rural development measures under the new EU Rural Development Regulation (RDR - Council Regulation (EC) No. 1257/1999). The RDR places agri-environmental measures in a wider context of rural development and removes the emphasis on zonal programmes. The ESA Scheme and CSS now fall under the umbrella of the England Rural Development Programme (ERDP) which implements the RDR.
- 0.24 Other agri-environment schemes in the UK are briefly reviewed in this report. These include Tir Gofal, established by the Countryside Council for Wales (CCW) in 1999, the Rural Stewardship Scheme (RSS), established by the Scottish Executive in 2001, and the Countryside Management Scheme (CMS) launched in Northern Ireland in 1999. All are similar to CSS in England, in that they are not restricted to designated areas and have multiple objectives relating to biodiversity, landscape and historic features. RSS, however, focuses on habitat and biodiversity measures (linked to national and regional biodiversity objectives) whilst CMS also aims to address water quality issues. Unlike CSS, however, all are whole farm schemes with fixed payments for options and all select participants by scoring applications according to their likely contribution to scheme objectives.
- 0.25 Elsewhere within the EU there has been considerable variation in the approaches taken by Member States to agri-environment schemes. The structure, delivery and performance of these measures have been reviewed by

the EU Commission and others, but the diversity of individual measures makes it difficult to draw conclusions. Many of the characteristics of schemes reflect national or regional policy priorities, and the schemes respond to essentially local agricultural and environmental concerns. A further major problem is that in most countries national monitoring and evaluation has not been effectively organised and the measures often lack clear aims.

- 0.26 Most countries, with the exception of the UK and Denmark, have adopted horizontal frameworks at national or regional levels. The horizontal schemes aim for wide participation and contrast with those targeted to areas defined by environmental characteristics such as ESAs. The schemes that have attracted farmers are those supporting less intensive production or that require few changes to existing practices. Although these may be an important tool for preventing marginalisation and limiting intensification in some cases their additionality and environmental benefits are likely to be low.

The environmental performance of the Environmentally Sensitive Areas Scheme in England

- 0.27 Early ESA monitoring was based on broad objectives for each ESA, but these were revised and more precisely defined, with the expansion of the scope of the scheme in 1992. For each ESA a range of objectives was set that defined desired outcomes for wildlife, landscape and the historic environment. Monitoring then focussed on the extent to which each objective was achieved. For each objective one or more Performance Indicators (PIs) were defined and agreed with partners in a consultation process. These PIs specified targets that should be achievable during the five-year period following the launch or re-launch of the ESA. The PIs include a combination of overall uptake targets (usually a percentage of each eligible land type that should be under agreement) and targets that relate only to agreement land and environmental impact indicators (e.g. vegetation that is characteristic of lowland wet grassland increases under Tier 2 agreement). In practice most PIs refer to uptake targets and therefore only provide indirect measures of environmental impact.
- 0.28 This report summarises the performance of each ESA on the basis of recent uptake data and the most recent published reports from the monitoring programme undertaken by ADAS. These reports are based on resurveys carried out in 1995 and 1996 for Stage I and II ESAs respectively, and 1996 and 1997 for Stage III and IV ESAs respectively. Although a comprehensive review of ESA objectives and PIs was carried out between 1998 and 2000, scheme performance has not subsequently been evaluated against these. These reports therefore provide the most recent published data against which progress with respect to objectives can be evaluated.
- 0.29 The most recent complete uptake data, from October 2001, indicates that there are 560,837 ha of land under ESA agreements, representing 61% of eligible land. Individual uptake rates for each ESA vary from 15% to 91% of eligible land, but 13 of the 22 ESAs had uptake levels in excess of 50%. In

five ESAs uptake was over 75% of eligible land (Pennine Dales, West Penwith, Clun, North Peak and South West Peak).

- 0.30 In contrast, some ESAs appear to have a relatively low percentage of their eligible area under agreement. These include the South Downs, the Essex Coast, the Suffolk River Valleys, the Upper Thames Tributaries and, in particular, Breckland. However, conclusions on the uptake performance of these ESAs must be drawn with caution as they are affected by several complex factors. Firstly, these are all part farm ESAs. Part farm ESAs have lower levels of uptake than whole farm ESAs, probably because they are lowland ESAs, where it is more difficult to attract participants to enter and hence extensify their more productive agricultural land. Secondly, in predominantly arable ESAs (e.g. Breckland) much of the land is only eligible for higher tiers (e.g. arable reversion), which are more onerous in their management requirements. Despite this, such lowland ESAs often do succeed in attracting relatively high levels of uptake on existing high value habitat.
- 0.31 Within most ESAs the majority of land under agreement is within Tier 1 (an average of 79%). However, this also varies considerably, particularly between whole farm and part farm ESAs. The average percentage of agreement land under Tier 1 on whole farm ESAs is 91% in contrast to 71% on part farm ESAs. This is likely in part to be due to the fact that a higher proportion of part-farm ESAs are only eligible for higher tier agreements (as noted above). Some of the variation may also be due to some agreement holders 'upgrading' some of their land into higher tiers when agreements are renewed.
- 0.32 However, it is difficult to draw conclusions from a simple assessment of the proportions of ESAs in various tiers. Enhancement objectives within ESAs tend to be delivered by higher tier prescriptions, but a certain degree of enhancement can be achieved under some Tier 1 agreements. Enhancement measures may also be delivered through supplements (e.g. to raise water levels), or by works agreed under Conservation Plans. It is therefore easier and more appropriate to assess performance with reference to each scheme's objectives and associated PIs.
- 0.33 Analysis of land cover within ESAs in 1998/99 reveals that over a third of ESA land is under improved grassland tiers. Such improved land tends to be of low ecological interest, although it can contribute towards landscape and historical environment objectives. More than half of ESA agreement land is in upland tiers, including moor, fell and upland grassland, which are potentially of high ecological and landscape value.
- 0.34 According to the most recent performance monitoring reports, on average just over half of the PIs had been met on Stage I and Stage II ESAs, approximately 40% on Stage III ESAs and a quarter on Stage IV ESAs. The percentage of PIs met varied greatly across the ESAs, from 0% for Cotswold Hills (Stage IV) to 89% on the South Downs (Stage I). However, these results must be treated with some caution, because in many ESAs monitoring activities were not undertaken to allow PIs to be assessed. This was a particular problem with respect to PIs relating to environmental impact (e.g. vegetation change). Assessment of progress against Stage IV PIs was also

hampered by a lack of resurvey data and because only three years had elapsed since the launch of these ESAs. Hence the date set for assessment had not been reached. Indeed, where monitoring was inconclusive this was often due to insufficient time for impacts to be detected, which could be indicative of inappropriate target setting rather than problems with the scheme per se.

- 0.35 However, most of the PIs relating to uptake (rather than impacts) were adequately monitored and therefore these have been further analysed. PIs for overall agreement uptake and Tier 1 uptake show considerable variation, but also a suggestion that PI attainment increases with time. On average there was a more even attainment of Tier 2 uptake PIs amongst the different stage ESAs, although again low attainment was observed for Stage IV ESAs (average 11%). But there was considerable variation in achievement of objectives at the individual ESA level. All Tier 2 and above uptake PIs were achieved in four ESAs. In contrast, little progress had been made in three others. Overall, although there has only been moderate and variable attainment of uptake PI targets, significant uptake has been achieved in most ESAs, particularly regarding Tier 1 agreements.
- 0.36 The actual impacts of the ESA schemes on wildlife, landscape and historical values in each ESA are difficult to quantify, especially for the Stage IV ESAs where monitoring resurveys were not carried out. However, from the information available it appears that schemes have achieved varying degrees of success with respect to their objectives of maintaining and enhancing these interests. Where monitoring was adequate to assess performance, most ESAs were successful in maintaining wildlife value, but enhancement was at best partial. No ESAs were able to demonstrate complete success in meeting both maintenance and enhancement objectives for wildlife interest.
- 0.37 More success could be demonstrated with respect to landscape objectives. Nine ESAs were judged to be successful in maintaining and enhancing landscape value, whilst all others were either partly successful or at least maintained landscape value. Best performance, however, appears to be with respect to historic environment values. These were maintained in almost all ESAs, with the exception of one where the monitoring was inconclusive. However, there was little evidence of positive management of the resource and limited attainment of the relevant PIs.
- 0.38 Although many of the objectives of the ESAs have been met, it has not been possible to assess the level of additionality achieved by the schemes, i.e. the extent to which environmental benefits would have been achieved without the scheme. It can be reasonably assumed that few of the enhancement measures would have been undertaken without the ESA scheme or similar initiatives being in place. But the maintenance of environmental value may have been partly achieved without ESA incentives. The measurement of additionality would require monitoring of 'control' sites on non-agreement land within ESAs ('policy-off scenarios'), but there are practical problems with this and little such monitoring has been undertaken.

The environmental performance of the Countryside Stewardship Scheme

- 0.39 Monitoring of the Pilot CSS suggested that the scheme was successful in targeting its resources to landscape types and geographical areas that offered good potential for environmental improvement and public benefit and in some target areas very high uptakes were achieved. The scheme also appears to have achieved a high degree of success in meeting its environmental objectives and providing significant benefits for environmental interests, both individually and in various combinations.
- 0.40 Furthermore, monitoring of a small sample of 'control sites' suggested that the pilot CSS may have delivered significant environmental benefits over and above what would have happened in the absence of the scheme. However, because of the small sample size and some other methodological limitations it was not possible to draw any definitive conclusions about additionality.
- 0.41 This report focuses on the impact of CSS after transfer to MAFF in 1996, as assessed by a MAFF commissioned monitoring programme, divided into two related but distinct modules. In contrast to the ESA monitoring approach, no specific objectives or PIs are set under CSS. Instead, CSS monitoring has focussed on evaluation of a sample of agreements in terms of their appropriateness and potential effectiveness. Thus it is not possible to evaluate CSS in terms of achievement of objectives, or quantity and quality of environmental benefits.
- 0.42 Module 1 involved assessments of a sample of 484 new CSS agreements taken from each landscape type in the scheme, and evaluated each in terms of its objectives, appropriateness, likely environmental effectiveness and feasibility. The assessment was holistic, covering the potential wildlife, landscape, access and historic environment benefits. The assessments covered the entire holding, not just the agreement land, so that the cross-compliance elements of the scheme could be examined.
- 0.43 Module 2 studied the botanical characteristics and quality of the land under agreement in CSS. The aim was to characterise the environmental resource receiving protection under the scheme and gain national estimates of vegetation type and hence the ecological quality of all agreement land in terms of UK BAP Broad and Priority Habitats. This could also provide a baseline for future monitoring of change in ecological quality.
- 0.44 CSS has achieved good levels of uptake. The most recent DEFRA dataset lists almost 12,000 CSS agreements at the end of 2000, covering a total of 263,277 ha of land (2.8% of agricultural and open grazed land in England). The amount of land under agreement increased relatively rapidly at the start of the Pilot scheme (1991-1992) and grew at a slightly reduced but steady rate until 1998, after which the rate of uptake increased again with the launch of the ERDP. The length of arable margin under agreement has shown a huge increase. This option was restricted in its availability under the Pilot scheme, but has subsequently increased, since further funding became available in 2000, to 21,933 km (split approximately equally between the creation of permanent grass margins of greater than six metres width, and creation of grass margins or beetlebanks of two metres width). A similar pattern of increase occurred for work undertaken under capital grants for conservation plans, such as hedgerow restoration.

- 0.45 The CSS landscape types have shown varying popularity, the greatest levels of uptake being observed for the regeneration of heather moor, lowland pastures on neutral / acid soils and upland rough grazing pastures. The greatest uptake of options on linear features has been for hedgerow restoration (>14,000 km).
- 0.46 The CSS monitoring suggests that the scheme is likely to be generally successful in delivering environmental benefits. For most landscape types the majority of the sample agreements were judged to be potentially effective in both maintaining and enhancing wildlife value. In all landscape types less than 10% of agreements were predicted to be ineffective in maintaining wildlife interest. Only in upland habitats were the majority of agreements considered to be effective only in maintaining and hence not enhancing wildlife value. Predicted landscape benefits were similar to wildlife, with a high percentage of agreements being judged to potentially be effective in maintaining and enhancing the landscape. Again, upland was the only landscape type showing poor performance in this respect.
- 0.47 Performance of CSS with respect to the maintenance of historical value has been less effective than ESAs. This was most evident in upland landscapes, where no maintenance or enhancement was judged to be occurring on 47% of sites. Nevertheless, CSS is achieving, in the main, its stated objective of protecting and maintaining important historical and archaeological features and landscapes. On average more than 70% of agreements were judged to be effective in at least maintaining historic value.
- 0.48 CSS Special Projects are intended to fund work that cannot be covered by standard CSS management options and cover a wide range of issues. Many of these have been developed in partnership with other interested parties, such as the RSPB, and their environmental impacts have been well monitored and directly quantified. Such projects have facilitated some of the greatest successes of agri-environment schemes, including the recovery of Cirl Bunting populations in Devon and Stone Curlews in Southern England. Special Project funding has also made a significant contribution to restoration of historic parkland and traditional buildings.

The environmental performance of the Habitat Scheme

- 0.49 According to the results of a five-year review, 431 agreements (covering >7,000 ha) were in place under the Habitat Scheme in 1999. The majority of these were under either set-aside or water fringe options. Take up of the saltmarsh option was very low (54 ha), although monitoring of this option showed success in rapid establishment of saltmarsh vegetation.
- 0.50 The environmental impacts of the set-aside and water fringe options were difficult to ascertain from the monitoring programme. The water fringe option was considered likely to provide both biodiversity and water quality benefits, but PIs used to assess biodiversity were inappropriate for the short timescale of the monitoring. Similarly, it was judged that the set-aside option would probably provide biodiversity benefits, but the monitoring study concluded that it was too early to decide if the scheme was meeting its environmental objectives.

The environmental performance of the Moorland Scheme

- 0.51 The aim of this scheme was to enhance the ecological value of dwarf shrub heath communities by improving the condition of heather and related dwarf shrub species. The benefits of the scheme were severely limited by very low levels of uptake, probably as a result of restrictive conditions and low payment levels. By 1995/96 only 15 agreements were in place, though they did cover 11,000 ha of heather moorland.
- 0.52 The monitoring programme also provided inconclusive information, but again this is likely to have been due to inadequate time between monitoring assessments. There has been no further resurvey, which is a major constraint on the assessment of the scheme's performance.

The environmental performance of the Arable Stewardship Pilot Scheme

- 0.53 The Arable Stewardship Pilot Scheme (ASPS) was subject to a thorough programme of monitoring and evaluation. This assessed the value of the scheme's options and supplements in creating valuable wildlife habitats and the resulting benefits for threatened/scarce wildlife species associated with arable farmland. A range of species and species groups were selected as PIs.
- 0.54 In the two pilot areas, by August 2000, 227 farmers had entered into ASPS agreements which covered 5,801 ha of land (approximately 1.94% of the agricultural area). There was however considerable variation in the uptake of the different options, with some being relatively unpopular. Uptake also varied between the two pilot areas, probably because of the varying suitability of the options among farms with different soils and farming systems.
- 0.55 The evaluation of the pilot scheme was constrained by the relatively short-time period for detecting effects, low take up of some options, small survey sample sizes and habitat fragmentation effects. However, despite these limitations the scheme showed clear increases in diversity and abundance in a number of species groups. Where significant results were not observed this was probably due to the low uptake of certain options or insufficient time for establishment of vegetation/habitats. In these instances interpretation of the results was cautious but positive trends were observed. Within the first three years the scheme was already contributing to UK BAP species and habitat targets. The scheme was highlighted by the National Audit Office as an excellent example of evidence-based policy making.

Provision of access

Access provision within agri-environment schemes does not have associated targets and PIs. Whilst the evaluations made prior to the DEFRA takeover of CSS are generally supportive of the appropriateness of the access procurement within CSS, the methods used were not rigorous in determining the value for money (VFM) of the access incentives. The main economic evaluation of access concluded that much had to be done before it could be claimed that the schemes offered good value for money to the public. The value of the access procured has varied widely and this raises questions about the quality of the new access and the extent to which it is used by the public. The information available to the public about access procured under the ESA scheme is much improved over the pre-1996 situation. Even so, it is difficult to draw

firm conclusions on the effectiveness of this approach to access procurement. The review of CSS educational access agreements identified the fact that most agreement holders find difficulty in implementing their agreements and could not meet the requirement for six visits per year. However, where visits took place, the responses of visitors were very positive.

- 0.57 What is needed is a more discriminatory approach and more evidence that there is a local demand for additional access and access services before they are procured. The evidence suggests that:
- Every access contract should be critically reviewed at the time of contract renewal to remove under-performing contracts.
 - VFM would be improved by greater targeting to areas where there is demand for additional access.
 - The scope for improving efficiency with locally variant payment rates should be investigated.
- 0.58 These aspects are either being addressed within CSS or in a recent DEFRA consultation paper.

Socio-economic performance of the agri-environment schemes

- 0.59 Economic studies to measure the value of the benefits from environmental protection and enhancement have been made on a number of ESAs. These use surveys to assess the public's willingness to pay to support agri-environment policy. They demonstrate that the ESA scheme is highly valued by the public and the value of the benefits greatly exceeds the public expenditure costs of the scheme. However, this strong underpinning for agri-environment policy has to be tempered by evidence that the policy benefits were in some cases over-stated in the surveys. These aspects have been reviewed in more detail in a separate DEFRA study (Cambridge University and CJC Consulting, 2002).
- 0.60 No comparable valuation assessment has been made for CSS and the 2000 economic evaluation team found the scheme difficult to assess because of its lack of defined PIs. Even so, they concluded that the scheme's objectives were being met. The evaluation proposed a number of changes to the scheme to enhance its performance. It proposed changes to the scoring system to bring the entry criteria more closely in line with the scheme's stated aims. The total value for money (VFM) of the CSS would be improved if applications were assessed on a stricter VFM criterion. This would involve selecting applications on a cost per unit score criterion. VFM would also be improved by taking account of the transaction costs involved in specific contracts. Payments were generally considered to be set at appropriate rates.
- 0.61 The socio-economic evidence is that, overall, both ESA and CSS provide good value for public expenditure on landscape, habitats and biodiversity. CSS appears more effective at delivering significant environmental enhancement. A more detailed assessment of the risks of environmental loss and degradation in ESAs would clarify the benefits derived from maintenance expenditures. The lack of clear performance indicators in CSS and concerns about the efficiency of the scoring system need to be addressed.

Integration of R&D information into agri-environment schemes

- 0.62 Successful implementation of agri-environment schemes depends on reliable knowledge of the relationships between land management practices, landscape, biodiversity and the protection of historic environment resources. The agri-environment programme has therefore been underpinned by an extensive programme of associated research and development (R&D), the current DEFRA spend being a little over £2m per year.
- 0.63 This report identifies key R&D outcomes (largely on the basis of examining previous R&D reviews and summaries) and assesses the broad extent to which these key findings have been integrated into agri-environment schemes. We have focused on biodiversity related issues as these have accounted for the vast majority of R&D spending in recent years.
- 0.64 The assessment was difficult because few clear recommendations for practical application to agri-environment schemes emanate from much of the R&D work funded to support agri-environment schemes. Despite these constraints a number of key research outcomes were identified that need to be addressed, e.g. through revision of scheme prescriptions or guidelines, or by transferring knowledge and practical recommendations to scheme participants and Project Officers (POs). These include:
- Some upland ESA grazing prescriptions are not sufficient to enhance condition when heather moorland habitats are in Unfavourable Condition (as defined by English Nature), and in a few cases may not be sufficient to maintain Favourable Condition. Grazing rates therefore need to be fixed on a flexible basis, which takes into account the type of habitats involved, their condition, conservation and landscape objectives and farming business.
 - Restoration and re-creation of heather moorland is often ineffective if the habitat is highly degraded. Such measures should be targeted at areas with residual populations of heather and other dwarf shrubs.
 - Grazing prescriptions on permanent grassland tend to be either too prescriptive and inflexible or are subjective. In some circumstances it may be possible to define agreement objectives by the desired outcome (e.g. sward composition or structure). Guidelines could then be given to the land manager on how this can be achieved rather than relying on defined management prescriptions.
 - Enhancement of semi-improved meadows and pastures cannot be effectively carried out by grazing alone, nutrient depletion, and in some cases, introduction of appropriate seed is required.
 - Heathland re-creation is dependent on low pH soils and requires either a viable heathland seed bank or seeding with appropriate heathland species. Heathland re-creation and restoration therefore need careful targeting.
 - Arable reversion is less likely to succeed in creating valuable habitat where the land has high residual fertility, especially phosphate content. This suggests that habitat creation, particularly species rich grassland, may require better targeting.

- Simple wetland management prescriptions may be ineffective because appropriate water level regimes are complex and vary depending on site conditions and specific objectives. Agreements need to be based on site specific Management Plans or integrated with statutory Water Level Management Plans.
 - Within arable habitats research has shown that the impacts of spray drift and fertiliser applications extends beyond 2 m buffer strips. The width of such strips therefore needs to be reconsidered.
 - Some Cereal Field Margin options under agri-environment schemes may be detrimental to scarce arable plants. Where it is thought rare arable flora may be present, a precautionary approach should be taken and grass margins should be restricted to sites where these plants are absent.
 - Many declining seed-eating birds require weedy stubble crops in winter, but although options for maintaining over-winter stubbles exist under the new arable CSS options, there is no option for the maintenance of stubbles from crops with reduced herbicide inputs (as included under the ASPS), which would be much more effective.
 - Ley and permanent improved grasslands are important habitats for several declining farmland bird species, but opportunities for enhancing these habitats are not provided for by current agri-environment schemes. The scope of the schemes needs to be expanded to offer a means of increasing habitat suitability for declining birds in improved grassland areas.
 - Indirect effects of pesticides may have a significant effect on invertebrate availability, but there are no options for reduced or selective use on arable crops under current agri-environment schemes except in Conservation Headlands.
- 0.65 DEFRA has funded little specific research on landscape issues that are of direct relevance to the design or operation of agri-environment schemes, although many research outcomes from the conservation management R&D programme may have landscape impacts. Similarly, there has been little research undertaken relating to the historic environment other than indirectly in relation to hedgerows, although an investigation into the management of archaeological sites in arable landscapes is soon to be completed. It is understood that an important conclusion from this research is that minimum cultivation techniques can provide effective yet economically viable mitigation against arable farming impacts.
- 0.66 This assessment of the uptake of R&D findings has shown that in general ESA prescriptions have evolved considerably and have become more complex and comprehensive in line with increased knowledge. Prescriptions are specific to each ESA and, therefore, adapted to some extent to local conditions. However, analysis of key research outputs suggests that there is still considerable scope for increasing the effectiveness of prescriptions by adapting them further to local conditions (e.g. habitat type, condition and objectives).
- 0.67 In both ESAs and under CSS, there may be advantages in some circumstances in framing objectives for some agreement land via desired

environmental outcomes (e.g. sward structure) rather than prescriptions, with management actions defined in specific management plans.

- 0.68 In many cases ESA and CSS agreements will also benefit from the preparation of detailed Management Plans particularly for higher tiers (e.g. for water level management). These would be cost-effective, provided that the plans are prepared by suitably qualified advisers. Indeed, consideration should be given to making the preparation of such a Conservation Plan or a related environmental farm audit a prerequisite for receiving agri-environment funding (e.g. as in Scotland under the RSS).
- 0.69 It has been more difficult to assess the degree of integration of R&D outputs into CSS as the guidelines tend to be broader because they are set at a national level. But this is compensated for by a greater degree of flexibility in their application, which allows significant discretion to be used by the PO (provided stated limits are adhered to).
- 0.70 In theory, therefore, CSS agreements provide more opportunities for incorporating research findings and adapting agreements to local conditions. However, in practice this is often dependent on the advice and interpretation given by POs, and others involved in the preparation of scheme agreements, which in turn is dependent on their expertise and knowledge of R&D outcomes. The successful uptake of R&D results by CSS is therefore largely dependent on effective technology transfer from research into practical advice to POs. This is achieved in part through the provision of guidance notes to POs, although these currently only address a number of issues and some remain in draft form or require updating.
- 0.71 Research outputs were often found to lack clear recommendations for practical application. They tended to be too focussed on academic audiences. Most reports were difficult to trace or obtain and many findings remain unpublished or only partly published in scientific journals, and there is currently no well defined institutional mechanism for getting advice and research outcomes to internal and external advisers. DEFRA is currently taking steps to address these issues.

The contribution of agri-environment schemes to related policy drivers

- 0.72 Agri-environment schemes in England have the potential to contribute to many related policy objectives for protected areas and features such as Areas of Outstanding Natural Beauty (AONBs) and National Parks, Sites of Special Scientific Interest (SSSIs), Special Areas of Conservation (SACs), Special Protected Areas (SPAs) and Scheduled Ancient Monuments (SAMs). They can also contribute to the wider conservation and enhancement objectives under the UK Biodiversity Action Plan (BAP), and are likely to be an important mechanism for delivering on two targets under DEFRA Public Service Agreement (PSA) 3 for 2001-2004, namely to:
- Reverse the long-term decline in the number of farmland birds by 2020, as measured annually against underlying trends.
 - Bring into Favourable Condition by 2010 95% of all nationally important wildlife sites, compared to 60% of sites currently estimated to be in such

condition. (NB. nationally important wildlife sites are considered to equate to SSSIs).

- 0.73 Although comprehensive monitoring data are lacking there is sufficient evidence to suggest that the agri-environment schemes are making substantial contributions to most of these key policy drivers. This is despite the fact that many (such as the UK BAP) have evolved after the establishment of the agri-environment schemes. Although the schemes are adapting to take increased account of these new policies and initiatives there is potential for greater integration and contribution towards their objectives.
- 0.74 The schemes' coverage show substantial overlap with National Parks and to a lesser extent AONBs, and therefore their landscape conservation benefits are likely to contribute to similar objectives in these designated areas. The emphasis of AONBs is mainly on protection, conservation and enhancement, and the safeguarding of rural industries such as agriculture and forestry. National Parks have a similar purpose yet also include objectives for the provision of recreational facilities. The general objectives of ESAs and CSS thus complement and reinforce those of National Parks and AONBs. Indeed, the schemes provide the main financial and practical means of managing and enhancing landscapes within these areas. Precise assessments of the contributions made so far to AONBs and National Parks is, however, not possible.
- 0.75 About 20% of SSSIs are being managed under ESA and CSS agreements. These agri-environment schemes should, therefore, be delivering appropriate management on the majority of habitats within these areas. Indeed, English Nature site condition assessment data suggest that where agri-environment agreements are in place the proportion of SSSI monitoring units in Favourable Condition (as defined by English Nature) is higher. CSS appears to be slightly more effective in delivering improved habitat conditions, but this may be partly due to the higher proportion of upland habitat within ESAs, a high proportion of which are in unfavourable condition. ESAs also have a higher proportion of common land under agreement and this tends to limit the potential for more demanding management prescriptions. However, there is evidence that both schemes only provide a slight improvement, which suggests that there is further scope for better integration of agreements with SSSI management requirements. Increased funding for agreements on SSSI land could also increase uptake and allow for more demanding and probably more effective prescriptions.
- 0.76 The area of UK BAP Priority Habitats within ESAs is not known, but it is clear that ESAs do contain a large proportion of many upland habitats in England, most of which are UK BAP Priority Habitats (though their condition may be poor). They also contain substantial proportions of calcareous grasslands and lowland wet grasslands. The ESA scheme is likely to be making a significant contribution to habitat maintenance targets for these habitats, although in the uplands there is evidence that a substantial proportion of priority habitat is in Unfavourable condition. ESA contributions to habitat restoration targets are more likely to be limited, principally because of the low uptake of higher tiers. Nevertheless,

significant contributions to the restoration of lowland meadows and lowland calcareous grassland have been achieved.

- 0.77 The extent of UK BAP habitats under CSS agreements can be estimated from monitoring data. On the basis of agreements in place at the end of 1997, some 15,000 ha of UK BAP Priority Habitat were estimated to be within CSS agreement land, which constituted about 15% of all agreement land. CSS appears to contain significant areas (i.e. just over 10%) of the England resource of lowland and upland calcareous grassland, lowland dry acid grassland and lowland heathland. However, the condition of habitats under CSS agreements are not assessed as part of the monitoring programme.
- 0.78 Again it is difficult to quantify the extent of new habitats re-created but it is known that CSS has made substantial contributions to the HAP re-creation target for cereal field margins, resulting in it having been met nearly ten years early. It has also probably made major contributions to HAP targets for upland meadows, lowland meadows, lowland calcareous grassland and lowland heathland.
- 0.79 The combined impacts of agri-environment schemes on species' populations are varied. The schemes have not yet been able to stabilise or reverse biodiversity losses in most taxa groups in farmland, open grassland or moorland habitats. This is most apparent with lowland farmland birds where declines in most common species are continuing. This is mostly due to the relatively small scale of the schemes compared to the extensive farmland area inhabited by many of these dispersed and widespread species. Another limitation has been that the schemes have tended to target grassland habitats and measures for arable farmland were not until recently widely available. The introduction of CSS arable options in 2002 offers a major opportunity to address the declines but will require widespread uptake and effective targeting.
- 0.80 Some targeted CSS Special Projects for individual species have made major contributions to UK BAP Species Action Plans. In particular the development of options to encourage weedy stubbles in South Devon has largely been responsible for the reversal of the decline of the Cirl Bunting.
- 0.81 Although there is a policy framework which advocates the management of the historic and archaeological resource to ensure its preservation, there is no archaeological equivalent to the UK BAP. Indeed, the resource is non-renewable and only partially identified. However, no other controls on activities affecting the rural historic resource are as geographically widespread as ESAs and CSS. Other historic designations cover a fraction of the area and agri-environment schemes are consequently increasingly recognised as the best means available to manage the rural archaeological resource, which is itself the largest component of the national resource.

Overall evaluation of agri-environment schemes in England

- 0.82 Agri-environment agreements now cover some 847,000 ha of countryside in England (i.e. approximately 9% of rural agricultural and open grazed land) and have undoubtedly had a significant impact on the environmental quality of the countryside. The ESA scheme has been largely successful in meeting its primary objective of maintaining biodiversity, landscape and historic

interest values within agreement land. This is of critical importance, because such 'natural capital' is very expensive, difficult and often impossible to restore if lost or degraded. The scheme has, however, been less successful in achieving enhancement, largely as a result of relatively low uptake rates in higher tiers. On the other hand CSS appears more successful in achieving its environmental enhancement objectives. The majority of agreements were judged to be effective in maintaining and enhancing wildlife and landscape values. The CSS objective for the historic environment is to maintain values; in this respect the majority of agreements were judged to be effective, but there was little enhancement of value.

- 0.83 Care must be taken with respect to any direct comparisons of ESA and CSS performance because the schemes were monitored in very different ways. ESA monitoring has been based on a systematic assessment of performance with respect to specified objectives for each ESA via a suite of Performance Indicators (PIs). The intention being that performance is directly monitored against these PIs every five years. However, evaluations have been hampered because some PIs have not been monitored or results have been inconclusive.
- 0.84 With CSS, however, objectives are set at the individual agreement level and no specific PIs are set. Thus there are no standards against which performance of the scheme can be objectively monitored. Instead performance of the scheme has been evaluated by a subjective scoring of agreements in relation to selected criteria. One advantage of this approach is that the appraisal is more holistic, because it can take into account all potential benefits, whilst the ESA system concentrates on defined PIs. Also, it avoids the difficulties of defining measurable PIs for landscape quality.
- 0.85 The main drawback with the CSS approach is that the monitoring scheme has not been validated or calibrated with respect to actual achievements. Thus it only provides a subjective and relative prediction of what may be achieved rather than an absolute measurement based on observation. Some measurement of achievement may be possible in future years if the Module 2 monitoring samples are resurveyed, but the information provided by this will be limited and will not be related to defined objectives. It will be necessary to refer to the objectives of each agreement to determine what each should have achieved. Revisiting Module 1 monitoring may enable this and provide some degree of validation and calibration of the assessments.
- 0.86 The ESA scheme and CSS are also making significant contributions to a range of other policy drivers. For example, the schemes are undoubtedly making a major contribution towards many UK BAP targets, but it is difficult to quantify these contributions with the available data. It is also difficult to quantify the contributions that the schemes are making towards other policy objectives, e.g. AONB and National Park objectives and the DEFRA PSA for enhancing condition on SSSIs.
- 0.87 Despite the incomplete evidence on contributions to date, it is clear that agri-environment schemes could perform the principal role of providing appropriate management of most habitats (i.e. moorland and farmland habitats) within National Parks, AONBs, SSSIs, SACs and SPAs. Furthermore, it is likely that the schemes will continue to be the main mechanism for directly incorporating environmental conservation measures

into farmland management in the wider countryside. However, we consider that there are some significant opportunities for further enhancements of the schemes.

- 0.88 In particular, our findings suggest that there could be considerable benefits from closer integration of the agri-environment schemes with other key policies. The development of objectives at national, regional, local and farm level could better reflect actual targets, for example UK BAP and local BAP objectives. The development of similar targets for landscape, access and historic environment values would help to integrate and deliver DEFRA policies on these issues.
- 0.89 An important concern is the high proportion of land that is currently in the lower tiers of ESAs and, in some cases, the effectiveness of the Tier 1 prescriptions for achieving their objectives. For some habitats, e.g. heather moorland, research suggests that Tier 1 prescriptions may be ineffective in maintaining or enhancing condition when habitats are already in an unfavourable condition. Although the primary policy objective of ESAs is to maintain wildlife, landscape and historic interest values, there is some uncertainty over the additional protection from loss that is achieved under some Tier 1 land.
- 0.90 We suggest that an assessment of the risk of loss and degradation of ESA habitats, landscapes and historic environment features is carried out to assess the additionality that is being achieved. VFM may be increased by changing entry requirements, such that land of low risk of loss and low value (e.g. if it is in unfavourable ecological condition), is excluded from lower tiers of the scheme that only aim to maintain habitat value. Instead, landowners could be encouraged to enter such land into higher tiers that aim to restore habitat value.
- 0.91 Some payment levels may not be sufficient to encourage target levels of uptake. But there is also evidence that reluctance to enter some higher ESA tiers and more demanding CSS options may be a result of farmer attitudes rather than payment levels. A perception of inflexible schemes appears to act as an important disincentive to land managers entering ESA schemes. As a result more flexible locally adaptable schemes, awareness campaigns and promotion may provide better VFM than increasing tier payments alone. However, increasing flexibility may result in higher administration and other costs, and therefore a balance is also required in this respect.
- 0.92 As noted above, some agri-environment scheme prescriptions need to be updated in the light of current research findings. This applies particularly to ESAs where the more prescriptive approach can lead to problems. Greater flexibility also needs to be allowed to create agreements that are more acceptable to farmers and adapted to local circumstances and objectives.
- 0.93 CSS agreements are based on broad guidelines which can allow more flexibility to reflect local circumstances, which is widely regarded as beneficial. However, success of individual schemes is very much dependent on POs, partners and farmers, especially their technical knowledge and approach. Greater efforts need to be made to provide practical guidance from

- R&D studies to landowners, POs and others involved in running the schemes.
- 0.94 Much agri-environment monitoring pre-dates and, therefore, has not been well integrated with the reporting needs for other policy drivers. There are opportunities for rationalising the monitoring amongst these requirements through better coordination and collaboration with key stakeholders. We therefore suggest that an overall agri-environment scheme monitoring strategy is prepared to increase the compatibility and integration of monitoring between ESAs and CSS and with other related policy initiatives.
- 0.95 The greatest limitation on the achievements of agri-environment schemes derives from the overall level of funding as this affects uptake and the scope of measures that can be included within the schemes. Estimated levels of expenditure on agri-environment schemes are about £99 million for 2001-02, with £51 million being spent on CSS and £48 million on ESAs.
- 0.96 This funding appears large and is significant when compared to conservation management expenditure levels in SSSIs and AONBs for example. But it is insufficient to allow participation of all current applicants to CSS. Furthermore, the new arable options are also costly (as they address more profitable farming systems and therefore require relatively high incentives to offset foregone profits) and will be a further draw on CSS funds. Relatively low uptake in the upper tiers of some ESAs also suggest that payment levels may be a factor affecting entry (although factors described in paragraph 91 may also play a role).
- 0.97 CSS land is currently widely scattered and therefore habitats managed under the scheme tend to be fragmented. This fragmentation may be a limitation on the scheme's potential for delivering wildlife benefits, especially in arable landscapes where biodiversity has considerably diminished. CSS is currently targeted to priority areas at the county level, and such measures may be effective in enabling maintenance of remaining wildlife populations. However, ultimately very high levels of agri-environment scheme participation will be required to maintain populations on a wider scale and to reverse biodiversity declines.
- 0.98 The funding limitations affecting agri-environment schemes have been recognised by the Policy Commission on the Future of Farming and Food, which has recommended a further substantial increase in funding to the schemes.
- 0.99 The selection of ESAs and the targeting of CSS (other than for arable margins) has tended to focus measures towards land that is already of high value in terms of its landscape, wildlife and historic interest. Such targeting is logical when resources are limited as it increases the value of the benefits achieved and the additionality of the schemes. Also, higher value environments tend to be the most fragile and least easily restorable, or re-creatable, and therefore their loss can be very expensive to reverse, if not impossible. Concentrating measures into specific areas, such as ESAs, can also have added advantages from economies of scale and increased effectiveness where large areas of contiguous land are under environmental

management. This can help reverse habitat fragmentation effects and can provide more obvious visual landscape impacts.

- 0.100 We therefore suggest that as funding increases, targeting should be maintained and schemes enhanced where necessary in areas of highest wildlife, landscape and historic value. Coverage may then be expanded to less valuable more widespread types of farmland. At the same time measures should be adapted to these less valuable areas, so that they provide real benefits and additionality, but are sufficiently less demanding to be cost-effective and widely taken up.