

Economic Evaluation of Agri-Environment Schemes

Final Report to the Department of Environment, Food and Rural Affairs

Centre for Rural Economics Research
Department of Land Economy
University of Cambridge
19 Silver Street
Cambridge CB3 9EP

CJC Consulting
45 Southmoor Road
Oxford OX2 6RF

2 September 2002



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Executive Summary

1. Introduction

The present agri-environment schemes arose from a failure of the available policy mechanisms in the early 1980s to deal with the pressures on the rural environment at an acceptable cost. Management agreements on Sites of Special Scientific Interest (SSSIs) were effective in resisting the intensification of agricultural production in the 1980s, but the approach would have been excessively expensive across the wider countryside. Following an experimental scheme in the Broads Grazing Marshes, 22 Environmentally Sensitive Areas (ESAs) were introduced in England from 1987. The Countryside Stewardship Scheme (CSS) was piloted by the Countryside Commission from 1991 and adopted by MAFF in 1996. Under the Rural Development Regulation (1257/99), ESAs and CSS were included in the England Rural Development Programme (ERDP). Expenditure on the CSS in particular is planned to increase substantially. These schemes were included in the ERDP largely unchanged, but provision was made for a mid-term review of the ERDP to be undertaken in 2003. The purpose of this evaluation is to feed into the mid-term review. The final stage of the report outlines the elements that we feel should be included in an agri-environment programme. We offer this as a ‘thought experiment’ as to the options and choices facing the development of agri-environment policy.

2. The rationales of agri-environment policy

The rationale for agri-environment policy has been based on the economic concept of market failure. Where landowners are imposing an external cost, the ‘polluter pays principle’ would apply. Where society wishes to encourage landholders to provide environmental benefits then the ‘provider gets principle’ would apply. Economic valuation studies have indicated a public willingness to pay for environmental enhancement, but this offers limited guidance on the optimal scale and direction for agri-environmental policy. At the same time, the UK and EU have subscribed to the principle of sustainable development. This suggests a wider set of issues and the adoption a more precautionary approach. It is a legitimate role of government to promote the protection of ‘critical natural capital’, and in practice some man-made assets exhibit similar characteristics and similar arguments apply. This suggests a rather different approach to the objectives and evaluation of agri-environmental policy.

Where environmental impacts cause little ecological damage and have a high degree of reversibility, cost benefit analysis might be appropriate in guiding policy. Conversely, where ecological damage costs may be high and impacts irreversible some alternative, such as the precautionary approach is appropriate. In the agri-environmental context, the former circumstances could apply with respect to changes to the appearance of an already highly

'manufactured' landscape. The latter circumstances might apply with respect to actions with significant implications for ecosystems functions, such as the extinction of species.

3. Experience with ESAs

ESAs were launched in areas of high environmental value, through the encouragement of appropriate agricultural practices in four Stages between 1987 and 1994. Since then the level of uptake has increased steadily but slowly. There have been different mean sizes of agreement area between stages and rather different trends over the period. Total expenditure has increased in all ESAs over the period. As at October 2001 there were 577,131ha under agreement, representing 60% of the eligible area. Some ESAs have achieved uptake levels of over 80%. The proportion of eligible land under agreement tends to be higher in the Less Favoured Areas (LFAs) than in arable and intensified farmed regions. In the predominantly arable and intensively managed grassland ESAs much of the eligible land may only be eligible for higher tiers that require major changes to farming systems.

There is an uneven match between ESA and other designations, particularly with National Parks and Areas of Outstanding Natural Beauty, without a clear rationale in terms of their objectives. There is a further issue that ESAs were originally conceived in terms of preventing environmental damage and were required to comprise a 'discrete and coherent unit'. The emphasis now has moved towards more positive environmental management and it would be surprising if the optimal pattern and scale of spatial targeting remained the same. Beyond this, by definition, they cannot address objectives beyond their current boundaries.

4. Experience with CSS

The major difference between the CSS and ESAs lies in the fact that there are no designated areas; the scheme operates throughout England. The scheme is discretionary and open to farmers and non-farming land managers and is directed at the conservation of specific landscapes. Targets are set and refined annually at a county level in consultation with local groups. CSS agreements run for 10 years and are drawn up individually to address particular circumstances. There are now almost 12,000 agreements covering 263,000 ha of land, 21,900 km of arable margins and 17,700 km of linear features. Payment rates are set nationally without regional variations. Much of the land in CSS is heather moorland, heath, grassland and hay meadows, although the new arable options will increase the area of more intensively farmed land. Without information on CSS 'eligible' areas it is difficult to interpret the statistics on agreements in terms of the scheme's overall impact. A substantial surplus of applicants over the number that can be funded has allowed selection of those agreements likely to give the highest return.

There are substantial differences in the average areas of agreements between counties and wide variations in the levels of uptake. The variation is particularly great with regard to the proportion of the agricultural areas in CSS and the length of arable margins per 1000 ha cereals. Two obvious influencing factors are the differential extent of ESAs within particular counties and the agricultural character of the area. Variations in the incidence of CSS is not *per se* a problem. A completely even spread would not be expected, but it will be valuable to consider the spatial distribution against the characteristics of different areas.

5. Performance of the schemes

A variety of approaches have been taken to studies of the uptake of agri-environment schemes. Economic models indicate that the impact on incomes and the private benefits are a fundamental element of participation decisions, although analysis has often omitted *private* transactions costs. A second approach has concentrated on contextual factors, emphasising the interaction between the farmer / farm system and scheme options and payment rates. Other factors such as age and conservation interest may also affect participation. A third approach investigates the process of adoption over time. We conclude the following in relation to participation:

- A high participation rate is an important policy objective in ESAs.
- Conservation interest plays a stronger role in CSS schemes.
- There may be a case for more effective scheme promotion in some ESAs.
- Promotion needs to be related to marginal adopters; those one the borderline of deciding to participate.
- Age and conservation interest may influence the entry decision, but in general tenure status is not important.
- Significant changes to farm systems will prove difficult even if substantial incentives are offered. The key determinant is the degree of fit with the farm system.
- With diverse contexts, the fixed incentive mechanism is weak. Other types of policy instrument may be needed to achieve the twin goals of high participation and cost effectiveness.

Policy should take account of both public and private transactions costs. While very limited information is available at a scheme level, it is clear that they represent a significant proportion of costs. They have declined through time, reflecting the shift in emphasis from introducing new schemes and negotiating new contracts towards maintenance and management. The contribution that scheme administration makes to environmental output is important, rather than simply its total cost. There may be scope for reducing costs by extending contract periods, unifying schemes, and through alternative contracting mechanisms. Auction mechanisms may save public transactions costs, but at the risk of increasing private costs. Nevertheless, reductions in costs may be made by transparent ‘cut-off’ scoring systems.

A number of monitoring and evaluation studies have been commissioned. Most evaluation has been in terms of processes or intermediate outputs rather than final outcomes (environmental impacts). There has been no assessment of additionality given the absence of counterfactual sites. Economic valuation techniques have been applied to ESAs, especially the Contingent Valuation Method (CVM). The methodology adopted in these studies can be criticised, both in terms of the assumptions underlying CVM and the valuation frameworks adopted. Nevertheless, what evidence there is suggests that agri-environment schemes have generally had positive effects and that these are valued by the public.

Socio-economic evaluations have been undertaken of each of the four ESA stages. They found that most participants are relatively content with the format and basis of the schemes. In all ESAs some farmers found difficulty in meeting particular scheme conditions or considered particular payments inadequate. Non-participation was mostly explained in terms of limited conservation interest, inadequate payment rates and conditions perceived as too onerous. One evaluation has been undertaken of the CSS since it was transferred to MAFF.

Monitoring and evaluation has suggested that the objectives of the scheme are being met. It has been suggested that greater weight should be given in the scoring system to the quality of environmental outputs and that it should reflect value for money. Payment rates were generally regarded as acceptable. Regionally differentiated payment rates were not recommended although there were cases for local supplements.

Environmental monitoring suggests that ESA expenditure on maintenance is at least partially successful in protecting valuable habitats. With regard to wildlife enhancement, ESAs seem less effective than CSS. Overall CSS appears capable of delivering significant environmental benefits. Very few of the options were judged to be non-effective in terms of maintaining or enhancing biodiversity.

6. Payments in agri-environment schemes

Payment by results would harness economic self-interest, encouraging farmers to use their specific information to improve efficiency and create incentives for co-operation. But there is often a time lag between action and environmental outcome and the relationship between them may be highly uncertain and often outside of the farmer's control. There are problems in defining and measuring outputs. Overall, it seems that payment-by-results may be a realistic alternative in cases where there is a relatively close link between actions and outcomes and where outcomes can be measured with relative ease. Incentives might be improved by linking some element of the payment to outputs.

Payment on the basis of agricultural income forgone reflects the logic of the 1980s when the concern was to prevent agricultural intensification. However, when farm incomes are insufficient to maintain land in agriculture, payments based on the agricultural income forgone must be insufficient to keep the land in production. It has been suggested that payments should be based on the value of the environmental benefit. This would present problems of valuation as shown in Section 5. A judgement of the value of environmental benefits expected is necessary to a decision on whether or not a scheme should be implemented, but it does not determine the appropriate level of payment. Agri-environmental payments should be determined on the basis of the total opportunity cost of their provision. They should represent a *full* payment reflecting a fair return to the business for all of the resources committed to the environmental scheme. Where agriculture is profitable, agricultural income forgone will represent a key element. Where resources would alternatively not be employed in agriculture, the payment should be based on the minimum payment required to keep the resources in the desired use. The payment should also take account of private transactions costs, such as the paperwork, the skills required, such as applying ecological knowledge, and the uncertainties faced.

The EC requires that the payment rate should equal the income forgone and additional costs plus a maximum 'incentive' element of 20%. In ESAs, Tier 1 payments are set on average at 60% of income forgone but there is considerable variation in the rates of reimbursement offered. Given different rates paid on different tiers, there is no single figure that describes the overall position for each ESA. Two possibilities have been explored: the rate paid on Tier 1 and a simple average of the rates paid on the different tiers. Rudimentary statistical analysis failed to reveal any straightforward relationships between these variables and uptake rates. With many payments set below the maximum, there is scope for increasing rates. However, given the lack of a clear relationship between reimbursement and uptake, the revision of payment rates is not a straightforward route for increasing uptake.

Across all scheme elements in the CSS, 82% of payments are below the estimated figure for income forgone. There is a wide variation between counties in the rates of uptake of arable margins against total area of cereals, with rates lowest in the most predominantly arable counties. Under a fixed price scheme we would expect more land to be offered in areas where returns are relatively low. If the distribution of take-up is regarded as a problem, the application of differentiated payments would be far more efficient than raising the fixed prices across the board. Information was not available on the success rate of applications made to CSS for different elements of the scheme or for different locations.

7. Experience in Scotland and Wales

Scotland

Under the Rural Development Regulation the opportunity was taken to re-vamp the schemes and launch a single new Rural Stewardship Scheme (RSS) in January 2001. The scheme has had 476 applications in its first year with an associated cost of £28.5 million. The key characteristics are:

- It has a well-selected range of environmental enhancement measures.
- It gives greater priority to BAP-relevant proposals.
- It focuses resources on enhancement; all prescriptions.
- The scheme uses a Good Farming Practice requirement to ensure a degree of environmental protection across the holding at no direct exchequer cost.
- It uses discretionary entry and scoring to select high value for money applications.
- It leaves open the scope for facilitating entry amongst ESA entrants if this is necessary to prevent loss of environmental gain from the ESA scheme.

The main issues in design that need to be explored are:

- The design and operation of the scoring system which gives high weighting to the diversity of habitats without taking direct account of environmental quality. This favours large diverse holdings.
- The question of whether some payments are too high and do not take adequate account of lower opportunity costs and private benefits on some (large) holdings.

Wales

Tir Gofal was launched in 1999 as part of the Rural Development Plan for Wales. This development in policy reflected a growing dissatisfaction with area-targeted schemes. In 2001 the scheme had 1,107 applications with the 100 points minimum. Funding was set at £10.9 million. No evaluation or monitoring of Tir Gofal has been undertaken but its main characteristics are:

- The scheme has a well-selected range of environmental measures and strong whole-farm and mandatory element.
- It does not have the clarity of environmental targets and explicit weighting for BAP contributions that are desirable.
- The scheme attempts to balance environmental outcomes against other rural development and distributional objectives through its scoring and cut-off system and this appears to be a useful way of meeting the diversity of interests in the scheme.

- This is likely to be at the expense of greater additionality and diversity in the environmental activities offered by applicants. The suspicion is that environmental value for money is being traded off against distributional gains. Comprehensive evaluation is needed to investigate this aspect.

8 Experience in other European countries

Regulation 2078/92 granted Member States a large measure of discretion for designing their own schemes, matching them to local conditions and advancing regional priorities. This discretion resulted in a wide variety of measures with a range of objectives and management prescriptions, implemented at different geographical scales – from local to national. We can distinguish three policy traditions and concerns: nature and landscape protection; regulation of agricultural pollution; and support for marginal agricultural activities and compensation for natural handicaps. Table 8.1 gives an overview of the different types of measures on offer across the EU.

Table 8.1: Agri-environmental measures (regulation 2078/92) on offer in EU-member states

Type of measures	B	DK	D	Fin	F	GR	IRL	I	NL	AT	P	S	E	UK
1 meadows and pastures														
2 arable land														
3 reduced stocking rates														
4 rare breeds														
5 permanent crops/viticulture														
6 maint.. of abandoned land														
7 20-year set-aside														
8 loss of domest. plant species														
9 nature conservation														
10 organic farming														
11 demonstration projects														
12 education and training														
13 'basic' support														
14 access to land														

We may summarise the approaches taken in different countries by comparison to the approach taken in England. Thus England did not introduce schemes for rare breeds, permanent crops, maintenance of abandoned land or demonstration projects. The proportion of expenditure under Regulation 2078/92 on organic farming has been relatively low, while that on farming with environmental improvements has been relatively high. More generally there has been a low expenditure per ha across the total UAA and a low proportion of land entered into agri-environment contracts. The Rural Development Programme budget is relatively low per ha UAA and a relatively high proportion of the budget is directed towards agri-environment schemes. Through the 1990s administration costs were relatively high per ha, per participant and per 100 ECU paid as compensation.

Uptake statistics give an encouraging image of EU agri-environmental policy but their environmental impacts are less clear, despite numerous evaluations. Evaluations have been impeded by the sheer diversity of schemes, the frequency of changes in rules, imprecise, diverse and non-prioritised objectives, lack of baseline data, and the high costs of introducing

effective monitoring and evaluation regimes. Overall, the evidence is mixed, with some success stories of well-designed and well-managed schemes against some schemes that have not achieved their objectives.

Denmark

The first generation of Denmark's agri-environmental schemes, implemented in 1990, were confined to 915 ESAs, initially covering 4.5% of Denmark's UAA. Regulation 2078 saw a deepening and extension of the ESA approach. Counties were requested to designate 13% of their UAA as ESAs, regardless of agricultural and environmental conditions. This has resulted in a total of 2500 ESAs being designated with an average size of 146 hectares. These areas provide a territorial framework within which management prescriptions may be implemented by counties. By 1996 some 93,000 hectares were covered by agreements, of which 35,000 hectares fell under the organic farming scheme.

Austria

In spite of its small size, Austrian agriculture claimed almost 17% of EAGGF funds in 1997. Since 1995, over one quarter of total agricultural support payments have been made through ÖPUL, a broad and shallow agri-environmental programme. This consists of 34 measures in six categories. In 1997, ÖPUL covered 76% of Austria's UAA. The wide range of measures on offer, combined with relatively high payment rates explains the very high uptake rates. These include a basic subsidy option under which farmers who agree to follow some very basic code-of-good-practice type measures qualify for this basic payment. The least demanding options account for much of the expenditure, followed by organic farming. Farmers have largely avoided the more demanding measures. While evaluation studies are inconclusive it is unlikely that the scheme has been particularly successful in terms of environmental impact and effectiveness. However, while maintenance is a significant purpose, the income objective has always played an important role.

Ireland

Agri-environment policy in the Republic of Ireland is implemented through the national Rural Environment Protection Scheme (REPS) introduced in 1994 and revised in 2000. Described by the government as "an income support scheme", farmers have to submit an agri-environmental plan produced by an approved agency for the entire holding. There are 11 compulsory measures. By 1999, over 30% of agricultural land had been entered. An evaluation in 1999 concluded that the approach was appropriate and should be continued. While take-up in designated areas and of the organic measure was twice the target level, take-up of other measures was much lower. In 1998, REPS participation increased family farm income by an estimated £110/ha. Various criticisms have been made: it is most attractive to lower intensity farms that may be expected to be causing the least environmental impact, and it is not targeted on areas where environmental problems are worst.

The French contrat territorial d' exploitation (CTE)

The CTE was introduced in 1999 as a voluntary whole-farm development contract. It is now the principal mechanism for implementation of the RDR in France, largely replacing the existing agri-environment schemes. The CTE provides grant aid for a wide range of

activities, both socio-economic and territorial/environmental. CTE are designed primarily at the level of the *département*. A committee of relevant interests develops a set of objectives and measures relevant to local conditions and needs drawn from a nationally prescribed set. Applicants must undertake a diagnostic exercise for the whole farm from which to construct a whole farm 5-year plan. Collective CTEs are also possible, involving groups of farmers working with other partners. To date 29,000 contracts have been approved and 23,500 signed. These include 1,200 collective contracts. CTEs cover 1.6m ha (3.5% of agricultural land) and of this 60% is covered by environmental agreements. The average payment over 5 years is around £17,500. In contrast to the approach in the UK, agriculture is used as the engine of rural development and agricultural interests appear to be the main beneficiaries. The approach is strongly multifunctional and decentralised. The CTE provides a vehicle for implementing a wide range of policy measures but the administrative costs appear to be very high. It is too early to assess its effectiveness. Some initial difficulties in implementation have been overcome and but initial target figure of 100,000 contracts has not been met due to the administrative complexity.

9 Beyond agri-environment schemes

Legitimation of agri-environment schemes requires not only that benefits be seen to exceed costs but also that there should be no more efficient means of provision through the private sector. Some potential alternative approaches should be considered.

Agri-environment schemes are implemented through the use of various types of environmental contract. These have a number of limits:

- The determination and specification of target outputs has to be undertaken by government.
- Farmers have incentives to evade contract requirements and the government lacks information on their individual circumstances.
- There is a lack of incentives for entrepreneurship to lower costs or develop new outputs.
- The public may feel that they should have rights over the environmental improvements.
- The necessary ecological requirements may not be met over the time periods and at the scale of the contracts offered.
- There may be opportunities for benefiting from donations in money, land and labour from the general public that are not captured.

There are a variety of ways by which linkages may be established between those who demand environmental improvements (as consumers, voters or donors) and those who have the necessary control over land to deliver them. Some markets for agricultural products can generate incentives for the provision of environmental benefits, such as for organic products, 'niche' products or tourism. There is a role for government in establishing and supporting such markets. There may be opportunities to create markets for what have traditionally been assumed to be public goods, such as by the definition of new property rights, separating out property rights and by creating new institutional arrangements.

Collective demand – Conservation, Amenity and Recreation Trusts (CARTs)

CARTs are non profit-making organisations with the aim of generating wide public benefit through nature conservation and environmental improvement, provision of amenity and opportunities for public recreation and conservation of landscape heritage. While agri-

environmental policy involves agreements with existing owners, the CART model implies some change in the character of property owners. An alternative approach is therefore for the state to promote the actions of such organisations through grants for the purchase of land, contributions towards labour costs and the tax relief.

Such organisations will act entrepreneurially, seeking new products and new methods. They may be more flexible and less bureaucratic than government agencies, responding more rapidly to opportunities as they arise. They may specialise in particular types of conservation or may focus their efforts within a particular area, building up a level of expertise. But this should not be interpreted as indicating that there is no role for government. Rather it may be more appropriate to regard CARTs as a policy by intermediary. A relatively close match between government and CART objectives means that government policy can operate by steering CART activity more readily than by providing incentives to private individuals. This enables government to take advantages of CART entrepreneurship and reduces monitoring costs. Clearly CARTs as landholders do already benefit from agri-environment schemes but such funding does not support other sorts of activities, such as land purchase or more general administrative requirements.

Dedicated funds

It may be possible to establish funds operated to support environmental enhancement either within a local area or for a particular type of conservation. There are three main elements: fundraising, fund consolidation and disbursement, and some arrangement for the control of land. The fund may be operated by local government or non-governmental body to finance environmental contracts or CARTs. As with CARTs there are potential problems of unbalanced decision-making and poor financial management. Some sort of regulatory regime would be appropriate for funds not directly managed within the public sector. There is little systematic information their operation in practice. It might also be argued that the presence of such funds may help to reveal consumers' preferences by providing an opportunity to make contributions towards valued environments. But there is still a limit to the extent to which they are able to capture fully the public good benefits of the environment.

Collective action by suppliers

Local landholders may take action collectively in order to achieve some co-ordinated land management towards a common environmental goal. The aim in the context of the provision of agri-environment benefits is to establish the conditions where groups of landholders within local areas can agree to adopt a co-ordinated or collective approach to resource management. There is thus a need to identify appropriate areas and to set an agreed approach to management. There is scope for the creation of new organisations within which common management decisions may be taken.

The Australian Landcare program

The Landcare program in Australia encourages landholders to improve standards of resource management through collective action. The approach was first introduced in the mid 1980s and in 2001 there were more than 4,500 Landcare groups, including about 40% of all farmers. Government funding has been extended recently by \$1.25 billion over 5 years. Membership is voluntary and open to any local person. Groups are involved in a variety of activities: holding meetings to identify priorities and develop strategies; establishing demonstration

sites; undertaking educational and promotional activities, undertaking practical work such as tree planting or construction, co-ordinating pest and weed control, establishing wildlife corridors, and preparing applications for government funding. A relatively recent phenomenon has been the trend for Landcare groups themselves into networks. It is difficult to measure the environmental impacts of Landcare. Participants are more likely to have larger holdings, to be more profitable landholders and a small number of groups have had access to disproportionate amount of funding. There are concerns that the resources available are excessively restricted and that there has been a failure to provide long-term funding for group co-ordination. It is argued that state governments have taken advantage of the availability of federal funds to reduce their own expenditures in rural areas.

The agricultural circumstances in the UK are very different from those in Australia. The significant resource management problems in Australia are primarily directly associated with agricultural productivity, establishing a direct incentive for primary producers to become involved. There are though relevant lessons. Collective action amongst farmers can support conservation by improving the exchange of information and promoting economies of co-operative activity. The building of social capital can reduce transactions costs. Commercial sponsorship for Landcare groups might suggest options for similar support in England. The involvement of non-farm residents and interests in local groups might be even more relevant to circumstances in England.

10 An approach to agri-environment policy

The circumstances of agri-environment policy have changed since the 1980s. There are now greater concerns for positive environmental management and with low levels of farm incomes. It is also appropriate to review whether agri-environment schemes deliver the full range of environmental benefits. A re-focussing of concern towards the maintenance of ecosystem functions might imply less emphasis on the ‘agri’- environment, and more on the broader ‘rural’ environment. Finally, it is appropriate to anticipate agri-environmental payments that can be independent of traditional CAP support and thus WTO proof.

We sketch out an overall approach to agri-environment policy as a ‘thought-experiment’ designed to organise the analysis and work through the questions that need to be addressed. We should emphasise that the alternatives are not costed and we do not suggest a balance of expenditure towards the different elements.

Basic requirements

A basic element of an agri-environment policy must establish explicitly the basic requirements of landholding. This element is currently recognised through the requirements that participants are required to meet the conditions of the Codes of Good Farming Practice.

Broad and shallow: basic land stewardship

A broad and shallow scheme, perhaps termed a Land Stewardship Standard, offers a number of possible advantages:

- There is scope for broader environmental enhancement benefiting some species of plants and wildlife that the more targeted approach does not reach.
- The experience with set-aside indicates the environmental advantages of a scheme reducing agricultural intensity across a broad area.

- In Less Favoured Areas (LFAs) there is a widespread threat to maintenance of farming and the protection of the environment may be seen to be the primary rationale for public support for farming. This is not confined to the ESAs.
- The location of ESAs may no longer reflect priorities for environmental management. A broader scheme would reduce inflexibility in the face of changing priorities.
- The IACS system gives capability for administration of a broad and shallow scheme at relatively low cost.
- There are also equity issues. Such a scheme would offer those whose income is reduced by policy reform a new income source, offsetting some of the distributional impacts.

In LFAs a Hill Farm Environment Scheme might operate combining the Hill Farm Allowance (HFA) with the lower tiers of the ESAs. Payment may be attained through checking certain questions on the IACS form, as is the case with the environmental enhancements in the HFA. These might relate to simple verifiable characteristics, such as stocking traditional breeds, length of stone walls being maintained, field size, altitude, heather cover, and so on).

Outside the LFAs, we suggest three potential models:

- The Policy Commission approach based on whole farm schemes entered on completion of a whole farm environmental plan and audit.
- A competitive tendering scheme. Landholders would offer to divert land for conservation uses, such as field margins, over wintered stubbles or buffer strips. Bids, made by completion of a simple form, would be scored centrally and those offering best value for money would be accepted.
- A simple IACS check box scheme freely open to all. Questions could offer similar options to those in the competitive scheme. It would be possible to give a higher payment for farms achieving certain audit standards.

The choice between alternatives depends on a number of factors, especially funding available, the priority to expand the area under agri-environment schemes and transactions costs. A large scale competitive tendering scheme would involve relatively high public and private transactions costs and would need careful design if it is to achieve benefits from competition. A scheme requiring whole farm audits has desirable qualities, but is likely to be adopted at a slower rate. There may be advantages in a more rapid transition. In the context of radical CAP reform there may be urgency in getting payments to farmers to avoid the potential environmental damage from structural change. The farmers who find difficulty in meeting the audit requirements may also be particularly vulnerable to the loss of support from policy reform.

Wildlife, landscape and resource enhancement

The ESAs and CSS have become more similar, reflecting the greater emphasis on environmental management. Further, the spatial pattern of ESAs may not be ideal and there could be an advantage to a more flexible approach. Analysis does suggest advantages of the CSS which can be more readily tailored to specific situations. The most obvious possible drawback to the CSS model would be that it may involve higher administrative costs. This is an issue that deserves further analysis.

This element would procure environmental protection and the enhancement of wildlife, landscape, heritage and access, representing the range of environmental objectives in ESAs and CSS beyond those under the broad and shallow scheme. It would be a whole farm scheme, encouraging farm audits and plans. Applications would need to demonstrate the environmental benefits to be provided. Acceptance would be discretionary. Increased weight might be given to the protection of ecosystem functions to take account of the objective of sustainable development. There may be decentralisation in setting the objectives, criteria to be applied in scoring applications and the terms of agreements. Rates of payment may be varied to achieve regional or local uptake targets. The general aim in selecting applications would be to maximise the value of benefits generated per unit expenditure.

In some circumstances the state of an SSSI depends on the management of the surrounding countryside and a judgement then has to be made as to what balance there should be between funds expended on the management of the SSSI itself and on the management of the surrounding area. Closer integration might be achieved by incorporating the Wildlife Enhancement Scheme into this unified scheme, establishing a single process within which such decisions are taken. It might also provide a means for the application of CAP funds towards the maintenance of SSSIs.

Collective initiatives for environmental enhancement

In certain circumstances there is a need for co-ordination amongst landholders. Collective initiatives would encourage groups of landholders to adopt a collective approach to environmental and resource management. This element would provide funding on a competitive basis for collective applications. The scheme would build on the rules and practices under the elements described above, but would consider a single application from a group of landholders and would offer funds explicitly to support institutional development. We anticipate that the process of applying and the scope for varying conditions and payment rates amongst the members of the group would stimulate genuinely co-operative activity. This approach could have application in a number of contexts, such as in the management of commons, supporting communities of landholders within National Parks and on SSSIs, enabling conservation boards in Areas of Outstanding Natural Beauty or groups of landholders promoting traditional or novel landscapes or habitats. Collective provision might be made within river catchment areas or amongst riparian owners for land management and river improvement.

Community engagement

This element aims to draw a wider range of actors into agri-environmental land management. The primary objectives would be to:

- promote longer term environmental protection secured through land ownership,
- harness environmental entrepreneurship,
- support an institutional framework which can lever in voluntary contributions,
- support the establishment and operation of discretionary funds, and
- create further opportunities for the revelation of preferences for the environment.

Funds would be allocated on a project basis through competitive tenders. Projects would be assessed in terms of their capacity to promote environmental enhancement in the long term. This would include the support for institution building, such as those capable of reflecting local community priorities and of leveraging in voluntary labour, donations and bequests.

Many of these activities are already supported by government. An aim of this approach would be to provide a more systematic and consistent source of support for community engagement. It would also integrate this with agri-environment schemes and enable CAP expenditure to be directed through these alternative approaches.

The level of decision-making

The changing objectives of agricultural policy suggests a parallel change in the level at which policy decisions should be taken. Some shift towards re-nationalisation has already occurred, such as through the rural development programmes. The principle of subsidiarity states that decisions within a political system should be taken at the lowest level consistent with effective action. An economic approach suggests that local public goods should be provided at the scale that internalises costs and benefits. This indicates that funds should be raised amongst the groupings of the population who enjoy the benefits of the expenditure and funding decisions taken by their representatives. In practice the decision is not quite so straightforward. Given the significance of transactions costs in policy implementation, economies of size in the delivery of policy may also be a factor in determining an optimal level for decision-making and implementation. And there may be a view that some degree of spatial redistribution of income should be incorporated into the system.

In the context of agri-environment policy, this might suggest that funding for local public goods should be at the local level. However, some landscapes and nature conservation objectives are regarded as of national or international importance. This indicates that it will often be inappropriate to give total discretion to the local level. Greater decentralisation in decision-making would seem to be justified, but remaining subject to national support and influence to ensure that it is consistent with wider commitments. The current discussion of the potential for regional government suggests that this tier might have the institutional capacity to implement agri-environment schemes.

1

Introduction

1.1 The origins of agri-environment policy in England

The history of the introduction of Environmentally Sensitive Areas (ESAs) is well known, although there are debates as to the precise source of the initial idea. A major stimulus was in the financial incentives to farmers in the early 1980s to convert extensively grazed pastures into cereal production. The 1981 Wildlife and Countryside Act provided the means to the Nature Conservancy Council (NCC) to offer management agreements to landholders wishing to intensify production on Sites of Special Scientific Interest (SSSIs). However given the relative profitability of agricultural intensification, the costs of buying out potential farming incomes through the mechanism of contracts individually negotiated with landholders threatening to intensify production was well beyond the means of the NCC. In practice, this effectively required the NCC to buy out the agricultural subsidies on offer from the Common Agricultural Policy, although in practice the payment of grants for this type of agricultural intensification was soon ended. Even then, the potential of existing policy mechanisms was limited to sites specifically notified as SSSIs; there was no protection for the wider countryside.

In this context, the Countryside Commission and the Ministry of Agriculture, Fisheries and Food (MAFF) introduced an experimental programme in the Broads Grazing Marshes, inviting to apply for a standard contract for a fixed payment. Under these contracts farmers agreed not to plough up their pasture or intensify production. The Grazing Marshes Scheme was successful in achieving a relatively high take-up rate at levels of payment far lower than those being paid on management agreements on SSSIs. It also had the advantage that payments were not effectively forced through a process of landholder threats, but rather were made to all landholders on an equal basis. At that early stage, success in political terms was largely measured in terms of achieving a high take-up rate and in environmental terms of preventing severe environmental damage. Thus, the immediate goal was that there should be no environmental change.

In practice, the success of the scheme was perhaps less pronounced than appeared. It was introduced at a time when there was a decline in the profitability of cereals production relative to beef production that eased the pressures for the conversion of grazing land. It also moved policy from a problem of negotiation between unequal partners with different levels of information, towards another one, also associated with asymmetric information, of adverse selection. But from this beginning, as well as similar initiatives in other European countries such as the Netherlands, the approach was adopted into European policy.

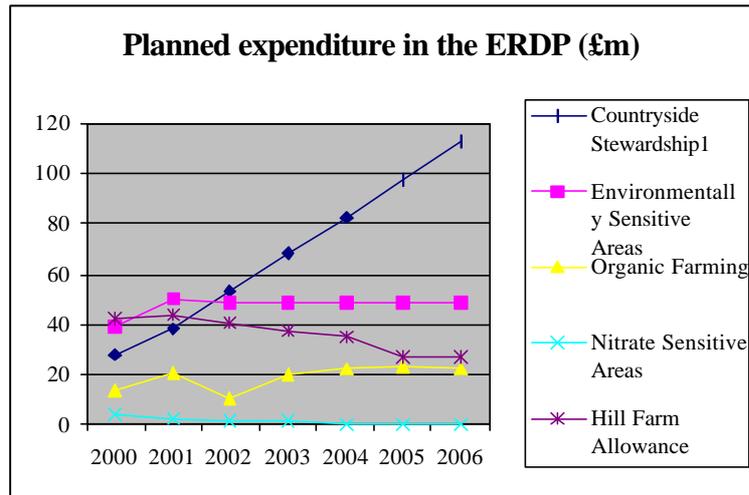
Agri-environment policy was introduced into the CAP through Council Regulation 797/85 (e.g. Whitby and Lowe, 1994, Baldock and Lowe, 1996,). Under Article 19, member states were authorised to introduce zonal programmes in environmentally sensitive areas. Five Stage 1 English ESAs were launched in 1987 and five Stage II in 1988. The original objective of the scheme was (MAFF, 1989) ‘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’. The emphasis was thus on protection against environmental loss resulting from changes in farming practice. In 1992 the objective was revised to “maintain and enhance the landscape, wildlife and historic value of each area by encouraging beneficial agricultural practices”. The Countryside Stewardship Scheme (CSS) was launched as a pilot Countryside Commission scheme in 1991. This scheme concentrated on enhancing valued non-ESA landscapes in England.

The agri-environment regulation (2089/92) provided the framework for the extension of agri-environment policy. The Stage 1 ESAs were re-launched in 1992 with modified objectives, and in the period to 1998, further ESAs were designated (to give a total of 22 in England). The scope of CSS was extended and the scheme transferred to MAFF in 1996, and a number of other agri-environmental schemes were launched (Habitat, Moorland, Arable Stewardship). Subsequently, arable stewardship has been incorporated into the CSS. The Moorland Scheme was closed to new entrants in 1999 with only 24 on-going contracts (MAFF, 2000d) and the Habitat Scheme was closed and transferred to CSS in part because of low uptake (only 4 contracts for the saltmarsh option).

1.2 The England Rural Development Programme

Following the Agenda 2000 review, under the Rural Development Regulation (1257/99) agri-environment schemes were included in Rural Development Programmes for individual member states. In the UK, separate Rural Development Programmes have been introduced for England, Scotland, Wales and Northern Ireland. The England Rural Development Programme (ERDP) gives a prominent role to agri-environmental instruments to support the sustainable development of rural areas and to respond to society’s increasing demand for environmental services. The existing ESA scheme and CSS are components of the ERDP with the priority in future spending given to CSS.

Planned expenditure on agri-environment schemes and on the Hill Farm Allowance in the ERDP is shown in Figure 1.1. The figure for the CSS includes a small amount of expenditure on closed schemes, such as the Moorland Scheme. Spending on Nitrate Sensitive Areas is phased out over the period. Spending on the Hill Farm Allowance reverts to a level similar to that on Hill Farm Compensatory Allowances during the 1990s after the addition of extra payments related to BSE. Spending on ESAs increases over the first couple of years, but is planned to remain constant after 2003. Overall expenditure is planned to increase by some 23%. What is most apparent is the very considerable increase in expenditure on CSS, increasing by some 300% over the period.



Source: MAFF (2000)

Figure 1.1: Planned expenditure on environmental and related schemes under the England Rural Development programme

The agri-environment schemes included in the ERDP were included largely unchanged from those in operation under the previous regulation and in the ERDP it is noted that all measures will operate throughout the programme subject to the availability of funds and the results of any reviews and mid-term evaluations. It was noted that it was intended to carry out a major review of the suite of schemes under the agri-environment measure, with a view to simplification. The review was due to start in 2002 and to feed into the mid-term review in 2003. It is also noted that the Hill farm Allowance will be reviewed with a view to establishing a more sophisticated approach to assessing the degree of natural handicap.

1.3 The context of this evaluation

The purpose of this evaluation is to feed into the review of agri-environment schemes which will, in turn, feed into the mid-term review of the ERDP. In this study, we concentrate on ESAs and CSS. Evaluations have previously been undertaken of both the different stages of the ESAs and of the CSS. The study is largely desk-based, drawing on the previous evaluations, the available literature and ESA and CSS administrative data from DEFRA.

The organic farming scheme has been the subject of a separate review and other agri-environment schemes have largely been closed and phased out or incorporated into the CSS. A parallel study has been commissioned by DEFRA to review existing agri-environment scheme monitoring information and relevant R & D and so this study does not consider the evidence on the environmental impacts of agri-environment schemes.

As part of this project, we have undertaken an examination of the operation of agri-environment schemes in Europe and an analysis of two further aspects of agri-environment: the possible implications for agri-environment policy of DEFRA adopting sustainable development as a central objective for policy, and the scope for alternative approaches towards the provision of agri-environment benefits. In order to get some feedback on the

work that we have undertaken, we ran a small seminar to review the conclusions reached towards the end of the project. This was held in Cambridge in May 2002.

This evaluation adopts a somewhat different approach from many others that have been commissioned by DEFRA. In particular, we have not collected primary data on the operation of the schemes. We thus have little information on scheme implementation, operation and performance beyond that already available in economic evaluations and the academic literature. As a result, the report covers a broader range of issues and considers some questions of the longer term development of agri-environment policy.

During the course of the research, the Policy Commission on Farming and Food has taken evidence more generally on food and agricultural policy issues and published their report (Policy Commission, 2002). We have reviewed the evidence submitted to the Commission, but in practice the main focus of attention in that context was on the implications of foot and mouth disease and on more general issues associated with the future development of agriculture and food production. There was relatively little specific evidence relating to the operation of agri-environment schemes. We do however consider the Commission's proposals for reform of agri-environment policy later in our report.

The final stage of the report presents a proposal for an agri-environment policy programme. This outlines the elements that we feel should be included and considers their individual characteristics. We recognise that there are aspects that remain under researched, especially in relation to the costs involved. The choice policy also depends importantly on the progress made with the more general reform of the CAP. We do not offer this as a final solution, but more in the nature of a thought experiment as to the options and choices facing the development of agri-environment policy.

Rationales of agri-environment policy

Agri-environmental policy originated in response to the perceived limitations of conventional agricultural policy, partly with the objective of restraining production surpluses and partly to address the problems of environmental damage arising from modern agricultural production methods. Initial implementation was more a process of crisis management than of considered policy development. However, as the policy has matured there has been an increasing need to establish a coherent rationale for it as a legitimate government activity. This justification is necessary, both with regard to submissions to the European Commission and in the context of international trade debates. Current negotiations about agricultural policy and international trade can be expected to develop searching critiques of the justification given for all payments made by governments to farmers.

The role of government is perceived in a variety of ways. From an economic perspective the rationale for government intervention relies heavily on the concept of market failure. In this section, we review the arguments that have been used in order to justify government involvement in the provision of agri-environment benefits. We then extend this discussion in two ways. First, we argue that the adoption by DEFRA of sustainable development as its primary guiding principle suggests an alternative approach towards agri-environment policy with implications for the types of benefit that may be sought and the evidence that might be looked for in order to justify it. Second, we review the approach adopted in England in the context of the debate relating to multifunctionality, especially as lead by the Organisation for Economic Co-operation and Development (OECD). This implies a further element in the justification for government involvement, namely that equivalent benefits could not be provided more effectively through markets. This approach thus involves a broader assessment of alternative means of provision. We review this broader range of potential measures later in the report in Section 8.

2.1 Economic rationale

The rationale for government intervention in the agri-environment is based on the concept of market failure (MAFF, 2000c). The causes of market failure are: the substantial public good characteristics of countryside benefits, negative externalities from agricultural inputs, and possible information failures, for instance in relation to complex notions such as biodiversity. The consequence is that the market fails to deliver the socially desirable level of environmental output. MAFF (2000c) state that the ESA and CSS schemes are specifically

intended to correct the market failures arising from the public good characteristics of the environment.

This is also the principle embodied in the RDR (1257/99). . The rationale for agri-environment schemes as explained in paragraph 6.1.22 of the ERDP is ‘based largely on the concept of market failure’, primarily associated with missing markets for the provision of public goods, such as biodiversity and landscape. The main instrument used to deliver policy is voluntary incentive payments to procure environmental outputs. There is underlying this argument a judgement that the provision of agri-environment benefits represents the provision of a ‘good’ rather than an failure to pre

The formal requirements of landownership are defined through the regulatory framework. This establishes a formal reference level of property rights (Hodge, 1989; Hodge, 1994, OECD, 1999; Scheele, 1999) and hence determines a level of environmental quality that can be expected of landowners. Failure to meet this standard is interpreted as pollution and hence the ‘polluter pays principle’ would apply. However this may be seen as a minimum expectation. There may be a social expectation that landowners should achieve a standard of environmental quality above this minimum. In this respect there may be some fuzziness as to the precise allocation of property rights held by landowners. It might for instance be expected that landowners should take actions so as to reduce the risks of environmental damage. Thus, the Codes of Good Agricultural Practice are used to set a level expected of participants in ESAs. Only actions in excess of these are regarded as deserving payment. This is to say that the ‘Provider Gets Principle’(OECD, 1994; OECD, 1996; Hanley *et al.*, 1998) would apply. The position is illustrated in Figure 2.1.

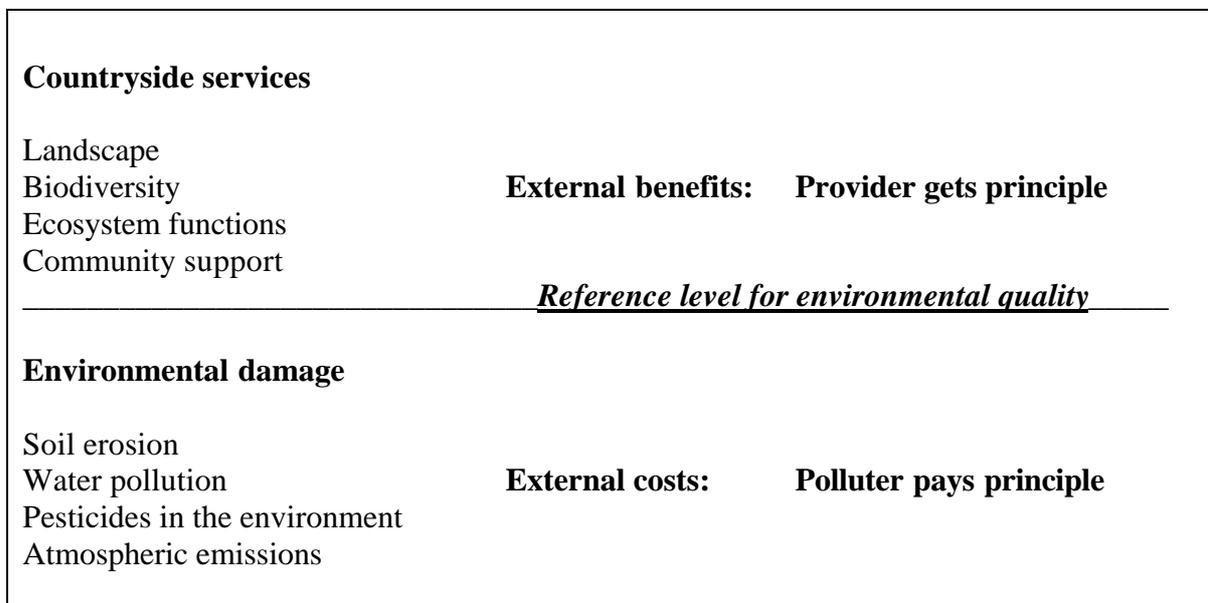


Figure 2.1: Property rights and policy implications for environmental impacts of agriculture

It may be noted that this reference level changes through time. Often a formal legal shift in right follows on from voluntary policies and persuasion. For instance, the Countryside and Rights of Way Act 2000 has implemented a significant shift in the property rights held by the owners and occupiers of Sites of Special Scientific Interest (SSSIs) by making actions that damage SSSIs illegal rather than the subject of voluntary negotiation.

There is often a general presumption that emissions of chemicals and pesticides and erosion of soil should be regarded as forms of pollution. However, we have noted that schemes to reduced levels of pollution are often included with agri-environment programmes. This is also the case in the United States under programmes such as EQIP. There is thus a need to review the justification for schemes to pay farmers for particular types of actions.

However, this somewhat understates the complexity of the situation and the difficulty of translating the rationale into appropriate action on the part of government. There are a number of points here:

- an element of the external cost from agriculture reflects the distortions in input use that result from agricultural support. Policy externalities as well as market externalities are involved. Even so, the level of these policy externalities on the environment is being reduced by regulation (e.g. the Nitrates Directive) and adjustments to support mechanisms (e.g. changes to LFA policy under 1257/99).
- Some environmental issues have been addressed through a re-definition of property rights or cross-compliance rather than market intervention. For example, the RDR (1750/1999) sets a whole farm Good Farming Practice baseline for participants in agri-environment schemes. Increasing the public's access to open countryside has been addressed by re-defining property rights in the CROW Act rather than through quasi market intervention.
- agri-environmental intervention may introduce or reduce trade distortions because of output effects of agri-environment policy.

Despite these caveats, the public good and missing market case for intervention remains valid. There is evidence that the public wish to protect and enhance the farmland environment and are willing to pay for policy intervention (Willis *et al.*, 1993; Stewart *et al.*, 1997). However, public preferences are not revealed in the market and this presents real difficulty for implementing a welfare-based approach. It has proved difficult to offer clear economic guidance on the optimum size and direction for agri-environmental intervention. In practice, the focus of agri-environment expenditure is heavily determined by advice from the environmental and countryside agencies, and the activities of interest groups. We review the work that has been undertaken on the evaluation of agri-environment schemes in Section 5.

2.2 Sustainable development

Both the EU and the UK government have subscribed to the principle of sustainable development. The UK strategy (DETR, 1999) emphasises four objectives: social progress which recognises the needs of everyone; effective protection of the environment; prudent use of natural resources; and a maintenance of a high and stable levels of economic growth and employment.

The promotion of sustainable development was immediately adopted as a central objective on the establishment of the Department of Environment, Food and Rural Affairs (DEFRA) in

June 2001¹. Its first ‘key task’ was to establish DEFRA as ‘the leading voice in Government for sustainable development’. DEFRA aims for sustainability and ‘will protect and improve the environment using the principles of sustainable development and integrate the environment with other policies across government and internationally’.

The adoption of sustainable development as an objective suggests a wider set of issues than those covered by market failure. Sustainability implies the maintenance of natural capital, even where the expected costs exceed the expected benefits as measured in cost benefit terms. The rationale for this is typically based on arguments of uncertainty, irreversibility and non-substitutability.

While there remains considerable unresolved debate as to the specific and appropriate implications of the principles of sustainable development for practical decision-making, a central element concerns the treatment of uncertainty and ignorance². In particular, uncertainty as to the potential significance of the depletion of natural capital for future human welfare indicates that alternative decision-making principles might be adopted in certain circumstances³. These may take various forms, such as the use of the precautionary principle⁴ or the safe minimum standard. Perhaps more fundamentally, uncertainty or ignorance as to the operation and implications of changes in the operations of ecosystems directs decision-making towards the enhancement of their resilience⁵. This would give greater attention to ecosystem functions⁶.

This signals a goal to recognise the full range of monetary and non-monetary values and to take account of longer term consequences, but given the plethora of definitions of sustainability, the specific implications remain uncertain.

However it does suggest a focus on the role of capital as the basis for the maintenance of future welfare (e.g. Turner, 1993) and questions a simple application of cost benefit under certain conditions (e.g. Toman, 1994). This emphasises the need to protect critical capital, generally capital where there is uncertainty as to future values, for which there are no close substitutes and whose loss would be irreversible.

Natural capital

In a rural ‘old world’ context (Hodge, 2000) where the environment has been substantially manipulated by human activity over many generations, the environment may generally not be

¹ DEFRA’s aims and objectives were set out in a News Release of 14 June 2001.

² Ignorance is defined as the position when the possible outcomes are unknown.

³ See for instance Toman (1994).

⁴ The precautionary principle was added as a principle of environmental law under the Maastricht Treaty. See Kramer (1995).

⁵ These issues are discussed by Holling *et al.* (1995).

⁶ The valuation of ecosystem functions is discussed in detail by Turner *et al.* (2001).

seen as ‘natural’⁷. Valued environments are typically products of the co-evolution of human and semi-natural systems. Beyond the immediate goal of promoting the provision of public good environmental values⁸, there is then a goal of protecting critical environmental capital. A goal of sustainability might have limited relevance where such environments can be easily and quickly recreated. But this is clearly not the case in some contexts, such as for ancient woodlands or other fragile habitats. The extent to which specific environments are effectively replaceable and over what time period is often unclear. The issue is further complicated by the prospect of climate change which implies a shift from a narrow site based approach towards one that takes account of the spatial relocation of species. However, the maintenance of ‘critical semi-natural capital’ will be a legitimate objective of policy.

In fact some elements of ‘man-made’ capital exhibit similar characteristics to natural capital. Man-made assets, such as archaeological sites, ancient buildings or works of art have particular qualities that may be unique and without direct substitutes. Their loss would be irreversible in the sense that while modern reproductions might be created, they would not have the same intrinsic quality that is valued in the original asset. In this respect, there is a clear argument to apply the same principles to their management that would apply to critical natural capital.

Resilience

An alternative approach to sustainability emphasises the idea of resilience. Holling *et al.* (1995) define this as “the amount of disturbance that can be sustained before a change in system control or structure occurs” (p50). Similar approaches have been adopted by other authors using different terminology, such as ecosystem integrity or ecosystem health (Turner *et al.* 2001). Holling *et al.* (1995) argue that there is an emerging synthesis in ecology that suggests an understanding of ecosystems that are different from those that have traditionally been used by resource economists. They suggest a number of features of ecosystems:

- Change is not continuous and gradual, but is episodic with slow accumulation and rapid release. Rare events (hurricane, species invasion) unpredictably shape structure with long term persistence.
- Spatial attributes are not uniform or scale invariant. Scaling up cannot be process of simple linear addition.
- Ecosystems do not have single equilibria with functions controlled to remain near it. Destabilising forces far from equilibria, multiple equilibria and absence of equilibria define functionally different states.
- Policies and management that apply fixed rules for achieving constant yields, independent of scale lead to systems that increasingly lack resilience, i.e. ones that suddenly break down in the face of disturbances that previously could be absorbed. The modernisation of agriculture generally involves this type of change in management.

⁷ In fact similar arguments might be made in a ‘new world’ context too. See for instance Budiansky (1995).

⁸ This tends to be the primary focus of the debate on multifunctionality. See the premier issue of *EuroChoices* (2001) for various perspectives and OECD (2001) for a more technical analysis.

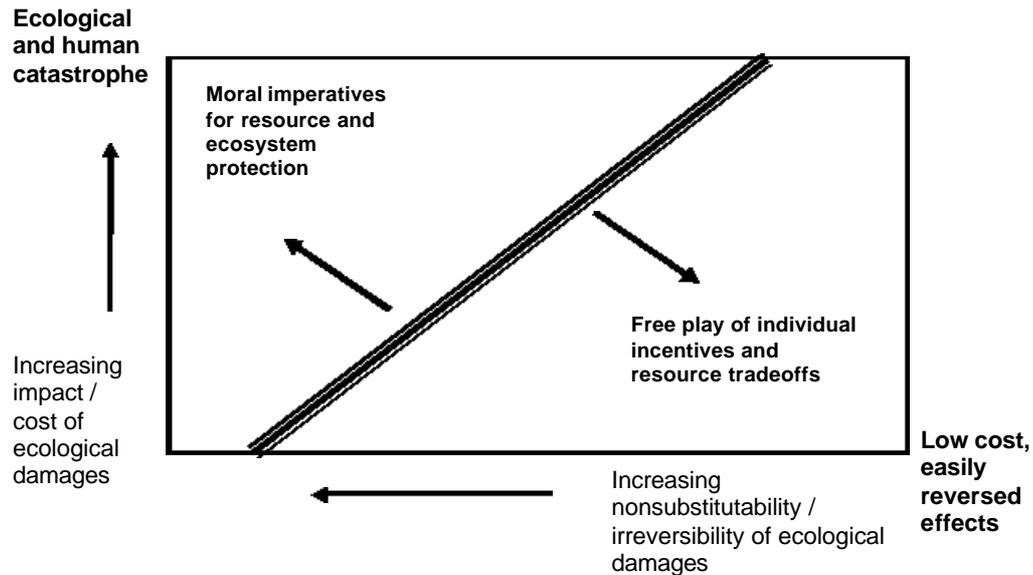
This suggests that an adoption of the principle of sustainable development could imply a rather different approach to the determination of the objectives for agri-environmental policy and its evaluation. The two approaches reflecting the wider differences emerging between environmental economics and ecological economics, characterised in Table 2.1.

Table 2.1: Alternative perspectives in incorporating environment into economics

	‘Environmental economics’	‘Ecological economics’
Conceptual framework	Marginal change and equilibrium	Disequilibrium, discontinuities and system changes
Modelling	Comparative statics	Evolutionary, path dependency
Information	Risk and probability	Uncertainty, ignorance, unpredictability
Goals	Optimisation and efficiency	Sustainability (precaution, resilience)
Disciplinary analogy	Engineering	Biology

Neither approach should necessarily be seen as ‘correct’. Toman (1994) has suggested the circumstances under which cost-benefit analysis might or might not be most appropriate, as illustrated in Figure 2.2. Where impacts have a modest cost and a high degree of reversibility, as represented by the bottom right hand corner of the box, cost benefit analysis might be most appropriate in guiding the correction of ‘conventional’ externalities. Conversely, towards the upper left-hand corner, costs tend to increase and reversibility to decrease. Uncertainty is likely to be high since the impacts are likely to involve large-scale ecological systems and functions that remain poorly understood. In these circumstances some alternative approach is most appropriate, such as the Safe Minimum Standard or the Precautionary Approach. This might be directed towards the enhancement of resilience.

In the agri-environmental context, the former circumstances would apply where there is good information, where the public good being produced is clearly recognised and understood by members of the public, and where there are no wider ramifications or implications. This could be the case with respect to changes being made in the appearance of an already highly ‘manufactured’ landscape. The latter circumstances might apply where there is a high degree of ignorance, where actions taken may be irreversible, and where there are few if any substitutes for elements of the environment or ecosystems functions that may be lost. This could be the case with respect to actions with significant implications for ecosystems functions, such as the extinction of species or to actions with significant implications for climate change.



Source: Toman (1994)

Figure 2.2: Illustration of the Safe Minimum Standard for Balancing Natural Resource Trade-Offs and Imperatives for Preservation

The example of climate change

One obvious example of where an objective of sustainable development might indicate the need for an alternative approach relates to the implications of climate change. The UKCIP98⁹ projections suggested the following impacts of climate change:

- Temperature increases of between 0.4 and 1.6 degrees centigrade by 2020s and 0.7 to 2.6 degrees centigrade by the 2050s.
- Increases in winter rainfall everywhere, but a decrease in summer rainfall in southern England of as much as 22% by the 2050s.
- Higher evaporation rates that will affect water availability, particularly in the south east of England.
- Sea level rise of as much as 78 centimetres by the 2050s in the south east of England and southern Ireland, but less in the north west of England and Ireland.

These changes imply a major relocation of species and habitats across the country. There will also be changes in the composition of species in habitats as species respond differently to the influences of climate change. A recent study Modelling Natural Resource Responses to Climate Change (MONARCH) based on the UKCIP98 projections has evaluated the impacts

⁹ New projections, the UKCIP02 scenarios, have been published in April 2002. These show slightly higher warming rates, reflecting higher assumed carbon dioxide emissions, taking account of reductions in sulphur dioxide emissions and a higher response in the model to increased concentrations of greenhouse gasses. On the other hand they show slightly smaller rates of sea level rises (Hulme et al., 2002)

of climate change on species and habitats in four environments: terrestrial, freshwater, coastal and marine (Cook and Harrison, UKCIP, 2001). The research estimates the likely changes in climate space for individual species and habitats. Climate change will lead to shifts in the locations suited to the success of particular species. In some cases this will present an opportunity, in other cases the survival of the species may be threatened. There are likely to be important implications for habitat composition and functioning.

Even where a new climate space becomes available for particular species, it cannot be guaranteed that a species will be able to move to it. The results from MONARCH shown that species could be lost as a result of climate change. It is necessary to determine what approaches will be required both to meet international commitments on nature conservation, such as under the EC Habitats Directive, and to meet national targets (Hossell, *et al.* 2001). Thus, while it will be important to maintain the protection given to existing sites of conservation value, there is a need for greater emphasis to be given to the management of habitats in the wider countryside and at the landscape scale which will be required to accommodate species movements and displacement. The study concludes that a more forward looking, flexible and dynamic approach will be required to nature conservation.

“Policy makers, planners, land users and the public will also need to be aware of the need to create as well as conserve habitats. We may need buffer zones to minimise climate stress on existing species and to develop new communities. Ecological “corridors” and stepping stones to allow species to move between existing protected areas will sometimes be needed” (p17).

A MONARCH workshop on this issue concluded that small sites and isolated habitat types and populations are expected to be particularly vulnerable. The discussion advocated the development of fully functioning ecosystems within an interconnected landscape that would be robust to climate change (Hossell *et al.* 2001). In fact there differences of opinion as to the extent to which ecological corridors are necessarily beneficial to the extent that they may facilitate the spread of less desirable species as well as the desirable ones (Firbank, *personal communication*). This would seem to be an issue requiring further analysis.

The position is reinforced by requirements to meet international commitments, such as under the Habitats and Birds Directives at the EC level and under the Convention on Biological Diversity. Hossell *et al.* (2001) comment that climate change should not be viewed as an argument for ignoring existing commitments, but rather as a reason to discuss the interpretation and practical application of their aims.

Agri-environment policy clearly has an important role to play in this process. But it indicates the need for an agri-environment policy that is directed towards the enhancement of the resilience of the countryside to withstand the shocks associated with climate change. Considerable uncertainty remains as to what form these shocks will take. Not all of the expected impacts of climate change were modelled in MONARCH. For instance, no account was taken for changing levels of CO₂ in the atmosphere or extreme weather events. Given our limited understanding of climate ecosystem processes it will never be possible to predict the specific threats and their precise implications.

This implies a rather different approach to that deriving objectives and evaluating policy from a narrow perspective of market failure and contingent valuation. Such an approach may or

may not coincide with the preferences expressed by the general public for particular types of landscape. But there is certainly no guarantee that it will. And there is no reason to believe that the relative valuations attached to the alternative possibilities will bear any particular relationship to the resilience of the landscape to withstand the shocks of climate change. Rather it implies a need for an approach that responds more to evidence from research on the threats associated with a changing climate and the ways in which those threats may be managed.

The implications for agri-environment policy

In essence the rationale for government involvement remains one of missing markets, but is broadened to take account for the absence of markets for ecosystem services and the limits of economic valuation techniques, and the implications of complexity in restricting our ability to predict outputs and outcomes. The adoption of the principles of sustainable development would thus appear to have implications for the operation and development of agri-environmental policy:

- That the valuation methods adopted in policy evaluations may not always be appropriate and that caution should be taken in directing policy objectives on the basis of the information derived from them.
- That greater attention should be given to the potential role of agri-environment schemes in enhancing ecosystem resilience, especially where this acts to protect values that might be lost irreversibly.

These arguments apply to different degrees with respect to different issues. This is illustrated in Figure 2.3. With regard to climate change, there may be significant ecological impacts, such as loss of species that are essentially irreversible. In contrast, the failure to provide pleasant surroundings for local public access might have no major ecological implications and would be quite readily reversible. Thus a precautionary approach would be applicable in the former case and a cost / benefit approach in the latter. Two other possible objectives are considered. In practice there is a variety of different pollution emissions with different characteristics. But generally they may have substantial ecological impact and yet often be reversible. In contrast, the loss of historic landscapes would be irreversible, in the sense that the intrinsic qualities of the landscapes cannot be recreated in the present, but there would be little ecological impact.

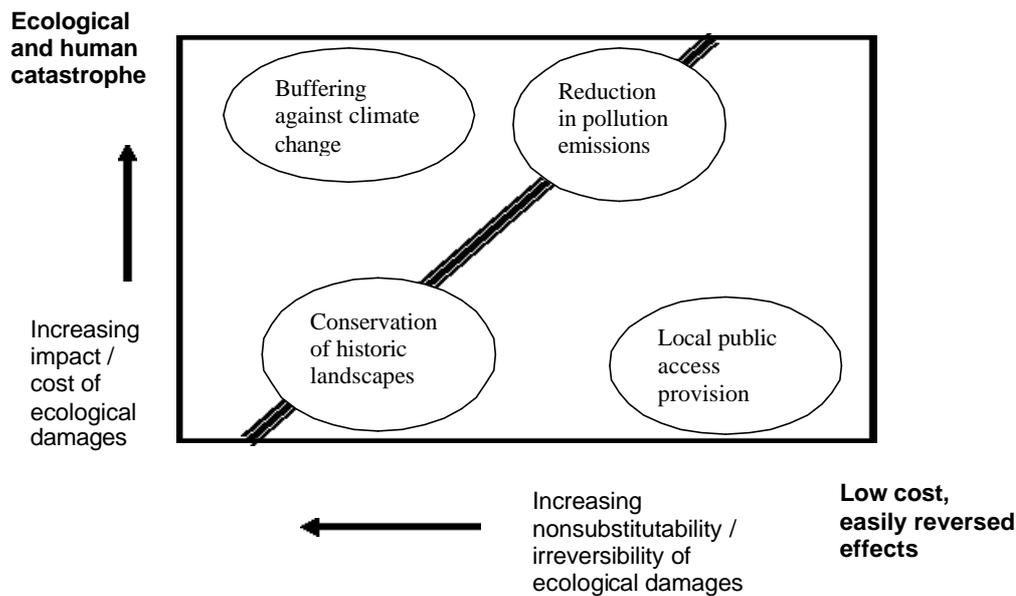


Figure 2.3: Schematic positioning of alternative agri-environmental objectives

The design and evaluation of agri-environment objectives and schemes thus requires an initial judgement as to the characteristics of the threats faced in advance of the determination of an appropriate methodological approach. In some cases a judgement has to be made as to whether particular actions will be effective in enhancing the resilience of the system against external shocks. Clearly, it will still be of concern to see that actions are taken in cost-effective ways. This suggests that more attention might be given to the relationships between ecosystem functions and the objectives and design of agri-environment mechanisms. Examples might relate to such issues as:

- Enhancing the capacity of species to respond to climate change by creating a network of semi-natural habitats through which they might move.
- Creating areas as buffers to protect wider environmental values and ecosystem functions. These might be along watercourses to reduce sedimentation and water pollution or the protection of fish spawning areas.
- Influencing land uses within the wider context of hydrological processes within catchments, such as through tree planting or the establishment of inundation areas for flood protection.

In other circumstances, the focus can continue to be on whether the benefits of the public goods provided exceed the costs of their provision.

2.3 The legitimisation of government involvement

The OECD has devoted considerable attention to the rationales for the support of agriculture, most recently in the context of the debate about multifunctionality. This has established some economic principles, generally accepted amongst different national interests, which define the circumstances under which intervention in the agricultural sector may be justified

(OECD, 2001). Analysis by the OECD leads to three questions that may be used as a guide as to when policy intervention is needed and as to what the optimal intervention should be (Cahill, 2001)¹⁰:

- Is the non-commodity output jointly produced with an agricultural commodity and if so, to what degree can its link with commodity production be changed, e.g. by changing farm practices or technology?
- Is there market failure?
- Have non-governmental options such as market creation or voluntary provision been explored as the most efficient strategy?

The debate about multifunctionality encompasses a variety of issues that extend beyond environmental quality, such as to rural employment and food security. The basic arguments about these other issues, especially the degree to which the non-commodity outputs are necessarily jointly produced with agricultural products, are rather more controversial than is the case with the promotion of rural environmental quality and will not be examined in this evaluation. This is not to suggest that there is no controversy with regard to the environmental issues.

Jointness

It is apparent that the joint production relationship between agricultural commodity production and agri-environmental benefits is not always fixed. Over some ranges of production, a reduction of agricultural production intensity can produce an increase in environmental quality. Over other ranges, the opposite relationship applies¹¹. Thus, liberalisation of agricultural policy may be expected to generate environmental benefits in some circumstances, but not in others.

The issue of jointness is most critical where the planned government intervention is directed towards agricultural production activities. This is generally not the case in the case of agri-environment policy in England and government policy is clear in seeking a further decoupling from agricultural production activities. However the presence of some degree of jointness does mean that policy directed at the promotion of the rural environment is likely to have some positive agricultural production impacts. The obvious example is the support of agricultural land uses in areas where production cannot compete internationally at world market prices. This is to be expected in the context of 'old world' agricultures where agricultural systems and valued environmental qualities have co-evolved over long periods of

¹⁰ In practice we might question the apparent linearity of these three questions. The presence or absence of 'market failure' depends to a large extent on the formal institutions (especially property rights, such a rights over land, but also in the definition of product standards, weights and measures, rules on advertising, contract law etc.) that are established by the state. Thus the term 'free market' may be seen as an oxymoron in that a market can only operate under the rights and duties established by the state. The alternative would be a condition of open access, which clearly fails to provide incentives for trading to take place at all.

¹¹ This relationship is explored for instance in Latacz-Lohmann and Hodge (2001)

time (Hodge, 2000). In these circumstances we believe that the impacts of government activity to stimulate an optimal supply of a public good on agricultural production should be regarded as ‘trade correcting’ rather than ‘trade distorting’.

Publicness

While the ERDP bases the rationale for government provision of agri-environment benefits on their public good characteristics, there is no detailed assessment of the extent to which the benefits provided do indeed demonstrate the qualities of publicness. Public goods are defined in terms of excludability and rivalness (or depletability). Agri-environmental benefits tend to be non-rival in that the availability of the good for consumption by one person is not decreased by consumption by another. They also tend to be non-excludable in that once provided, it is not possible to exclude people from enjoying their consumption. A typical example here would be an attractive landscape. In practice, most rural amenities have these characteristics to some degree, but they are rarely ‘pure’ public goods. Non-rivalry occurs over some range of use levels. Public access to the countryside can be enjoyed by substantial numbers of people without affecting each others’ enjoyment, but at some point congestion arises such that the quality of the recreation experience is reduced. Landscape can in principle be rendered excludable by setting up and enforcing boundaries around an area, but in practice the cost of so doing would exceed the revenue that might be obtained from the undertaking. Thus publicness often results from the high transaction costs of exclusion.

	Rival	Non-rival (up to a point)
Excludable	Craft enterprises in Finland Coarseware pottery in Greece <i>Tanada</i> owner system Labelled products of French nature parks	Ruins and temples in Asuka Canadian national parks Canadian historical sites
Non-excludable	“Everyman’s right” to harvest natural products in Sweden Game fishing in Kasumigaura	Austrian mountain farming French regional nature parks Asuka rural landscape <i>Tanada</i> landscape Traditional farming in Yufin Sailing trawl in Kasumigaura Greek pottery villages

Source: OECD (1999)

Figure 2.4: A classification of amenities

In practice, the degree of publicness varies between different aspects of environmental quality, ranging perhaps between a small garden, where exclusion is possible at relatively low cost and where benefits are readily depleted by congestion, and the existence values associated with the protection of spectacular scenery or rare emblematic species. In this

context, benefits are essentially non-excludable and non-depletable. Most agri-environmental benefits lie somewhere between these two extremes.

Private provision

These mixed circumstances suggest that market or voluntary approaches could have some role in the provision of agri-environmental benefits. The debate here, such as in the approach promoted by the OECD, is generally cast in terms of either a 'free market' or 'government intervention'. In practice the apparent assumption of a strict dichotomy between 'public' versus 'private' oversimplifies the reality of the situation. An increased emphasis on voluntary provision needs to recognise the complex interrelationships between state and market. The key issue for an evaluation of agri-environment schemes is whether the particular benefits that they provide could be better provided by other means. We return to the discussion of the broader range of options for the provision of agri-environment benefits in Section 8.

3

The experience with agri-environment schemes

3.1 The development of Environmentally Sensitive Areas

The Environmentally Sensitive Areas (ESA) scheme was launched by MAFF in 1987 with the aim of pursuing environmental objectives in designated areas of high environmental value, through the encouragement of appropriate agricultural practices. MAFF (2000a) state that the purpose of the ESA scheme is to ‘protect and enhance the rural environment by encouraging environmentally beneficial farming practices in areas of the countryside where the landscape, wildlife and historic interest is of national importance’. Each ESA has its own objectives related to landscape and wildlife features and the prevalent agricultural practices being undertaken.

In selecting suitable areas for designation, they must be of national environmental significance, conservation must depend on adopting, maintaining or extending particular farming practices, either changes to farming practices must pose a threat to the environment or the adoption of particular practices must be capable of resulting in significant environmental improvements, and each area must represent a discrete and coherent unit of environmental interest. (NAO,1997 p11).

Objectives and performance indicators for ESAs were set and agreed from 1994 onwards although this was not always apparent to external organisations. NAO (1997) state that the ESA uptake target was 75% of the eligible area but this was not used as a performance indicator in the scheme evaluations (ADAS, 1991; Whitby, 1994; CEAS, 1997,1998). In 2000, MAFF established new 5-year environmental objectives and uptake targets (MAFF, 2000b). Each ESA now has an overall aim, a set of objectives and uptake targets for activities in each Tier. These targets are specified in terms of the uptake of prescriptions, the implication being they will deliver environmental gain. The basis for the uptake targets is not stated. They are almost always higher than the uptake in 1997-1998 and imply that ESA objectives are either not static or not currently being delivered. Directly specifying environmental output targets (e.g. in terms of changes in habitat quantity and quality) would appear to be a more precise route for measuring policy success. The Tir Gofal scheme in Wales (discussed in Section 7) is establishing a monitoring programme that aims to measure scheme performance in this way.

Achieving a required degree of participation is essential to the success of voluntary schemes. Low participation rates have been problematic for a number of agri-environment schemes.

We examine participation rates in the ESA scheme and CSS below. This is followed with a wider review of the literature on factors affecting uptake.

3.2 Uptake

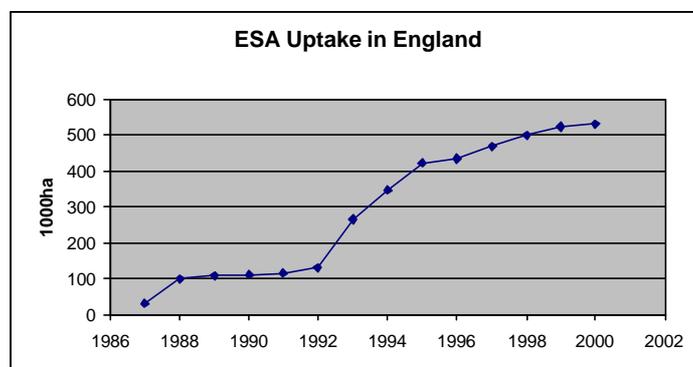


Figure 3.1: ESA uptake in England

Figure 3.1 shows the total area entered into ESAs in England up to 2000. The total area is comprised of increasing areas within ESAs and the establishment of new ones. ESAs were introduced in four Stages between 1987 and 1994, as shown in Table 3.1. The level of uptake has increased steadily but slowly since the designation of the Stages I and II ESAs. ESAs in Stages III and IV have generally seen a higher rate of growth, although the level in Stages IV ESAs has declined somewhat since 1998. This is because the total areas enrolled in the Blackdown Hills and the Cotswold Hills have declined over this period.

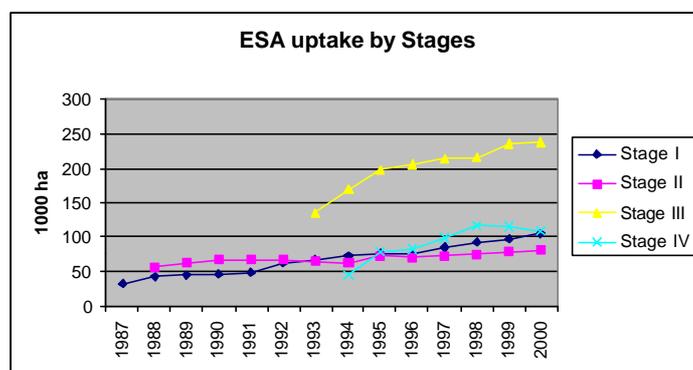


Figure 3.2: ESA uptake by stages

Figure 3.3 shows the mean size of agreement over time for the four Stages. These show very different levels and rather different trends over the period. Stage I ESA agreements have been consistently smaller than those in the other Stages, with some very slight increase over time. The mean size of agreement in the other Stages has declined. These different patterns presumably reflect different scheme arrangements, such as whether they are part or whole-farm, and circumstances, such as the underlying pattern of landholding and ownership. It may also be associated with a different pattern of take-up. Through time, Project Officers may have put more effort into attracting smaller holdings into the scheme. In the part-farm

ESAS which were more prevalent in Stages I and II, growing confidence in the scheme may have encouraged farmers to enter additional parts of their holding.

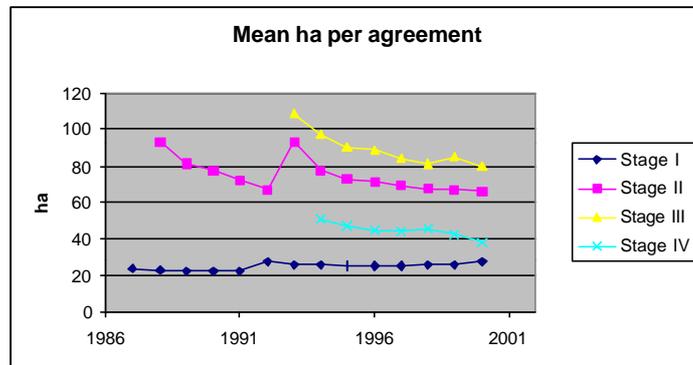


Figure 3.3: Mean area per agreement in ESAs

Total expenditure has increased in all ESAs over the period. As with the area enrolled, the lowest rate of growth is in the Stage III ESAs. Stage IV ESAs started at a very low level but increased rapidly thereafter up until 1998. This is shown in Figure 3.4.

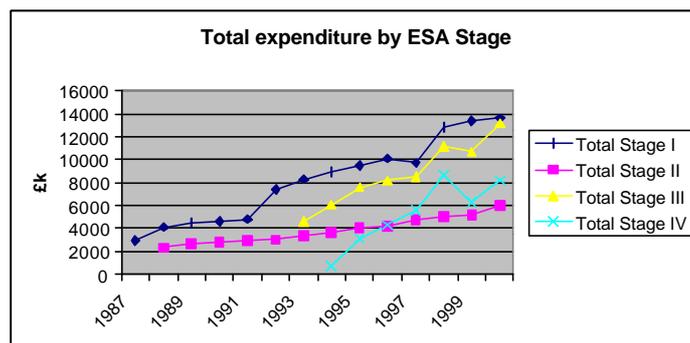


Figure 3.4: Total expenditure by ESA stage

The levels of expenditure per ha in all ESAs are shown in Figure 3.5. This shows a significant U-shaped relationship over time, suggesting that the rates of payment started relatively high and then first declined before rising again. However, this does not quite describe the experience within individual ESAs. Rather there appear to be two distinct forces influencing expenditure per ha.

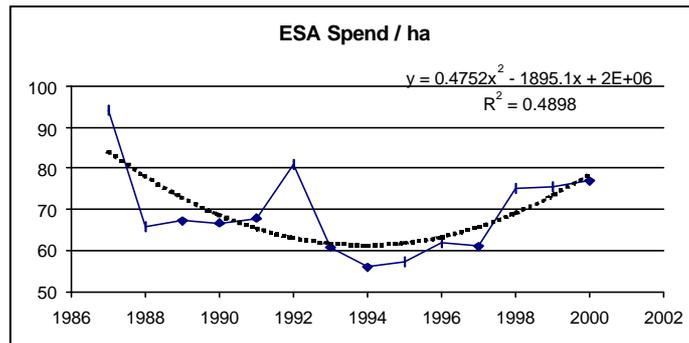


Figure 3.5: Expenditure per ha in all ESAs

Figure 3.6 shows the position for each group of ESAs. The aggregate relationship is explained by the relatively high rate paid per ha in the Stage I ESAs, so that the mean across all ESAs declined as the later Stages were introduced at lower rates of payment per ha. It is difficult to explain the higher rates paid in Stage I ESAs. Part of the explanation however is perhaps associated with the smaller average size of ESA agreements and, as we note later in the report, the rates of reimbursement represented in terms of payment as a proportion of estimated income forgone was somewhat higher. Against this influence, in the cases of Stages I, II and III, there has been a moderate and steady increase in the level of payment per ha, as more land has been put into the higher tiers at higher rates of payment per ha. At the same time, these may be assumed to be generating greater environmental benefit.

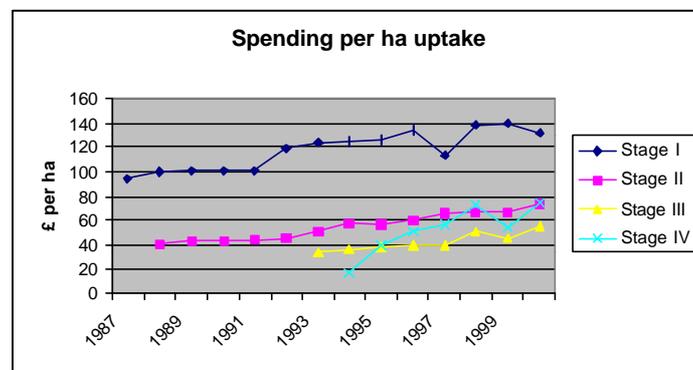


Figure 3.6: Expenditure per ha in each ESA stage

ESA uptake statistics as at October 2001 are summarised in Table 3.1. There are 577,131ha under agreement and this is 60.2% of the eligible area. The proportion of eligible land under agreement tends to be higher in the LFAs than in arable regions, reflecting both the lower intensity of land use in LFAs and the predominance of part-farm ESAs in arable regions. This raises the question of what level of participation is desirable. In so far as the original *raison d'être* of ESAs was to protect valued area of conservation interest against the risk of loss, high levels of Tier 1 uptake on land of conservation value would be desirable where any risk of loss or depreciation can be identified. According to the National Audit Office, at the outset of the ESA scheme uptake targets were set at 75% of eligible land (NAO, 1997). Only

5 ESAs have achieved this uptake level to date. Factors that explain variation in the uptake of agri-environment schemes are discussed in Section 5.

MAFF has revised the eligible area statistics for ESAs (FRCA, 2000), and MAFF (2000b) defined 5-year uptake targets for land under agreement (either in specific prescriptions or overall). These targets indicate 'what the scheme is seeking to achieve within each designated area' and are based on what are considered to be feasible aspirations for uptake.

Table 3.1 indicates that some ESAs have achieved uptake levels of over 80% of the total eligible area. Others appear to have problems in attracting eligible land (e.g. Breckland, Suffolk River Valleys, South Downs and Essex Coast). However, it would be incorrect to draw the conclusion that these ESAs have in some way failed because of the low percentage of eligible land in the scheme. In these predominantly arable ESAs, much of the eligible land is in fact under arable cultivation and may only be eligible for higher tiers. The higher Tiers either apply to specific types of high biodiversity land (e.g. permanent grassland) or are prescriptions for habitat enhancement (e.g. conservation headlands, uncropped wildlife strips, arable reversion). Given the changes to farming systems that such activities require, it is not surprising that uptake in such areas is lower than in other ESAs.

Table 3.1 also examines the balance between Tier 1 and higher Tier uptake. It shows that many ESAs have over 90% of the land under agreement in Tier 1 with correspondingly small areas under Tier 2 enhancement (e.g. Clun, Exmoor). These tend to be the upland and livestock ESAs where much of the land can fairly readily be entered into Tier 1 prescriptions. They are also generally whole-farm ESAs. Where ESAs are part-farm and in arable areas (e.g. South Downs, Essex Coast) uptake is lower and there is a higher proportion of enhancement tiers (See also Section 6.3).

Table 3.1: ESA uptake at October 2001

ESA	Eligible area (ha)	Area under agreement (ha)	% of eligible area under agreement	% of agreement area in Tier 1
Stage I				
Broads*	32,400	19,532	60	46
Pennine Dales	51,100	38,476	75	95
Somerset Levels & Moors*	27,600	19,101	69	77
South Downs*	51,600	17,503	34	33
West Penwith	4,600	7,822	91	98
Stage II				
Breckland*	54,100	7,960	15	43
Clun	18,400	15,848	86	90
North Peak	50,300	43,631	87	53
Suffolk River Valleys*	33,700	10,651	32	69
Test Valley*	3,500	1,536	44	85
Stage III				
Avon Valley*	4,000	2,726	68	94
Exmoor	71,000	52,576	74	98
Lake District	205,100	146,269	71	94
North Kent Marshes*	12,200	5,976	49	69
South Wessex Downs	44,300	25,280	57	92
South West Peak*	30,500	24,922	82	73
Stage IV				
Blackdown Hills	33,400	13,568	41	99
Cotswold Hills	65,900	46,367	70	93
Dartmoor	86,600	40,386	47	95
Essex Coast*	21,900	5,680	26	52
Shropshire Hills	32,900	22,719	69	99
Upper Thames Tributaries*	23,300	8,602	37	72
Total	958,400	577,131		

* indicates part-farm schemes

Source: DEFRA

Figure 3.7 suggests that there is a relationship between a high proportion of Tier 1 land under agreement and high uptake (as % of eligible land). The linear regression coefficient for all ESAs (+0.48) is significant at $p < 0.1$. Again, high uptake rates are associated with a high level of Tier 1 entry. Low uptakes tend to be related to higher levels of upper Tier entry. At the same time, there is a difference in the position between part-farm and whole-farm ESAs. Whole-farm ESAs tend to have a higher proportion of eligible land under agreement, but, with a couple of exceptions, a higher proportion of agreement area in Tier 1.

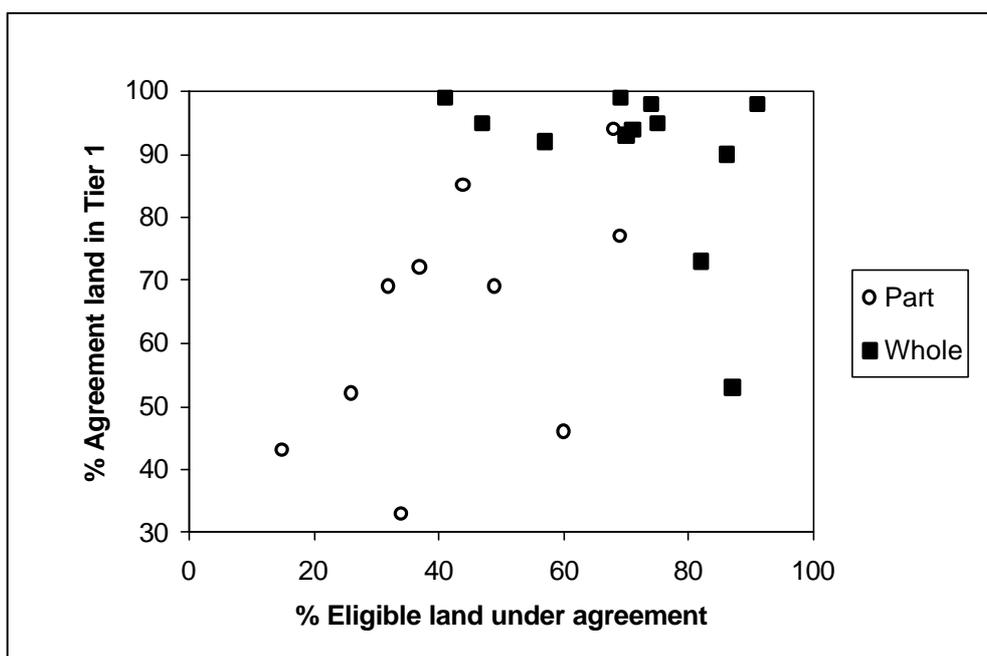


Figure 3.7 Percent of agreement land in Tier 1 against percent of eligible land under agreement (part-farm and whole-farm ESAs)

It is possible that differences in uptake between ESAs could be explained by differences in payment rates, since these are set separately for each ESA. In Section 6 we examine this aspect but find that differences between ESAs in uptake cannot be explained in terms of differences in the ‘incentive’ element in the payment rates (the difference between the rate paid and the calculated income forgone). It seems that the uptake characteristics principally reflect the ‘fit’ between the scheme and the type of farming and associated habitats. Opportunities for Tier 1 entry are much higher in upland livestock areas than elsewhere. The analysis of the literature on uptake (see below) supports this conclusion.

3.3 Spatial targeting in ESAs

There is an uneven match between ESAs and other designations. While none of the first Stage of ESAs were within National Parks, a number were included in the later Stages. Now all National Parks do have an ESA, with the exception of the North Yorks Moors and Northumberland. Even so, coverage within the other National Parks is incomplete. In Dartmoor, Exmoor, the Lake District and the Norfolk Broads, National Park and ESA boundaries match quite closely. In the Peak District, there are ESAs covering the North and South West but not the east. The ESA in the Yorkshire Dales covers only the valleys and not the tops of the hills.

Similarly, some ESAs cover Areas of Outstanding Natural Beauty. But here the overlap is even lower than with National Parks. Parts of several AONBs are included in ESAs, such as the Blackdown Hills, the South Downs, and the Cotswolds. But others have none at all, such

as Bodmin Moor, the Quantocks, the North Wessex Downs, the Norfolk Coast or the Lincolnshire Wolds.

In a similar way the overlap with other characteristics is uneven. Several ESAs follow river valleys, such as the Test Valley, Upper Thames Tributaries or the Suffolk River Valleys. But clearly the great majority of rivers do not have them. A few coastal areas have ESAs, but most do not.

Beyond the uneven overlap with static and long term characterisations and features, there is a further aspect of spatial targeting given the changing role of ESAs. As we have noted, they were originally conceived in terms of preventing threats of agricultural intensification from causing environmental damage and were required to comprise a 'discrete and coherent unit'. This implies both a rationale and scale of targeting based on the circumstances ruling in the 1980s and early 1990s. But the emphasis now has moved towards a more positive role of environmental enhancement. In these circumstances, it would be surprising if the optimal pattern and scale of spatial targeting remained the same through time. This must bring into question whether an apparently fixed pattern of spatial targeting is appropriate to the long-term objectives of agri-environment policy.

3.4 Conclusions

ESAs were introduced in response to immediate threats of the environmental impact of agricultural intensification. A major aim was thus to get farmers enrolled rapidly and the scheme was successful in getting generally high proportions of farmers enrolled. While the level of uptake varies quite substantially between ESAs, the differences in context and increasing complexity of the tiers offered in ESAs makes comparisons difficult. There is not always even an obvious 'basic' tier that can be directly compared. There is also no obvious or simple relationship between scheme design and 'success'. We turn to the question of evaluation in Section 5. Further, there may be doubts that ESAs are effectively targeting locations where the scope for environmental enhancement is greatest.

4

Experience with the Countryside Stewardship Scheme

4.1 The implementation of CSS

The Countryside Stewardship scheme was first introduced as a pilot by the Countryside Commission, but was taken over by the MAFF in 1996. Similarly to the ESAs, it offers payments to farmers and other land managers to enhance and conserve landscapes, their wildlife and history and to help people to enjoy them. The major difference lies in the fact that there are no designated areas. The scheme operates throughout England outside the ESAs and even within them applications can be made in respect of land entered into an ESA to undertake options that are not available under the ESA scheme. The scheme is open to farmers and non-farming land owners and managers, including voluntary bodies, local authority and community groups.

The scheme is directed at the conservation of specific landscapes and targets are set annually to reflect current priorities and the progress made in previous years. Targets are refined annually at a regional level in consultation with local interest groups. Countryside Stewardship agreements usually run for 10 years and each is drawn up individually to address particular management objectives and local circumstances. The CSS aims to sustain landscape beauty and diversity, to protect and extend wildlife habitats, to conserve archaeological sites and historic features, restore neglected land or features create new habitats an landscapes and improve opportunities for people to enjoy the countryside (MAFF, 2000a). Some further details are shown in Figure 4.1.

Some of the main features that distinguish CSS from the ESA scheme (CCRU, 2000) are:

- CSS has national coverage outside ESAs
- CSS is aimed more at producing positive changes in the countryside than ESAs where the main thrust is on protecting what is already there
- CSS is more market orientated and has a stronger competitive element.

The competitive element in CSS takes the form of discretionary entry in that not all applications are accepted into the scheme. Thus, from 1991-1994, 72% of applications to enter the scheme resulted in agreements. Of the 'unsuccessful' applicants, 31% were the results of applicants deciding not to proceed with the application; the remaining 61% were rejected (Countryside Commission, 1998).

CSS has national and geographical uptake targets but no specific objectives relating to each landscape type. Objectives are thus less well specified than in the ESAs where each tier/prescription has specified objectives. In contrast to the ESAs, there are no *ex-ante performance* targets for environmental gain against which success can be assessed.

The objectives of the scheme are 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,
- create new habitats and landscapes.

Eligible areas and features are: - chalk and limestone grassland, lowland heath, waterside land, coastal land, upland, old meadows and pasture, historic features, field boundaries, field margins community forest and urban fringe, new access. In 2001, arable land was included as an eligible area.

Source: MAFF (2000)

Figure 4.1: The Countryside Stewardship Scheme

4.2 CSS uptake

Some trends in the operation of CSS are shown in Figure 4.2 for number of agreements, area under agreement, arable margins and capital linear features. These are comprised of Hedgerow and hedgebank (83%); Wall Restoration (9%) and Ditches and earthbank (8%).

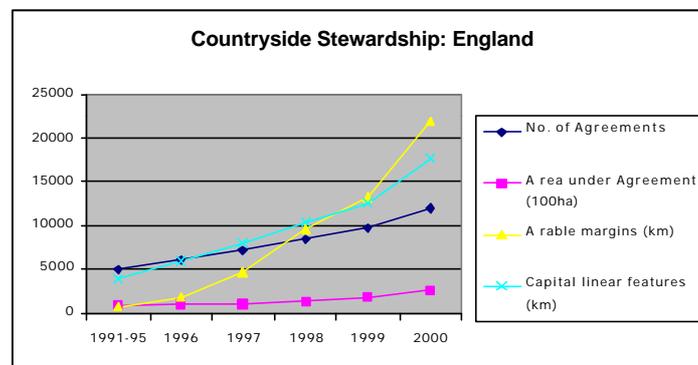


Figure 4.2: Uptake of Countryside Stewardship Scheme

Table 4.1: CSS uptake statistics

	96	97	98	99	00	TOTAL
No. of Agreements						
E Midlands	113	141	142	136	215	1,303
Eastern	130	105	119	105	225	1,393
Gt London	11	5	4	3	7	64
N East	70	81	82	85	130	770
N West	134	136	136	108	235	1,389
S East	158	204	178	146	324	1,686
S West	238	259	280	280	548	2,639
W Midlands	157	138	160	138	238	1,263
Yorks/Humb	106	126	174	167	283	1,480
Total	1,117	1,195	1,275	1,168	2,205	11,987
Area under agreement (ha)						
E Midlands	1,380	1,371	1,696	1,949	4,704	19,373
Eastern	1,416	1,006	1,038	1,258	2,809	17,742
Gt London	305	58	26	50	205	1,134
N East	2,075	944	3,699	16,197	20,680	53,388
N West	1,822	1,320	3,227	11,525	14,111	45,422
S East	2,603	2,790	2,343	2,267	4,764	27,861
S West	3,143	2,971	4,806	4,622	7,595	41,783
W Midlands	723	1,005	1,341	1,491	2,645	10,757
Yorks/Humb	1,093	1,350	3,420	12,840	13,697	45,817
Total	14,560	12,815	21,596	52,199	71,210	263,277
Arable margins (km)						
E Midlands	109	312	595	460	1,384	2,951
Eastern	298	536	974	704	1,439	4,151
Gt London	0	0	0	0	0	0
N East	54	193	234	312	492	1,450
N West	10	95	130	208	454	938
S East	208	731	1,168	493	1,164	3,855
S West	152	759	771	592	1,730	4,038
W Midlands	64	206	443	269	976	1,989
Yorks/Humb	169	134	507	600	1,020	2,561
Total	1,064	2,966	4,822	3,638	8,659	21,933
Capital linear features (km)						
E Midlands	264	296	354	319	364	2,111
Eastern	208	238	348	270	183	1,798
Gt London	10	4	2	3	6	38
N East	157	206	155	190	231	1,291
N West	393	334	270	182	774	2,614
S East	196	282	281	185	620	1,935
S West	362	344	417	537	1,697	4,113
W Midlands	168	186	252	307	617	1,864
Yorks/Humb	229	211	303	271	529	1,993
Total	1,987	2,101	2,382	2,264	5,021	17,757

Table 4.1 gives the basic uptake statistics for CSS for the 5 years since the scheme was transferred to MAFF. There are now almost 12,000 agreements covering 263,000 ha of land, 21,900 km of arable margins and 17,700 km of linear features. The area under agreement has expanded every year, with 2,200 new agreements (71,000ha) added in 2000. As noted above, under the ERDP, expenditure on CSS is forecast to rise substantially over the next few years (DEFRA, 2002). Payment rates are set nationally and there is no regional variation in rates, as occurs with ESAs. Entry into CSS and the resulting pattern of uptake is driven by locally determined targets and budgets for the selection of entrants. These reflect local and ERDP priorities (MAFF, 2001). Advisors also have a role in tailoring agreements to fit within the budgetary constraints.

Table 4.2 gives the areas under agreement for particular options. Much of the land area under agreement is in heather moorland, heath, grassland and hay meadows. Some other options have quite limited participation. The table does not include the substantial investment in linear and capital features such as hedgerow restoration, wall restoration and creation of arable grass margins (see Table 2.2). The CSS also has the facility to fund special projects which are considered desirable and meet the objectives of the scheme, but which work outside the scope of normal prescriptions and standard payments. For example there have been a number of special projects for bird species (e.g. the curlew). These add considerably to the flexibility of CSS to address conservation issues although there is likely to be some increase in administrative costs.

Table 4.2: Countryside Stewardship Scheme uptake by tier option code 1991-2000 (ha).

	91-95	96-00	TOTAL
Lowland pastures on neutral/acid soils	261	-	261
Restoration / conservation of sand dunes	2,308	-	2,308
Regeneration of grassland / semi-natural vegetation	868	-	868
Restoration/conservation of sand dunes	372	30	401
Restoration/conservation of fen/carr/reedbed	345	605	950
Lowland hay meadows	2,225	5,343	7,568
Upland hay meadows	1,323	1,426	2,750
Lowland hay meadows and pastures on neutral/acid soils	2,516	-	2,516
Regeneration of grassland / semi-natural vegetation	501	116	617
Restoration and management of old orchards	585	671	1,256
Base payment to sustain existing heath	8,115	5,044	13,159
Re-creation of heathland	586	506	1,092
Regenerating suppressed heather moor <300ha	11,538	54,625	66,163
Regenerating heather on improved land	425	6,078	6,503
Lowland hay meadows and pastures on neutral/acid soils	432	-	432
Lowland pastures on neutral/acid soils	11,398	34,049	45,446
Upland in-bye pasture	3,692	6,860	10,552
Upland rough grazing pastures	3,480	28,483	31,963
Upland limestone grassland	13,500	4,756	18,256
Ancient irrigated water meadows	60	49	110
Regeneration of grassland/semi-natural vegetation	3,634	12,178	15,812
Regeneration of grassland/semi-natural vegetation	2,125	-	2,125
Lowland hay meadows and pastures on neutral/acid soils	10,892	-	10,892
Regeneration of grassland/semi-natural vegetation	1,223	-	1,223
Managing Intertidal Habitats	3,508	947	4,455
Upland hay meadows and in-bye pasture	2,721	1,691	4,412
Regeneration of grassland/semi-natural vegetation	8,351	12,294	20,645

Source: Unpublished DEFRA data.

Participation is less of an issue for CSS than in the ESA scheme (see Section 5.1) because there has been a substantial surplus of applicants over the number that can be funded. This allows discretionary selection of those agreements likely to give the highest return on investment. There is only a problem if the uptake of some options is below regional target levels and this can give rise to a skewed regional distribution of uptake. We return to this

issue in the context of considering payment levels. Regional differentials in payments would be one route for addressing such an issue. CCRU (2000) found the payment rates generally acceptable and did not support the case for introducing regional differentials. It is however, not clear from their evaluation how they evaluated the uptake profile of the scheme. Since there appear to be no formal targets set for options and their regional distribution it is not possible to analyse this aspect of uptake.

Uptake in terms of the numbers of agreements, area under agreement, length of arable margins and length of linear features since 1996 by Government Office region are shown in Figures 4.3 – 4.6.

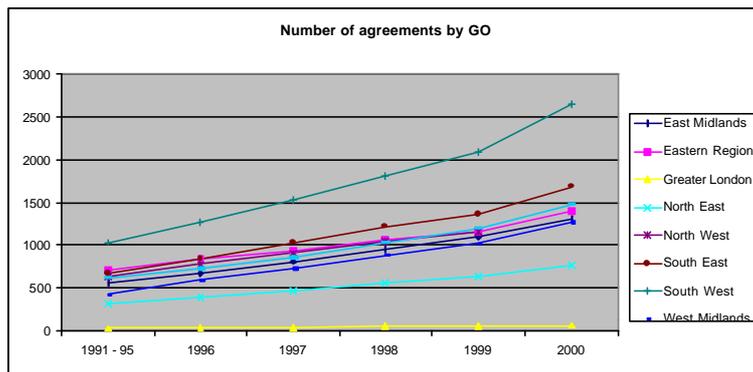


Figure 4.3: Number of CSS agreements by GO

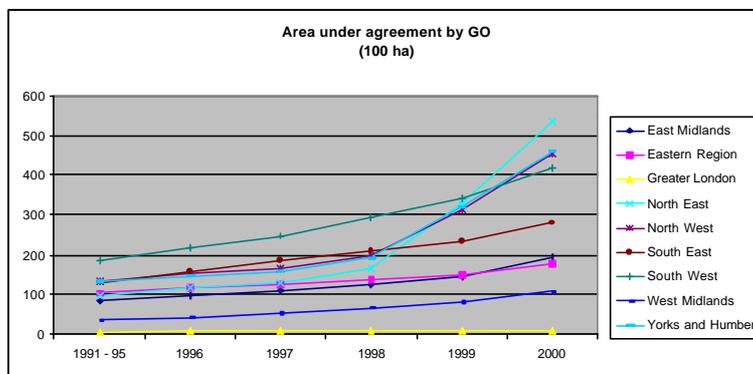


Figure 4.4: Area under CSS agreement by GO

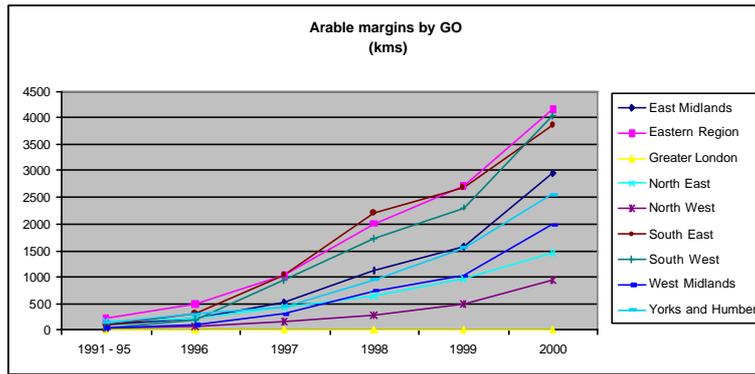


Figure 4.5: Length of arable margins in CSS by GO

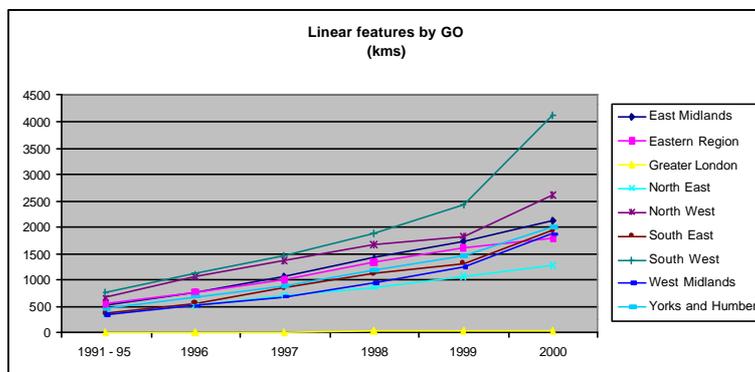


Figure 4.6: Length of linear features in CSS by GO

Excluding Greater London, there are similar numbers of Countryside Stewardship agreements in most Government Office regions, with the exception of the South West which stands out with a greater number, and the North East which has a smaller number.

In terms of the total area under agreement, the South West had a larger area up until 1999, when it was overtaken by the North East, Yorkshire and Humber and the North West. This is attributed to the introduction of a number of Upland Options in 1999 which significantly increased both the number of hectares and the mean size of agreement and took the North East from the middle of the group of regions to become substantially the highest. The area in the West Midlands is consistently less than that in any other region.

There has been a high rate of growth in the lengths of arable margins in most regions, starting from a low level in the early to mid 1990s. The lengths are highest in the Eastern, South East and the South West and lowest in the North West. There has also been an increase in the lengths of capital linear features. The lengths are highest in the South West and lowest in the North East.

There are substantial differences in the average size of agreement. Table 4.3 provides a ranking by county. These range between over 106ha for Northumberland to just over 4 ha in Cleveland. In fact, the mean size of agreement in Northumberland is more than twice the mean area of Cumbria which is the next highest. Even so, these two together with Cumbria, North Yorkshire, Durham and Lancashire stand out over the other counties. Clearly this

reflects the upland character of farming in these counties. And in Northumberland, this is combined with a large average size of holding; at 159 ha per holding substantially larger than Lincolnshire, the next highest at 97 ha.

Table 4.3: Counties ranked by average area of agreement (ha)

Counties sorted by agreement size	
	agree size (ha)
<i>NORTHUMBERLAND</i>	106.20
<i>CUMBRIA</i>	46.30
<i>NORTH YORKSHIRE</i>	46.06
<i>DURHAM</i>	41.85
<i>LANCASHIRE</i>	30.81
<i>DORSET</i>	24.91
<i>SURREY</i>	23.75
<i>BERKSHIRE</i>	22.27
<i>WEST SUSSEX</i>	21.78
<i>EAST SUSSEX</i>	20.35
<i>WILTSHIRE</i>	20.13
<i>DERBYSHIRE</i>	19.26
<i>CAMBRIDGESHIRE</i>	18.64
<i>GLOUCESTERSHIRE</i>	17.81
<i>GREATER LONDON</i>	17.72
<i>GREATER MANCHESTER</i>	17.48
<i>NORTHAMPTONSHIRE</i>	16.77
<i>ISLE OF WIGHT</i>	16.64
<i>AVON</i>	16.60
<i>HAMPSHIRE</i>	16.40
<i>NORFOLK</i>	16.24
<i>CORNWALL</i>	15.92
<i>WEST YORKSHIRE</i>	14.84
<i>OXFORDSHIRE</i>	14.81
<i>CHESHIRE</i>	14.18
<i>LINCOLNSHIRE</i>	13.59
<i>TYNE & WEAR</i>	13.11
<i>DEVON</i>	12.57
<i>HERTFORDSHIRE</i>	12.33
<i>BUCKINGHAMSHIRE</i>	11.78
<i>KENT</i>	11.43
<i>SOMERSET</i>	11.38
<i>STAFFORDSHIRE</i>	11.32
<i>MERSEYSIDE</i>	11.28
<i>LEICESTERSHIRE</i>	10.64
<i>ESSEX</i>	9.45
<i>SUFFOLK</i>	9.23
<i>WARWICKSHIRE</i>	9.16
<i>HUMBERSIDE</i>	8.65
<i>SOUTH YORKSHIRE</i>	8.43
<i>NOTTINGHAMSHIRE</i>	7.87
<i>HEREFORD & WORCESTER</i>	7.72
<i>BEDFORDSHIRE</i>	7.71
<i>SHROPSHIRE</i>	7.42
<i>WEST MIDLANDS</i>	4.61
<i>CLEVELAND</i>	4.20

Clearly the extent of the coverage of Countryside Stewardship depends both on the total area of agricultural land and on the uptake per unit area in each region. Uptake will of course depend on the suitability of the land area for stewardship agreements and other factors influencing participation, such as the costs of implementing an agreement, the rate of payment offered, the availability of information and the attitudes of landholders.

In order to take some of these aspects into account, county data from the June Census for the total agricultural area, the area of cereals and the numbers of holdings were obtained. Data relate to the 1999 June Census figures. Figures were computed for

- the total area in stewardship agreements as a percentage of the total agricultural area,
- the number of stewardship agreements as a percentage of the total number of significant agricultural holdings,
- the length of arable margins in the stewardship scheme per 1000 ha of cereals, and
- the length of capital linear features in the scheme per 1000 ha of total agricultural area.

The counties were ranked and the results are shown in Tables 4.4 and 4.5.

Table 4.4: Counties ranked by CSS agreements as % agricultural holdings and CSS area as % total agricultural area

Sorted by CSS agreements as % agricultural holdings		Sorted by CSS area as % of total agricultural area	
	% holdings		% area
<i>ISLE OF WIGHT</i>	18.23	<i>NORTHUMBERLAND</i>	11.50
<i>NORTHUMBERLAND</i>	17.25	<i>GREATER LONDON</i>	8.53
<i>GREATER LONDON</i>	15.92	<i>LANCASHIRE</i>	7.53
<i>TYNE & WEAR</i>	15.83	<i>DURHAM</i>	6.44
<i>BEDFORDSHIRE</i>	14.87	<i>NORTH YORKSHIRE</i>	6.33
<i>CLEVELAND</i>	14.60	<i>ISLE OF WIGHT</i>	6.27
<i>SOUTH YORKSHIRE</i>	13.07	<i>CUMBRIA</i>	5.41
<i>BERKSHIRE</i>	12.79	<i>EAST SUSSEX</i>	4.43
<i>NORTHAMPTONSHIRE</i>	12.70	<i>SURREY</i>	4.38
<i>DURHAM</i>	11.19	<i>DERBYSHIRE</i>	4.28
<i>BUCKINGHAMSHIRE</i>	10.78	<i>TYNE & WEAR</i>	4.07
<i>DERBYSHIRE</i>	10.66	<i>DORSET</i>	3.86
<i>EAST SUSSEX</i>	10.20	<i>BERKSHIRE</i>	3.52
<i>NORTH YORKSHIRE</i>	10.05	<i>CORNWALL</i>	3.20
<i>LANCASHIRE</i>	9.70	<i>AVON</i>	3.07
<i>HERTFORDSHIRE</i>	9.54	<i>GREATER MANCHESTER</i>	2.71
<i>MERSEYSIDE</i>	9.46	<i>WEST YORKSHIRE</i>	2.63
<i>DORSET</i>	9.37	<i>MERSEYSIDE</i>	2.48
<i>SUFFOLK</i>	9.11	<i>NORTHAMPTONSHIRE</i>	2.32
<i>OXFORDSHIRE</i>	8.96	<i>WEST SUSSEX</i>	2.28
<i>NORFOLK</i>	8.84	<i>DEVON</i>	2.17
<i>CUMBRIA</i>	8.39	<i>CHESHIRE</i>	2.14
<i>KENT</i>	8.31	<i>BUCKINGHAMSHIRE</i>	1.98
<i>LEICESTERSHIRE</i>	8.25	<i>WILTSHIRE</i>	1.85
<i>HUMBERSIDE</i>	8.25	<i>HAMPSHIRE</i>	1.82
<i>CORNWALL</i>	8.16	<i>SOUTH YORKSHIRE</i>	1.81
<i>HAMPSHIRE</i>	8.08	<i>GLOUCESTERSHIRE</i>	1.70
<i>WILTSHIRE</i>	7.53	<i>NORFOLK</i>	1.61
<i>DEVON</i>	7.46	<i>KENT</i>	1.61
<i>HEREFORD & WORCESTER</i>	7.43	<i>STAFFORDSHIRE</i>	1.55
<i>WARWICKSHIRE</i>	7.07	<i>HERTFORDSHIRE</i>	1.46
<i>WEST MIDLANDS</i>	6.89	<i>OXFORDSHIRE</i>	1.45
<i>AVON</i>	6.84	<i>BEDFORDSHIRE</i>	1.44
<i>SURREY</i>	6.79	<i>SOMERSET</i>	1.39
<i>NOTTINGHAMSHIRE</i>	6.70	<i>LEICESTERSHIRE</i>	1.29
<i>SHROPSHIRE</i>	6.13	<i>HEREFORD & WORCESTER</i>	1.26
<i>CAMBRIDGESHIRE</i>	6.04	<i>CAMBRIDGESHIRE</i>	1.24
<i>WEST SUSSEX</i>	5.95	<i>WARWICKSHIRE</i>	1.06
<i>CHESHIRE</i>	5.87	<i>CLEVELAND</i>	1.01
<i>WEST YORKSHIRE</i>	5.65	<i>WEST MIDLANDS</i>	1.00
<i>STAFFORDSHIRE</i>	5.59	<i>SUFFOLK</i>	0.96
<i>LINCOLNSHIRE</i>	5.56	<i>HUMBERSIDE</i>	0.84
<i>ESSEX</i>	5.42	<i>SHROPSHIRE</i>	0.79
<i>GLOUCESTERSHIRE</i>	5.38	<i>LINCOLNSHIRE</i>	0.78
<i>SOMERSET</i>	5.32	<i>ESSEX</i>	0.66
<i>GREATER MANCHESTER</i>	4.20	<i>NOTTINGHAMSHIRE</i>	0.66

Table 4.5 Counties ranked by arable margins per 1000 ha cereals area and by linear features per 1000 ha total agricultural area.

Arable margins / 1000 ha cereals		Linear features / 1000 ha agricultural area	
<i>CUMBRIA</i>	64.16	<i>CLEVELAND</i>	4.21
<i>LANCASHIRE</i>	58.10	<i>LANCASHIRE</i>	3.74
<i>DEVON</i>	32.55	<i>DEVON</i>	3.60
<i>DERBYSHIRE</i>	20.37	<i>TYNE & WEAR</i>	3.32
<i>CORNWALL</i>	19.71	<i>CUMBRIA</i>	3.13
<i>DURHAM</i>	18.59	<i>DURHAM</i>	3.13
<i>GREATER MANCHESTER</i>	14.50	<i>SOUTH YORKSHIRE</i>	3.11
<i>GREATER LONDON</i>	13.80	<i>DERBYSHIRE</i>	2.89
<i>SURREY</i>	13.69	<i>GREATER LONDON</i>	2.86
<i>WEST YORKSHIRE</i>	13.64	<i>CORNWALL</i>	2.70
<i>CHESHIRE</i>	12.81	<i>LEICESTERSHIRE</i>	2.62
<i>EAST SUSSEX</i>	12.78	<i>WEST YORKSHIRE</i>	2.54
<i>SOMERSET</i>	12.11	<i>ISLE OF WIGHT</i>	2.50
<i>AVON</i>	11.49	<i>DORSET</i>	2.45
<i>DORSET</i>	10.95	<i>BUCKINGHAMSHIRE</i>	2.31
<i>ISLE OF WIGHT</i>	10.61	<i>EAST SUSSEX</i>	2.26
<i>CLEVELAND</i>	10.24	<i>HEREFORD & WORCESTER</i>	2.18
<i>NORTHUMBERLAND</i>	9.56	<i>BEDFORDSHIRE</i>	2.17
<i>STAFFORDSHIRE</i>	9.31	<i>WARWICKSHIRE</i>	2.10
<i>SOUTH YORKSHIRE</i>	9.24	<i>MERSEYSIDE</i>	2.09
<i>HEREFORD & WORCESTER</i>	9.20	<i>WEST MIDLANDS</i>	1.97
<i>TYNE & WEAR</i>	8.77	<i>BERKSHIRE</i>	1.94
<i>WEST MIDLANDS</i>	7.79	<i>SURREY</i>	1.89
<i>BUCKINGHAMSHIRE</i>	7.76	<i>CHESHIRE</i>	1.83
<i>LEICESTERSHIRE</i>	7.44	<i>HAMPSHIRE</i>	1.83
<i>SHROPSHIRE</i>	6.87	<i>NORTH YORKSHIRE</i>	1.82
<i>NORTH YORKSHIRE</i>	6.82	<i>SHROPSHIRE</i>	1.81
<i>WARWICKSHIRE</i>	6.21	<i>STAFFORDSHIRE</i>	1.80
<i>WEST SUSSEX</i>	5.95	<i>GREATER MANCHESTER</i>	1.77
<i>MERSEYSIDE</i>	5.51	<i>NORTHAMPTONSHIRE</i>	1.76
<i>BERKSHIRE</i>	5.49	<i>AVON</i>	1.73
<i>HAMPSHIRE</i>	4.92	<i>NORTHUMBERLAND</i>	1.66
<i>BEDFORDSHIRE</i>	4.72	<i>SOMERSET</i>	1.60
<i>NORTHAMPTONSHIRE</i>	4.65	<i>WEST SUSSEX</i>	1.47
<i>GLOUCESTERSHIRE</i>	4.18	<i>NORFOLK</i>	1.36
<i>KENT</i>	3.55	<i>HERTFORDSHIRE</i>	1.33
<i>OXFORDSHIRE</i>	3.34	<i>SUFFOLK</i>	1.31
<i>WILTSHIRE</i>	3.23	<i>HUMBERSIDE</i>	1.31
<i>NORFOLK</i>	3.15	<i>OXFORDSHIRE</i>	1.24
<i>HERTFORDSHIRE</i>	2.92	<i>NOTTINGHAMSHIRE</i>	1.21
<i>NOTTINGHAMSHIRE</i>	2.90	<i>LINCOLNSHIRE</i>	1.15
<i>SUFFOLK</i>	2.82	<i>GLOUCESTERSHIRE</i>	1.10
<i>HUMBERSIDE</i>	2.48	<i>WILTSHIRE</i>	1.03
<i>LINCOLNSHIRE</i>	2.43	<i>ESSEX</i>	1.03
<i>ESSEX</i>	2.16	<i>KENT</i>	1.01
<i>CAMBRIDGESHIRE</i>	1.65	<i>CAMBRIDGESHIRE</i>	0.80

There are wide variations in the rates of uptake between counties. The variation is particularly great with regard to the proportion of the agricultural areas in CSS and the length of arable margins per 1000 ha cereals, although we should note with that in absolute terms the take-up is often higher where the rates of uptake are relatively low. Two obvious factors influencing this pattern are the differential extent of ESAs within particular counties and the agricultural character of the area. Both of these factors probably affect the high proportion of the agricultural area of Northumberland included within CSS as it both has no ESA and has a considerable upland area. Other counties similarly affected are Durham and North Yorkshire. The location of ESAs does not appear to be a major explanation for the counties with small proportions of their areas under CSS. Rather the explanation here seems more likely to relate to the more intensive character of the counties' agricultures, although this does not seem to offer a complete explanation. A further factor could be the smaller average field size in less intensive arable areas leading to a longer distance of margin per 1000 ha of cereals. Agricultural influence appears to be particularly notable in the case of the incidence of arable margins, although the inclusion of arable stewardship in CSS since these figures were collected will have increased the availability of field margin options. However, it is also notable that the counties with the lowest take-up rates, such as Cambridgeshire, Essex, Lincolnshire and Suffolk, all would seem likely to have relatively high returns to agriculture per hectare.

4.3 Conclusions

Variations in the incidence of CSS per unit area and as a proportion of holdings is not *per se* a problem. As we have noted in the context of the ESAs, different types of area will have rather different objectives. Clearly there will be variations in the opportunities for environmental enhancement and in its value between locations. However, if the objective is to achieve a spread of CSS across the country, these results show that the spread is at best uneven. Perhaps most notable is the extent to which even in the case of the arable margins, the highest rates of incidence on cereal land is highest in the pastoral counties of Cumbria and Lancashire. Subject to the qualifications noted above, this element of CSS was not effectively directed towards arable counties, but following the piloting of two arable areas, arable options were incorporated into the national CSS in 2001. We return to this issue in the context of the question of whether there should be some spatial variation in the rates of payment offered in CSS later in the report.

5

Performance of the Schemes

The schemes have been analysed from a variety of perspectives. This covers studies that have been undertaken in England and elsewhere in the United Kingdom. In this Section, we first look at the literature relating to farmers' participation in schemes. We were unable to obtain much evidence on the issue of transactions costs, and so we only include a brief consideration of this issue. We then assess the evidence that has been provided by economic evaluations. After considering the issue of the valuation of the benefits of agri-environment schemes, we review studies of ESAs and CSS. Finally we consider evidence from environmental monitoring and conclude with a consideration of value for money.

5.1 Factors affecting participation

Because of the voluntary nature of agri-environment schemes, farmers' decisions to participate are central to achieving policy aims (Falconer, 2000). These are the agents through which government aims to deliver environmental protection and enhancement and without agent participation this will not occur. Studies of uptake have shown a complex of business, personal, contract and external contextual factors are involved in both the 'willingness to adopt' (the attitude of the farmer towards the scheme) and the 'ability to adopt' (the economic status of the farm and the degree of correspondence with the farming system) (Gasson and Potter, 1998; Morris and Potter, 1995; Moss, 1994; Wilson, 1997). A variety of research approaches have been used and at risk of some simplification we classify them as:

- Economic: emphasising the cost and income elements in the participation decision
- Contextual factors: examining the wider set of factors that determine participation
- Adoption models: investigating the process of adoption over time

Economic models

From a normative economic perspective, the participation issue is one of how to obtain target levels of participation (and related environmental gain), without paying an excessive level of incentive¹². Theory indicates that the farmer agent takes the production (participation)

¹² Payment levels are in any case normally restricted to an additional 20% in excess of income forgone and additional costs (1750/1999). See further in Section 6.

decision in relation to expected profit or utility. This incorporates compliance costs, which will be determined by the income forgone, and any additional costs and private benefits.

There is strong support for the view that for most farmers the effects of participation on their farm incomes together with any private benefits from amenity etc. are a fundamental element in their participation decisions. Newby *et al.* (1977) showed that the behaviour of farmers towards conservation was dominated by the over-riding interests of the farm business. Many are attracted to enter because they can satisfy the conditions with minimal changes to farm management and so generate extra income (Crabtree *et al.*, 1999; Colman, 1994). Wilson and Hart (2000) state that 'most farmers in the EU are driven in their participation decisions by financial imperatives and, to a lesser extent, by the goodness of fit of schemes'. Numerous studies have demonstrated that farmers are less inclined to join when scheme conditions do not fit with existing farm management (Crabtree *et al.*, 1999; Skerratt, 1994, Froud, 1994).

However, this explanation for farmer behaviour has often omitted costs faced by prospective entrants that may be difficult to quantify. Falconer (2000) introduces the element of *private* transactions costs. This cost shifts the supply curve to the left, increasing the price that has to be offered to obtain a specified participation rate. Farmers' transaction costs were found to be highly variable but on average they added around 5% to the compensation payments required to elicit participation. Badger (1998) took the inclusion of intangible costs further by surveying farmers to estimate their 'willingness to accept' contracts for wetland and woodland options in the Cairngorms ESA. This demonstrated the substantial variation between farms in the costs of entering these ESA options, part but not all of which was explicable in terms of differences in income forgone and additional identifiable costs.

Crabtree *et al.* (2000) explored the different distribution of costs and their implications for optimal payment rates. This approach concentrates on the 'population' of costs across farms within a scheme and offers one straightforward explanation for limited rates of uptake. Where costs (and WTA) differ between farms, a payment set at the mean of income forgone plus additional costs (the basic approach of 12587/1999) will clearly not elicit full participation because a proportion of farms will be under-compensated. We know little about the range of compliance costs within ESAs because information on the distribution of costs is not typically reported. However, ESAs differ in the diversity of farm types represented and where there is marked variation in compliance costs, even a payment set at the European Commission maximum of costs +20% will not necessarily elicit a target uptake.

The conclusions from the economic models of participation is that:

- The low uptake in some schemes and options has sometimes reflected limited information on the part of policy makers leading to apparent misjudgements of farmer's costs (e.g. Hughes, 1994; O' Carroll, 1994). Evaluation studies on the schemes have also highlighted situations where payment rates were considered too high or low (e.g. CEAS, 1997,1998; CCRU, 2000). Policy has generally responded to such situations by adjustments to payment rates.
- The conventional income forgone plus additional costs method of calculating compliance costs fails to take adequate account of transaction and other less tangible costs that are accounted for in a more comprehensive WTA approach.

- It may require very high payments to elicit ‘target’ uptake rates in contexts where compliance costs (WTA) vary substantially or where the prescription demands major changes to land management objectives.
- As payment rates are increased so the deadweight increases and the cost of inducing the marginal entrant rises correspondingly (Crabtree, 1993). This raises the question of whether the payment rates that may be required to elicit high participation necessarily represent good value for money given competing routes for agri-environmental expenditure.

Seen from an economic perspective, one difficulty in obtaining target uptakes is the problem of price setting in a situation of limited and asymmetric information about farmers’ compliance costs. It also reflects the limitations of the fixed payment incentive as a policy instrument.

Critics of this type of analysis argue that it fails to give sufficient weight to understanding the factors influencing the behaviour of farmers when making their entry (and non-entry) decisions. ‘Behavioural’ approaches to participation focus on the actors, their motives, values and attitudes that determine the decision making process of individual farmers (Morris and Potter, 1995). The assumption is that farmers’ behaviour is directly related to these entities. But as Falconer (2000) notes, a unique focus on farmer factors is futile because scheme factors such as eligibility will determine whether a farmer can enter irrespective of attitudes and values.

Behavioural approaches use a range of research methods (e.g. Brotherton, 1989; 1991; Skerratt, 1994; Wilson, 1997). Here we first look at the literature that concentrates on explaining behaviour in terms of contextual variables and then follow with an examination of the literature on adoption.

Contextual factors

Brotherton (1989) differentiated ‘farmer’ from ‘scheme’ factors in explaining participation in agri-environment schemes. The behavioural literature has concentrated on farmer factors including age, successor status, education, conservation interest, and tenure status. There is evidence that older farmers are less likely to participate (Potter and Lobley, 1992; Skerratt, 1994; Wynn *et al.*, 2001) but age is not a strong determining factor and not all studies have demonstrated an effect (Wilson, 1997). Potter and Lobley (1992) have suggested that whether or not a farmer has a successor may be important in influencing participation decisions. However, Wilson (1996) and Wynn *et al.* (2001) were unable to demonstrate any such effect, nor has this been a factor determining entry into farm woodland schemes (Crabtree *et al.*, 1998). Whether tenure status affects participation seems to depend on the situation in specific ESAs. Some landlords have on occasion either encouraged or discouraged entry (e.g. Froud, 1994; Crabtree *et al.*, 1999; Wynn *et al.*, 2001) but, in general, tenure status is not an important determinant of entry.

Where a farmer has an interest in conservation this has been shown to be a significant in determining overall uptake or the uptake of particular options (Wilson, 1996, 1997). Farmers with a strong conservation interest tend to join a scheme earlier (Wynn *et al.*, 2001). It is possible that conservation-interested farmers are much more important to the competitive CSS scheme (and more important in the total uptake) than amongst marginal entrants to the ESA scheme. Wilson and Hart’s (2001) study showed that 66% of CSS entrants in Devon

entered because they wished to promote environmental conservation compared with 23% in the Cambrian ESA. Where conservation interest may be important in ESAs is in the uptake of habitat creation options or those requiring major adaptation of land management. Only those with a conservation interest might be prepared to undertake this.

With regard to ‘scheme’ factors, the evidence is that these can play an important role in determining who enters a scheme. Wilson (1997) undertook a detailed investigation of entry determinants in the Cambrian Mountains ESA to find that farm size and the amount of remnant semi-natural wildlife habitat emerged as the strongest variable influencing participation in the ESA. This appeared to reflect the promotion activities of ADAS who had specifically targeted larger farms with large semi-natural habitats. Smaller farms were less adequately informed about the scheme. ‘Farmer’ factors were less important as determinants of participation although they appeared to have some effect on the uptake of specific options. Effects of farm size have been noted elsewhere (Skerratt, 1994) but this seems to be ESA-specific (Wynn *et al.*, 2001)

The key determinant of entry that emerges from several studies is the extent to which the scheme options ‘fit’ with the farmer’s objectives and farm system. In Wynn *et al.*’s (2001) detailed modelling of the Scottish ESAs this emerged as the prime factor determining whether a farmer was a non-participant. The probability of entry was higher where the option could be incorporated without major changes to farm operations. More intensively run and heavily stocked farms were less likely to join because they faced greater adjustment problems and higher compliance costs. Morris and Potter (1995) similarly found that non-adopters were mainly concerned with the financial and constraining effects of entry. Similarly Morris *et al.* (2000) found that arable farmers were mainly reluctant to join CSS because ‘it did not suit the overall commercial purpose of their business’.

The conclusions from the contextual factor research are:

- It is the interaction between the farmer / farm system and the scheme options and payment rates on offer that is the main determinant of whether a farmer participates and which options are selected. Where farmers have the choice to select options they generally do so so as to minimise the impact on their farming system, exploit complementary, and in this way enhance income with minimum disturbance (Wynn *et al.*, 2001).
- Eligibility criteria and scheme conditions may restrict entry in some cases but this is highly dependent on the context.
- Other factors such as farmer age and conservation interest may influence the entry decision but they are of limited policy interest not being readily amenable to change.
- Selective promotion influences participation.

Adoption models

Adoption models have been used to study the characteristics of entrants in relation to the time taken to enter (or not-enter) a scheme. Wynn *et al.* (2001) used duration analysis to investigate the speed of adoption in relation to contextual factors. They found that the extent to which farmers felt informed about the scheme, their interest in conservation and the ‘fit’ of the options to their farm were the most significant determinants of rapid entry. This appears quite a reasonable explanation of why some adopt faster than others.

Others have classified farmers into adoption types related to their eagerness or reluctance to participate. Morris and Potter (1995) used four categories ranging from 'resistant non-adopters' to 'active adopters'. However, it is open to debate whether identifiable psychological stages in adoption exist in this context since different workers identify or infer different stages (e.g. Morris and Potter, 1995; Morris et al., 2000). In addition, these models are simplistic in that promotion cannot push farmers along the participation spectrum if scheme conditions restrict their entry (Falconer, 2000).

Morris *et al.* (2000) and Morris and Potter (1995) concentrate on matching promotional methods to a farmer's stage of adoption. Others have sought to emphasise the role of networks and leader-follower relationships in influencing farmers' decisions (although evidence for the effect of such networks is not always present, Wilson, 1997).

The effectiveness of promotion in the ESA and CSS schemes does not appear to have been studied. However, it is one area where there may be potential for improved delivery either directly by government or through the use of agents.

A related policy issue is that of how best to encourage greater conservation-minded behaviour in scheme participants (Colman, 1994). This could have a pay-off in terms of greater compliance and enhanced environmental output as participants take a stronger role in producing environmental goods. Participation of agri-environment schemes does increase the conservation interest of some participants and this could also be beneficial in retaining environmental output if incentives were terminated (Crabtree *et al.*, 1999; Whitby, 2000).

Conclusions

We conclude the following in relation to participation:

- Participation has been a more important policy issue within the ESA scheme. CSS has been over subscribed whereas in some ESAs there has been concern that uptake levels may limit the amount of protection and/or enhancement achieved.
- The characteristics of marginal entrants is likely to differ between ESA and CSS schemes with conservation interest playing a stronger role in the latter.
- There may be a case for more effective scheme promotion. To achieve high uptake rates, project officers have to be able to demonstrate clear income benefits. Promotion by emphasising private environmental benefits may be valid for conservation-minded farmers or where results are relatively fast (ponds, walls, woodland). Promotion of options that produce discernable benefits only after a long time period is likely to be less productive because hard evidence on benefits is lacking.
- Promotion needs to be related to the cohort of marginal adopters and ESA and CSS therefore require different approaches to promotion.
- Options that demand significant changes to farm systems will prove difficult to implement even if substantial incentives are offered. This is often the case on arable or intensive grassland farms. Large-scale uptake of such options is likely to be unrealistic.
- It is difficult from the literature to identify 'barriers' to participation that reflect scheme conditions. The most obvious barrier is the reluctance of many farmers to change the basis of their land management (and business).

- With diverse contexts, the fixed incentive mechanism is weak. Other types of policy instrument may be needed to achieve the twin goals of high participation and cost effectiveness.

5.2 Transactions costs

The full social costs of agri-environment policy should take account of both the public and private transaction cost and the economic cost of raising finance through taxation (Whitby et al., 1998; Moxey et al., 1999). Colman (1994) noted that the transaction costs of ESA policy were relatively high as compared with more traditional grant aid schemes. Falconer and Whitby (1999) have estimated these costs and found that they are non-trivial both for the public sector and for private participants. They estimated that in UK agri-environment schemes the public administrative costs averaged 48% of the compensation paid. Falconer (2000) estimated the private transaction costs to farmers as around 5% of the compensation although the range is likely to be substantial.

DEFRA provided information of the running costs for ESAs as follows in Table 5.1 and were unable to provide information on the costs of running the CSS. Clearly this is not a sufficient basis for judgements as to the administrative performance of the scheme.

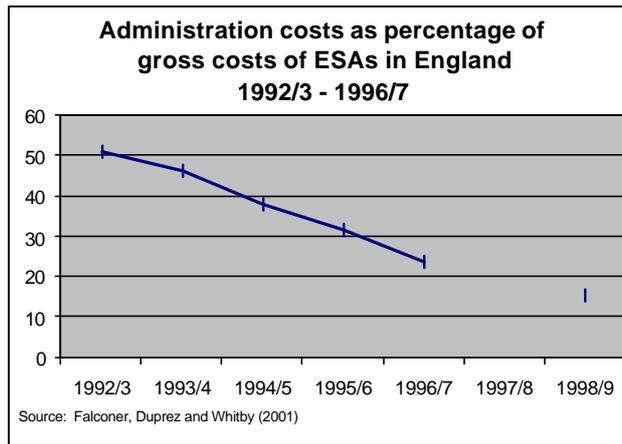
Table 5.1 Running costs of the ESAs

1998-99	1999-00	2000-01
£301k	£295k	£299K

Source: DEFRA

Total costs of the ESA scheme are shown in Figure 5.1 for the period 1992-93 to 1996-97 as reported by the NAO (1997), together with an estimate from Falconer et al. 2000 for 1998-99. Total expenditure has almost doubled over the period as the number of ESAs designated and the take up rate by farmers has increased. Administration costs represent a significant element of the total costs of the scheme. Indeed in the earliest stages they exceeded grants paid to farmers. However through time administrative costs have not risen and if anything shown some decline.

These results suggest that the transaction costs of agri-environment policy are large and raise the issue of whether such costs can be reduced. In assessing transactions costs, what is important is not their absolute level, but rather that return that they bring in terms of enhanced environmental outputs. This requires both that activity should be cost-effective and that it should be directed towards actions that have the most impact on environmental outputs. As policy mechanisms are fine-tuned to increase efficiency and effectiveness, administrative cost are likely to increase.



Source: Falconer et al. (2000)

Figure 5.1: Administration costs of ESA in England

The available evidence does indicate that the administrative costs of scheme implementation have fallen steadily and significantly, in part at least reflecting a change in the pattern of administrative activity over the introduction of schemes. For instance, while in 1992/93 administration represented over 50% of the gross costs of the ESAs, this figure fell to 15% in 1998/99. This may at least in part reflect the reduced rate of entry of farmers into the schemes, with effort being redirected from the admission of new farmers towards scheme maintenance. The largest proportion of administrative costs is incurred at the start of an agreement, with administrative costs decreasing over time. But it may also reflect some sort of learning process. Statistical analysis of the administrative costs of the ESAs (Falconer, Duprez and Whitby, 2001) also suggests administrative economies of size related to scheme participation. Substantial differences in administration costs were found between ESAs suggesting perhaps that further efficiencies may be possible, although this may reflect differences in local conditions.

Whitby and Falconer (1999) suggest that transaction costs could be reduced by extending the contract period, by unifying schemes, and by investigating alternative contract mechanisms such as auctions. However, alternatives require to be evaluated in some detail. For example, short-term cost savings from scheme unification may be limited until existing contracts expire. Auction mechanisms may possibly save on public transaction costs but evidence from the use of bidding mechanisms under woodland grant schemes suggests that private transaction costs are increased (CJC Consulting, 2002). Applicants may also bid up offer prices so that the savings in deadweight that may be anticipated from an auction mechanism end up as illusory (Garforth, 2001). Nevertheless there is good evidence that reductions in public transaction costs can be made through transparent ‘cut-off’ scoring systems because they deter applicants that will be unsuccessful from applying. This has been demonstrated by the introduction of entry scoring for the Woodland Grant Scheme in England (S. Greig, personal communication).

5.3 Scheme evaluations and benefit valuation

MAFF and DEFRA have commissioned a large number of monitoring and evaluation studies on the ESA and CSS schemes. The results of the environmental monitoring are currently being reviewed by Ecoscope for DEFRA.

Both schemes have the aim of maintaining or increasing elements of the natural capital stock (landscape, wildlife, historic interest) and public access to this stock. Policy effectiveness is increasingly being measured, through monitoring and evaluation, by the extent to which natural capital is being maintained or enhanced over time. This contrasts with the classical method of policy evaluation (policy compared with counterfactual) which is not applicable due to a lack of 'control' sites.

Methods

There are fundamental differences in the way the two schemes have been monitored and evaluated. Most of the evaluation has not been in terms of final outcomes (success in protecting and enhancement natural capital) but in terms of processes or intermediate outcomes. The ESA scheme has established internal performance indicators against which performance can be measured but these refer mainly to uptake of options. Some final outcomes (e.g. vegetation cover) have been measured. The evaluation of economic benefits procured has been based on *assumed* environmental impacts. The CSS has relied on evaluation of the effectiveness of the agreements and their impacts (appropriateness environmental effectiveness, compliance, side effects). There are no assessments of actual final outcomes for habitats and biodiversity¹³ within CSS.

In neither scheme is there any assessment of 'classical' additionality in which non-entrant farms are used as controls. This is not unreasonable given the cost and complexity of establishing such controls. Measuring additionality is not a problem where additionality is self-evident (new access, wall reconstruction, hedge planting). The CSS monitoring makes use of the scope for such 'internal' measurement of additionality. It assesses the potential benefits of enhancement options using the agreement land as its own control. The inability to measure the additionality of options that seek to protect existing environmental capital against loss or degradation is a serious problem for ESA evaluation.

Differences in evaluation methods mean that is impossible objectively to compare the performance of the schemes in terms of outcomes (i.e. environmental impacts). Comparison can only be made in terms of presumed effectiveness based on the expected impact of the prescriptions.

Table 5.2 indicates the socio-economic evaluations undertaken on the two schemes. The CSS position refers to that since transfer of the scheme to MAFF in 1996. The objectives of the evaluations have varied. Some were designed to measure the benefits in economic terms, others to assess how the schemes were performing in practice in terms of participation and the effectiveness of the mechanisms used.

¹³ Ecological change may be an extremely slow process, and the cost and difficulty of monitoring change should not be under-estimated.

Table 5.2: Main socio-economic evaluation and benefit valuation studies on ESA and CSS in England

Scheme	Author	Benefit estimates	Delivery mechanisms and scheme performance	Assessment of participation
ESA	ADAS (1991) Stage 1 ESAs	NO	Limited	NO
ESA	CEAS (1997) Stage II and III ESAs	NO	YES	NO
ESA	CEAS (1998) Stage IV ESAs	NO	YES	NO
ESA	Willis <i>et al.</i> (1993).	YES	NO	NO
CSS	CCRU (2000)	NO	YES	YES
All agri-environment schemes (benefit valuation only)	Stewart <i>et al.</i> (1997)	YES	Limited	Limited
ESA and CSS (access only)	Garrod <i>et al.</i> (1998)	YES	YES	NO
Agri-environment features	Hanley (2001)	YES	NO	NO

Key YES= where this aspect has been discussed in some detail
 Limited=some discussion of topic
 NO=not considered.

5.4 Economic benefit studies

This approach is legitimated and directed through evidence derived in economic valuations of agri-environment schemes that typically apply the contingent valuation method. Agri-environment schemes have generally been evaluated in a conventional cost-benefit framework. These have adopted economic valuation techniques, most commonly applying the contingent valuation method, to measure the benefits of the schemes. In this approach, benefits are thus assumed to be represented through the preferences of those taking part in the relevant surveys. Commonly they have been divided between local residents, visitors and others elsewhere who may hold non-participant values. Survey participants are provided with information on the implications of the operation of the agri-environment scheme. This assumes that the relevant values may be demonstrated through interviews with members of the public based on their own personal experience and information supplied in the context of a CVM survey. Applying this approach, studies demonstrate that benefits exceed costs and also provide guidance as to how policies should be designed and resources allocated.

MAFF commissioned two valuation studies to determine the economic benefits from agri-environment policy (Willis *et al.*, 1993 and Stewart *et al.*, 1997)¹⁴. Willis *et al.* (1993) used the Contingent Valuation Method (CVM) to value the benefits from the South Downs and Somerset Levels and Moors ESAs. Policy-on scenarios for landscape and wildlife were compared with a policy-off counterfactual (Table 3.2). Benefits were estimated for residents, visitors and the general public. The aggregate policy benefits were substantial and were dominated by the benefits to visitors (particularly in the South Downs) and to the general public. Both user and non-user benefits greatly exceeded the exchequer costs associated with operating the ESAs. Willis *et al.* concluded that the ESAs represented ‘extremely good value for money’. But as Hodge and McNally (1998) point out, this does not mean that that ESA expenditure is efficient: whether the same objectives could have been achieved at lower cost was not investigated.

Table 5.3: Net annual costs and benefits of ESA landscapes (£’000s)

	User Benefits (Visitors and residents)	Non-user benefits (general public)	Public exchequer costs
South Downs	48,682	31,153	970
Somerset levels and Moors	10,758	41,789	1,859

Stewart *et al.* (1997) reviewed estimates of the public benefits from all the agri-environmental schemes including a number of studies on Scottish ESAs. They emphasised that results from environmental valuation are only *indicative* of the magnitude of the benefits because of imprecision in the methods used. Even so, they concluded that the ESA scheme is highly valued by the public for the environmental goods it produces and that the value of the benefits exceeds costs for all schemes where valuation data are available. In some cases benefits decline at the margin but the evidence is insufficient to provide guidance on the optimum level of public investment.

Whilst the economic valuations of benefits from agri-environment policy are all highly supportive of the policy measures, they can be criticised both in terms of methodology and in relation to the utility of the valuation studies for improving policy efficiency. The methodological issues associated with CV (for example the large disparity in estimates between different elicitation methods) are well established and have led to some concern about the reliability of CV estimates. There may also have been information bias in that respondents may have been presented with unrealistic policy-on/ policy-off comparisons that over-stated the environmental gain from policy (e.g. Simpson *et al.*, 1997 which describes the methodology used in the Scottish ESA valuation study by Hanley *et al.*, 1996). In reality, only minor changes in farm management and land use were observed on the majority of entrant farms (Crabtree *et al.*, 1999).

This approach makes a variety of judgements in terms of the assumptions:

¹⁴ The benefits from public access provision were assessed by Garrod *et al.* (1998) but this aspect of the ESA and CSS schemes is not considered here.

- That the important actual or potential values are addressed in the valuation exercise;
- That respondents are willing to ‘play the game’ in the valuation exercise and make the necessary judgements;
- That respondents are not (irrationally) committed the status quo (e.g. Kahneman, et al., 1991) Willis and Garrod (1993) suggest that this may be an influence on responses in a study of the Yorkshire Dales);
- The respondents have the experience, capacity and commitment to understand and appreciate the values that are sought in the valuation exercise; (Burgess et al., 1998)
- That respondents are willing to trade-off costs and benefits through the expression of preferences rather than rights. (Hanley, et al., 1995)
- That all values are considered. Approaches to ecosystem values often begin by identifying the relevant goods values and services provided. However, it is sometimes suggested (see for instance Turner *et al.* 2001) that the sum of these individual elements may not be the same as the social value of an ecosystem. There may be functions that are fundamental to the maintenance of the ecosystem itself but which do not directly provide the identified outputs and services, sometimes terms a primary value or infrastructure value.

There may be doubts that each of these assumptions could be warranted in certain circumstances. Some of this uncertainty lies behind the emphasis generally given to sustainable development in policy towards the environment as discussed earlier in the report.

Hodge and McNally (1998) have also questioned whether the *ex-ante* assumptions about ESA policy impacts use in the valuation studies are realistic. They took the case of the Somerset Levels and Moors ESA, comparing the minimal benefits identified in the monitoring reports with the scenario of benefits used by Willis et al in the valuation study. They conclude that the valuation results severely overstated the value of the policy.

Nor are valuation studies on overall policy benefits much value for improving the design or delivery of policies (Hodge and McNally, 1998; Whitby, 2000). To develop an efficient policy, benefits values are required on the specific habitats and landscape features procured. There is also a need for information on the marginal benefits from agri-environmental policy.

In order to identify existing information in this aspect, Hanley *et al.* (2001) combined literature estimates of the value of environmental features (hay meadows, heather moorland; rough grazing, woodland and wetland) in a benefit transfer model (ELF). The information was supplemented with new CV estimates for hedgerows and arable headlands. There was evidence of diminishing marginal benefits. For instance, the WTP to attain a 5% increase in field margins in Cambridgeshire was £11.30 per household, compared with £14.70 for a 25% increase. Hanley also found that benefit estimates were feature- and region- specific and there was evidence for distance decay in benefits as the distance from the environmental feature increased. These estimates are fragile because they are based on a limited number of observations gathered in the most part from a range of studies each with their own methodology. Little confidence can be placed on the estimates. In addition the new estimates did not take account of the value placed upon features by non-residents. Other research discussed above indicates that the valuations of non-residents can be a very significant element within the overall public benefit. It is clear that ELF model is not at the stage where it can reliably inform expenditure decisions.

5.5 Socio-economic evaluations

A detailed assessment of the ESA and CSS evaluations is given by Ecoscope (2002). In this report we concentrate on the aspects of the evaluations that are of most direct relevance to the present assessment of agri-environment schemes.

ESA scheme

Each of the four sets of ESAs has been subject to a socio-economic evaluation (see Table 3.1). These evaluations did not directly assess the performance of the scheme in protecting and enhancing the agri-environment. In general the focus was on the response of farmers to the scheme, the payment rates offered, and the impacts of the agreement on farm management. It is certainly true that the behaviour of farmers is important because without their voluntary involvement and compliance the scheme will not succeed. The type of evaluations conducted reflects the policy concerns at the time and these have tended to be issue-specific rather than in terms of an overall assessments of success.

The Stage I evaluation (ADAS, 1991) is now rather dated. It found that the net incomes (per year) of farmers that had joined the scheme had increased by between £1,050 (Somerset Levels and Moors) to £1,751 (The Broads).

The Stage II, III and IV evaluations (CEAS, 1997,1998) were mainly directed at determining the impacts on farming and the environment of closure of the ESA scheme. Income effects of participation in the ESA were not measured directly but through the effect of scheme closure on income. Closure was estimated to result in a net income loss of £85 per ha (Stage II and III ESAs) and £52 per ha (Stage IV ESAs). These are sizeable sums that either reflect strategic bias in the responses or the inefficiency in the fixed payment contract mechanism. CEAS found that in some ESAs (e.g. Lake District and Clun) the additional income from ESA participation had enabled a sizeable proportion of participants to stay in farming. There may have been environmental benefits through this slowing down of re-structuring.

If the scheme were to be closed (see below) the impacts on the agri-environment would be highly significant because any protection and enhancement that the scheme provided would potentially be at risk. However, while the evaluations identify the impact on farm management and incomes there is little information on the environmental impacts.

The evaluations found that 'most participants are relatively content with the format and basis of the scheme' (CEAS, 1997,1998). In all ESAs some farmers found difficulty in meeting particular scheme conditions or considered the payments for certain options inadequate in relation to the costs involved. There was some investigation of the reasons for non-participation. This was mainly explained in terms of limited conservation interest, inadequate payment rates and conditions perceived as too onerous.

CSS scheme

The only economic evaluation of the CSS scheme since it was transferred to MAFF in 1996 is that undertaken by CCRU (2000). As discussed above, unlike the ESA scheme, CSS has no performance indicators and no monitoring has been undertaken to measure the actual environmental outcomes of the scheme. The monitoring and evaluations are based primarily on the subjective assessment of the agreements and their likely environmental impact. CRRU

concluded that the CSS should establish quantitative performance indicators to allow more effective evaluation. Stewart *et al.* (1997) also conclude that performance indicators need to be defined if the agri-environment programme is to be properly evaluated.

Despite their absence, CRRU formed the view that objectives of the scheme were being met. However, the evaluation mainly concentrated on exploring the experiences of entrants to the scheme, payment rates, the procedures for selecting applications and the scheme's administration. Here we only discuss their conclusions relating to the scoring system from applications, and payment rates.

Discretionary selection of applicants and scoring

CRRU (2000) were critical of the CSS scoring system. They considered that it was not well linked to the aims of the scheme and should be modified to increase value for money from the payments. They suggested that it should be based solely on the four outputs that the scheme aims to procure – historical features, access, wildlife and landscape. Greater weight should be given to the quantity of environmental outputs procured. At present the scoring system favours applications with a diversity of outputs on offer and limits entry to more specialised applications. To achieve this requires the ability to measure (at least as a score) the quantity of output procured - but this would seem to be an essential requirement if the scheme is to produce value for money.

They also suggest that scoring of applications could be done on a value for money criterion rather than the method used at present. This would involve calculating the total costs of each plan in relation to its score to derive a cost per point of score. Applications would be assessed on a cost per score point. This has much to recommend it because it incorporates a cost element into the selection process which is currently lacking.

Payment rates

CRRU (2000) concluded that the payment rates were generally acceptable although some modifications were suggested. Regionally differentiated payments were not recommended although there was a case for local supplements in some cases where payment rates were inadequate. It was noted that payment rates for the same capital work or environmental activity are often not necessarily the same under the ESA and CSS schemes. Annual payments for grassland and heathland habitats are generally higher in ESAs whereas payments for arable field margins were substantially lower. These differences reflect the different processes by which rates are set (e.g. national or regional income forgone calculations, differences in objectives between schemes and areas). Higher payment rates in ESA might be expected because target uptake levels (at least for Tier 1) relative to the size of the population of potential entrants are much higher. However, for enhancement prescriptions the differences need to be reviewed because it implies either that environmental outputs are not being valued consistently or that there is scope for improving the efficiency of agri-environmental expenditure.

5.6 Environmental monitoring

The results from the environmental monitoring of the schemes are the subject of a separate DEFRA contract with Ecoscope and final results are not available. This section draws on

preliminary results from the Ecoscope (2002) study for DEFRA. It is important to reiterate that the schemes have been monitored in quite different ways and that the CSS evaluation is more subjective and lacks quantitative performance indicators.

When assessed against the total of 388 performance indicators set up for the 22 ESAs, 38% of Performance Indicators (PIs) were achieved, on average, in Stage I-III ESAs and 16% in Stage IV. However, many indicators were only narrowly missed and these statistics include situations where indicators could not be measured. The situation may in part reflect the fact that indicators frequently have several functions. In this case they seem to have been set at an unduly challenging level that has proved difficult to deliver. A more comprehensive performance review is given in Ecoscope (2002).

Landscape and historic features are maintained in almost all ESAs. Maintenance of the wildlife interest is less complete but most ESAs were at least partially successful in maintaining wildlife values. The uncertain performance relates to Stage IV ESAs where insufficient time had elapsed to interpret the monitoring. There is limited evidence for enhancement of wildlife but enhancement of landscape and historic features is more widespread. A substantial part of the ESA expenditure is on maintenance of environmental capital and there is evidence that this is at least partially successful. However, what is less clear is the extent to which biodiversity and habitats would have been maintained in the absence of the scheme. As regards enhancement, ESAs seem less effective than CSS (see below) in achieving wildlife enhancement.

Figure 5.2 Average performance with respect to maintaining or enhancing wildlife, landscape and historic interest across all ESAs (from Ecoscope, 2002)

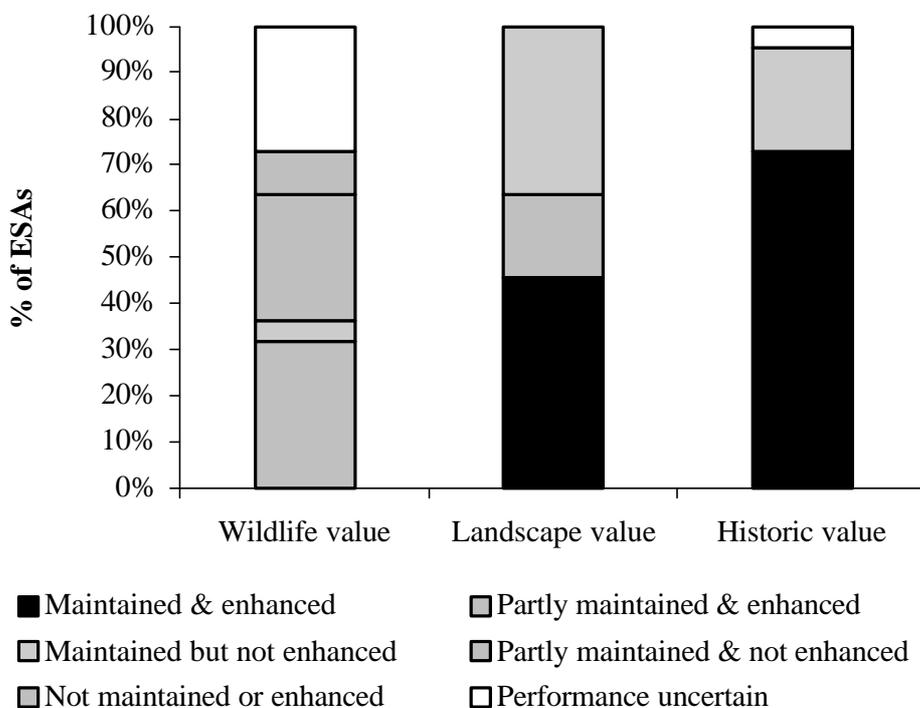
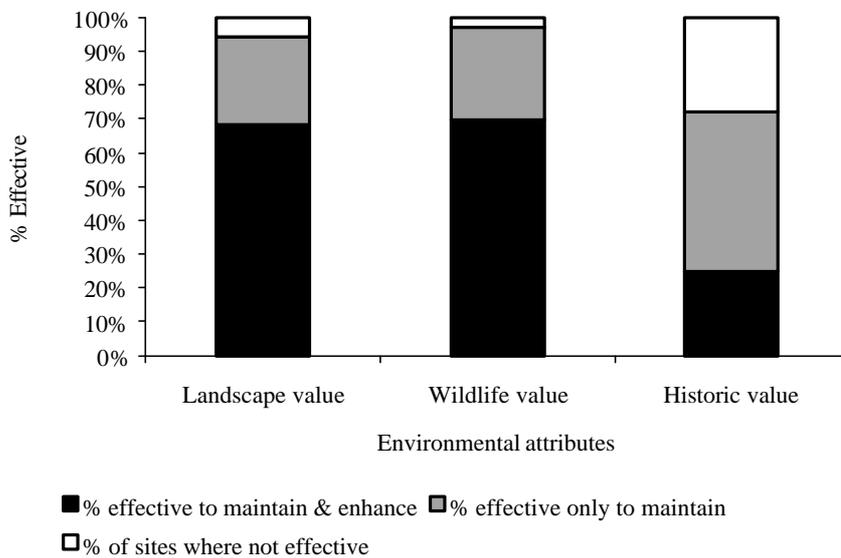


Figure 5.3 gives the results from the CSS monitoring. It is not appropriate to compare these figures with those for the ESAs because of the different monitoring systems in place. In particular the apparently greater success of CSS may simply reflect the ‘soft’ monitoring methods used. The great majority of contracts are considered effective for maintaining wildlife and landscape values and nearly 70% of sites are considered effective for enhancement. Performance in relation to historic features is more patchy and with no maintenance or enhancement occurring on 47% of sites. Overall, CSS appears to be capable of delivering significant environmental benefits. In over two thirds of cases CSS has led to works that would not otherwise have taken place. The additionality of the scheme appears to be high. This reflects, in part, the emphasis given in CSS to environmental enhancement; this is more likely to ensure additionality and measurable gain.

Figure 5.3 The average % of agreements judged to be effective in maintaining and enhancing values (from Ecoscope, 2002).



Very few of the CSS options were judged to be non-effective in term of maintaining or enhancing biodiversity by the evaluation procedures (Table 5.4).

Table 5.4 CSS agreements (%) predicted to be effective in maintaining and/or enhancing wildlife values

Category	% of sites where effective both to maintain and enhance	% of sites where effective only to maintain	% of sites where not effective
Calcareous grassland	70%	30%	0%
Lowland heath	83%	17%	0%
Waterside	79%	12%	9%
Coastal	82%	12%	6%
Upland	35%	63%	2%
Historic	46%	46%	8%
Old meadow and pasture	58%	42%	0%
Countryside around towns	53%	44%	3%
Arable margin	100%	0%	0%
Field boundary	94%	3%	3%
Orchard	64%	33%	3%

5.7 Conclusions

There has been a significant amount of work on the evaluation and assessment of performance of agri-environment schemes. All of these areas suffer from methodological limitations and remain somewhat inconclusive. The structure of ESA scheme provides a framework within which researchers have found it possible to define a counterfactual for monitoring and policy evaluation, although even here this may not be entirely reliable. The CSS approach makes assessment even more challenging. Nevertheless, what evidence there is suggests that the agri-environment schemes have had some positive effects and that these effects are valued by the public.

6

Payments in agri-environment schemes

6.1 Payment by results

Current agri-environmental schemes reward farmers for adopting environmentally friendly farming practices. This approach involves a number of potential inefficiencies:

First, the farmer's actions with respect to the terms and conditions of the contract are not perfectly observed by the environmental agency. This may give rise to a moral hazard problem on the side of the farmer who, given imperfect monitoring of his actions, stands a chance of succeeding with an imperfectly implemented contract. Also, the need to be able to monitor management prescriptions limits the range of actions that can be controlled to those which are easy to observe.

Second, if farmers are paid for their action rather than results there are no incentives for producers to seek out new methods of reducing costs, to introduce innovative approaches to the 'production' of the environmental benefits sought, or to take risk for the provision of such benefits.

Finally, paying farmers for actions is likely to entice those farmers into agri-environmental schemes who have been taking the prescribed actions anyway, implying low degrees of additionality in terms of environmental improvements. This would be similar to the ESA approach, rather than assessing enhancement as in the CSS.

The principal alternative would be to pay farmers by (environmental) results. The payment-by-results approach is generally taken in government procurement contracting, and environmental contracting can be seen as one special form of this. Payment by results would bring agri-environmental contracting closer to the notion of markets which reward producers for the quantity and quality of the final products rather than reimburse them for the costs of the inputs used in their production. Thus there would be no need for separate payments for operational and capital items. A payment-by-results strategy would have a number of advantages over the current system.

First, by harnessing the economic self-interest of farmers, it would create strong incentives to produce high-quality environmental goods and to develop innovative approaches to environmental management. Often, farmers have good information about local environmental conditions and can use their local knowledge to increase the output of the

countryside benefits sought. By linking payments to the quantity and/or quality of such benefits, farmers' knowledge and innovative powers can be effectively brought to bear in the production of countryside benefits.

Second, payment by results would create incentives for co-operation among farmers across several holdings. The production of certain environmental goods and services requires a joint effort of farmers. The classic example is attempts to raise the water table for wildlife. Cleaning up a watershed falls in the same category of measures. If payments are in some way linked to the outcome, for example water quality, there is a strong incentive for farmers to co-operate. In addition, this system would create incentives for farmers within the group to monitor each other. The Australian Landcare programme, while not rewarding farmers for results, is very much based on a co-operative approach to environmental management. We will revisit this programme later.

Finally, a result-based payment scheme may reduce the need for compliance monitoring. Rather than monitoring farmers' actions, the environmental agency would just need to check whether certain indicator species appear during certain time periods or whether the water quality in a nearby lake is improving. As we note below, this may not be a simple task, and even so, in practice the scope for change may be limited by the compliance monitoring requirements set by the EU.

The payment-by-results approach involves a number of potential drawbacks.

First, there is often a substantial time lag between action and outcome. It may take many years, for example, for reductions in land use intensities to show in the form of reduced leaching rates. Hence, payment by results implies a high up-front commitment from farmers with the risk of not being paid during the early years.

Second, the relationship between action and outcome is highly stochastic in many cases. Even if the right measures are taken, it is not certain that they will have the desired effects. In other words, nature introduces noise in the relationship between action and outcome through factors related to weather conditions. These factors are usually beyond the farmers' control, implying that the payment-by-results approach would expose farmers to high risk. Assuming that farmers are risk-averse, this is likely to result in reduced uptake or higher payment rates for the same level of uptake. We may note against this, that the government, operating a large number of contracts may effectively be indifferent to risk.

Third, there is often no consensus over what counts as a result or an output. Even ecologists tend to disagree on this question in many cases, such as in the botanical composition of grassland.

Fourth, it may be difficult (and costly) to determine, measure and quantify outputs to a standard that would satisfy the requirements of a court. And this may not be readily observable at all times of the year. This raises the likelihood of complaints and appeals by farmers who feel that they have been treated unfairly.

Overall, it seems that payment-by-results schemes may be a realistic alternative to current payment systems in cases where there is a relatively close link between actions and outcomes and where outcomes can be measured with relative ease. Numbers of nesting birds or the

conservation of wildflower meadows may be cases in point. The appearance of nesting birds or wildflowers is closely linked to certain forms of land management.

There are a number of ways to reduce farmers' exposure to risk in payment-by-result schemes. One would be to make part of the payment as a lump sum at the beginning of the year or the contract. This would essentially reward farmers for introducing (or maintaining) the required management changes. The remainder would be linked to the outcome and would be paid once environmental improvements have become apparent. In addition, provisions could be made for unfavourable weather conditions. If, for example, the weather conditions for certain wildflowers have been unfavourable in a particular year, either the lump sum for that year or indeed the 'price' (payment rate) for wildflowers might be increased. There would be scope here for research based on the land tenancy and contracting literature to assess the relevance of alternative models to the provision of agri-environment benefits.

6.2 Income forgone

The assessment of cost

The adoption of income forgone as the basis for the determination of agri-environmental payments arose in the 1980s in the context of efforts to prevent damage arising to the environment from agricultural intensification. There was a clear logic in determining that the minimum payment should be set at a level equal to that which could have been obtained from the agricultural intensification. Where efforts were required from farmers for positive work beyond this, it was then appropriate to make further payments based on any additional costs.

However the distinction between payments based on agricultural income forgone and additional costs is not based on any clear logic. In essence the cost of applying a resource to one particular use is represented by the return that the resource could obtain in its next best alternative use, its opportunity cost. The cost of a farmer's labour might be represented by the return that could have been earned by its application to agricultural production, or by the farmer's time spent on employment off the holding. The minimum payment needed to keep the resources in one particular use must be the return that those resources could earn in their alternative use.

However, when farm incomes are low, especially where they are insufficient to maintain land in agricultural production, then payments based on the agricultural income forgone must inevitably also be insufficient to keep the land in production. The purpose of the agri-environment payments in this context is to intensify agricultural production from what would be there in the absence of the payment, to prevent land abandonment. It is thus clear that in these circumstances an agri-environmental payment cannot be based on the *agricultural* income forgone if the objective of the payment is to keep the agricultural activity going.

This presents a challenge to the view that the multifunctional character of rural land management justifies alternative income streams as payment for the range of public good services provided by certain types of rural land use. If this payment is directly based solely on agricultural income forgone, then it cannot raise the total income available to rural land managers or diversify income sources and help to reduce risk.

The implication in this case is that the potential earnings off the farm are greater than the agricultural earnings on it; thus the opportunity cost is represented by the higher returns to the mobile farm assets in their alternative use off the farm. This does raise an equity issue. For some farmers there may be very limited, if any, opportunities for off farm earnings. In such cases it may be seen as equitable that an agri-environment payment should be based on what is regarded as a fair payment for work undertaken rather than on a judgement as to the financial return to the farm assets in a non-farm use.

Payment on the basis of environmental benefits?

As an alternative to income forgone, it has been suggested that payments should instead be based on the value of the environmental benefit that an agri-environment scheme generates. This presents us with a number of problems, not the least that, as we have seen in Section 5, the measurement of these benefits in monetary terms is extremely uncertain. Even so, such a valuation would be unlikely to represent an appropriate basis for payment. A judgement of the value of environmental benefits expected to arise from an agri-environment scheme is, of course, necessary to a decision as to whether or not a scheme should be implemented. But it does not determine the appropriate payment to be made to scheme participants. That should be based on the minimum payment necessary to attract the resources into the environmental use.

In most markets we would expect to have some element of consumer surplus, where the value enjoyed by the consumer exceeds the price that the consumer pays. This would also apply to agri-environment schemes.

There is an inevitable problem in selecting how to allocate available finance for agri-environment schemes where both the values of benefits and costs of participation vary between schemes, regions or individual farms. In principle, the solution would be to rank the available options in terms of their benefit / cost ratios and to select the highest ranked options down to the point where all the available funds have been expended. In practice we have incomplete information. One solution is to target relatively homogeneous areas with specific schemes with fixed contracts and payment levels. Alternatively, individual tenders might be ranked in terms of the ratio of an index of environmental benefits to contract cost. This approach is adopted in the Conservation Reserve Program in the United States.

An analogy with public sector procurement and utilities regulation

There is a similarity here with the way in which we procure outputs in the public sector and regulate utilities. In the case of procurement, competition is often used to promote the cost-effective provision of the desired outputs, through competitive tendering. The payment offered to the supplier is not based on the value of the good sought; no judgement is made as to the value of a tank to the Ministry of Defence or the value of hospital cleaning to the NHS.

However, if it is not possible to introduce competition then there is an analogy with the regulation of a monopolistic utility. In this case a private company producing a marketed good, such as water, is regulated to avoid it exploiting its monopolistic position in the market. The price of the good, the water, and thus the payment made to the utility, is determined on the basis of what is regarded as a fair return on the capital invested in the company. This would be equivalent to the rate of return that could be achieved under competitive conditions and will generally be the minimum return required to keep the resources in that activity.

Again, no attempt is made to determine the total value of the water as enjoyed by the consumers, which clearly could be very high.

A basis for determining agri-environmental payments

It can thus be argued that agri-environmental payments should be determined on the basis of the total opportunity cost of their provision. Where agriculture is profitable and the scheme requires that resources be transferred from agricultural use, then agricultural income forgone will represent a key element in determining the level of payment. Where resources would alternatively not be employed in agricultural production, and this may either be because agriculture is not profitable or because non-agricultural resources are required to be brought in from outside the farm, the payment should be based on the minimum payment required to keep the resources in the desired conservation use. In practice, this is likely to be based on a judgement as to what constitutes a fair and reasonable payment for the farmer's time, for his or her machinery and any other inputs required.

The payment made is thus to ensure that the desired activity is undertaken and the output produced. It should not be seen primarily as a means of supporting the farmer's income. Thus, the means of achieving the environmental objective is through the payment for the farmer to produce the output. In the same way, a payment for a cabbage in a market would not be seen as a means of supporting the income of the stallholder. Clearly it does contribute towards her income, but that is not the purpose of the payment from the perspective of the purchaser. The language with which these issues are described is important in persuading international critics that these are legitimate activities for government.

In practice it is possible to estimate the level of net income that can be derived from agricultural production subject to the constraints and requirements of an agri-environment scheme. This is the basis of the income forgone calculations undertaken by DEFRA. A judgement might then be made as to what rate of return would be judged as a fair return to those inputs in an alternative use. The appropriate agri-environment payment would be based on the difference between these figures, so as to make up the return to that determined as fair. In practice, standard figures will usually be adopted. The level of payments determined should cover all the farm cost, including transactions costs, such as the paperwork associated with entry into the scheme. Capital expenditure would be amortised over an appropriate period.

We should recognise that, of course, the figures estimated are averages. Some farmers will have lower costs and make a surplus, others will have higher costs and so not participate. This is inevitable given the way in which the process is organised in the absence of a competitive process.

These payments made to farmers must affect agricultural output levels where their aim is to ensure that land is kept in production. But we should not regard them as trade 'distorting' provided that they lead to an increase in the social value of output, i.e. that the environmental benefits exceed the resource costs and the least cost method of production is adopted.

Some implications

While agri-environment schemes are voluntary, sufficient payment will need to be made to attract farmers to participate. Thus, when there are significant agricultural incomes forgone,

payments will need to compensate for their loss. This issue will return to prominence with an increase in agricultural income levels.

The precise basis for the current EU rule permitting payment up to 20% above cost seems unclear. It would seem better, and easier to justify in WTO negotiations, that the payment should represent a *full* payment reflecting a fair return to the business for all of the resources committed to the environmental scheme. This should take account of private transactions costs, the skills required and the uncertainties faced. Some return can be expected for risks taken.

The opportunities for farmers to participate in agri-environment schemes are unevenly distributed. This is appropriate to the extent that the distribution represents the potential of different areas and farms to deliver environmental benefits. Payments based on environmental capabilities will lead to a different distribution of income from a system of payments based exclusively on agricultural production. And an adjustment process will be required.

It had generally been assumed that entry into an agri-environmental scheme would reduce the total risk facing the farm business because of the guarantee of regular payments over the contract period, although there is some risk that payment levels may be reduced if income levels outside of the scheme fall. However there is a risk that the contract will not be renewed at the end of the period and this could present a problem where the productivity of the farm has been reduced and cannot easily or quickly be returned to its original status. In this context, it might be appropriate to offer rolling contracts, perhaps on a three-year basis. But there is also a risk to government (and thus to society) that the environmental assets will be destroyed at the end of the contract period. These are assets that have been developed on the basis of public payments. A three-year rolling contract would also require farmers to give notice of their intention to withdraw from the scheme and of the threat to these environmental assets.

Low level of uptake of some higher tiers in ESAs suggests that the payments being offered are inadequate, implying that they do not cover the costs (and risks) of participation, although as we note later, the relationship is not straightforward. Following the principle suggested here, the level of payment offered should represent the full cost of participation. Where this requires ecological management skills, this should be reflected in the rate of payment for the manager's time. It may also be appropriate to add a premium to account for the level of uncertainty faced. This may be expected to decline as better information becomes available on the management techniques required to produce the desired environmental outcomes.

6.3 ESA Uptake and payment rates

In order to achieve target levels of uptake the payments have to be set at an appropriate level in relation to the conditions set in the agreement and the scheme must be suitably promoted to make farmers aware of its opportunities. The payment principle enshrined in 1257/99 is that the payment rate should equal the income forgone and additional costs of the entrants (the compliance costs). A maximum 'incentive' element of 20% is permitted. In reality, perceived compliance costs will vary between farms, and farmers will face some additional transaction costs if they participate. The net effect is that only a proportion will enter.

Payment rates will affect uptake, and payment rates were examined to determine whether they could explain differences in uptake between ESAs. The rates were set in 1998 and when related to income forgone (DEFRA personal communication) show considerable variation. Table 6.1 shows the mean rates for different Tiers and the range of payment rates. On the basic Tier 1 payments are set on average at 60% of income forgone but the range is very wide - from 37.7 to 109.4%. Higher Tier rates are on average set closer to income forgone but there is still a considerable range. Examples of particularly high rates (around 20% in excess of income forgone) are those for moorland and heather prescriptions (e.g. the Lake District, Dartmoor and Shropshire Hills¹⁵) and for raising water levels in the Somerset Level and Moors.

Table 6.1 ESA payment rates in relation to income forgone (All prescriptions across all ESAs)

	Tier 1 (all land)	Tier 1 (other prescriptions)	Higher Tier prescriptions
Mean (% income forgone)	60.0	89.6	95.9
Range (% income forgone)	37.7-109.4	47.4-118.8	53.2-152.0

The distribution of the figures in the ERDP for all 22 ESAs are shown in Table 6.2. There are some 200 payment elements. For each of these, DEFRA has estimated an income forgone figure and figures for payments as a percentage of income forgone have been calculated for each payment. This shows none in excess of 120% (although some were included at this level). About three quarters of the payments were 100% or less.

Table 6.2: Reimbursement rates on elements in the ESAs as proposed in the ERDP

%	Numbers of elements with given rate of reimbursement	
	Count	Percentage
> 120	-	
101-120	54	26.6
81-100	65	32.0
61-80	54	26.6
41-60	24	11.8
40	6	3.0
Total	203	100.0

Compiled from data in the ERDP

¹⁵ It is presumably not a coincidence that all of these areas have involve complications associated with co-ordination amongst participants, either due to common grazing or water level management. We consider collective issues later in the report.

Given the different rates paid on different tiers, there is no single figure that describes the position for each ESA. Two possibilities have been explored: the rate paid on Tier 1 and the simple average of the rates paid on each of the different tiers. The figure calculated does not take into account the different areas included in the different tiers. Similarly, uptake might be measured in various ways. We have taken the figure of total area entered into the ESA as a percentage of the eligible area taken from figures produced by Ecoscope. We also noted whether the ESA was based on whole or part farm agreements. The results are shown in Table 6.3.

Table 6.3: Uptake and Payment rates (P) as a proportion of income forgone (IF)¹

		Uptake as % eligible area (2001)	Whole = 1	P/IF – basic tier	P/IF av. all tiers
Stage I	Broads	60	0	98	85
	Pennine Dales	75	1	83	107
	Somerset Levels and Moors	69	0	99	108
	South Downs	34	0	94	101
	West Penwith	91	1	76	86
	All stage I	66		90	97
Stage II	Breckland	15	0	99	83
	Clun	86	1	116	86
	North Peak	87	1	36	79
	Suffolk River Valleys	32	0	94	80
	Test Valley	44	0	71	86
All stage II	53		83	83	
Stage III	Avon Valley	68	0	69	84
	Exmoor	74	1	47	85
	Lake District	71	1	80	99
	North Kent Marshes	49	0	112	80
	South Wessex Downs	57	1	76	84
	South West Peak	82	1	38	80
All stage III	67		70	86	
Stage IV	Blackdown Hills	41	1	61	91
	Cotswold Hills	70	1	37	63
	Dartmoor	47	1	53	83
	Essex Coast	26	0	103	93
	Shropshire Hills	69	1	49	97
	Upper Thames Tributaries	37	0	81	82
	All stage IV	48		64	85

¹ Figures represent simple averages of the payment / estimated income forgone for individual tiers in each ESA. Information is taken from ERDP.

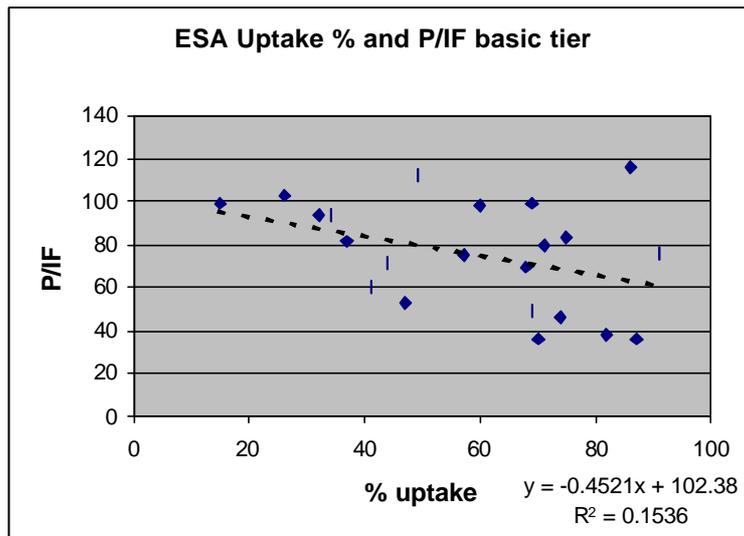


Figure 6.1: ESA uptake in relation to reimbursement rates

Some rudimentary statistical analysis fails to reveal any straightforward relationships between these variables. Figure 6.1 shows a scatter diagram of the relationship between ESA uptake and the reimbursement rate (Payment / Income forgone) on Tier 1. There is an apparent *negative* relationship between uptake and reimbursement rate, but the scatter is particularly wide at the higher uptake rates. There was no relationship at all between the simple average reimbursement rate and uptake rate. There is quite a strong correlation between the rate of uptake and whether or not the ESA is whole farm or part farm. However, surprisingly, this suggests that whole farm ESAs have higher rates of uptake for given rates of reimbursement.

The variation in payment rates presumably reflects a conscious decision to set payments within a limited total budget so as to prioritise expenditure on conservation priorities. Only very few of the payments are set at or above the Commission maximum of 20% over cost and many are well below it. This suggests that there is considerable scope for increasing rates if an increase in take-up is required. Higher rates are paid on the higher tiers, but even here there remains scope for increases. However, any changes in payment have to be approved by the Commission and with farm incomes in decline since 1998 it is possible that some rates would be expected to be revised downwards. Given this uncertainty and the lack of a clear relationship between reimbursement and uptake, the revision of payment rates is not the straightforward route for increasing uptake generally that it may appear to be. But there would seem to be scope for its selective use in particular cases.

6.4 CSS selection and payment rates

On the evaluation and monitoring evidence CSS appears to perform well and meet its objectives. It has been able to evolve, incorporating other schemes that were originally operated separately (e.g. Habitat Scheme) and using special projects to address specific conservation issues in a focused way (e.g. cirl bunting project). CCRU (2000) suggested a number of ways in which the scheme could become more cost-effective. There was scope to

improve administrative performance and to modify the scoring and selection process so as increase the value for money.

Reimbursement rates in CSS

Figures are provided in the ERDP on the income forgone calculations and proposed payments rates for the elements of the Countryside Stewardship Scheme. Table 6.4 summarises the figures in terms of the proposed payments as a percentage of the incomes forgone for the different elements of the CSS: land management measures, arable stewardship scheme items, linear activities, capital works items, and access items.

While there are a couple of payments in excess of 125%¹⁶, the table shows that the majority of payments in the CSS are below the estimated figure for income forgone. This is the case for 82% across all scheme elements, but the figure is higher for linear activities where 100% of payments are less than 80% of income forgone. For capital works, 75% of payments are less than 60% of income forgone. In contrast, for the arable stewardship payments, all are in excess of 80% and over half are over 100%.

Table 6.4: Reimbursement rates on items in CSS proposed in ERDP

	Land management measures	Arable stewardship items	Linear activiti es	Capital work items	Access items	All items
> 120	2	-	-	-	-	2
101-120	7	9	-	-	-	16
81-100	12	8	-	1	2	23
61-80	12	-	2	5	3	22
41-60	6	-	4	14	4	28
40	1	-	2	4	-	7
Total	40	17	8	24	9	98

Compiled from data in the ERDP

It is difficult to assess whether or not these rates are appropriate. It is not possible to relate uptake rates to payment as was possible with the ESAs given the absence of any measure of the eligible area. It might in principle be possible to relate reimbursement to the achievement of targets for each category but we do not have the data for this. In Section 4, we have related the uptake of CSS to various measures of the total area agricultural area and the results for arable margins are summarised in Figure 6.2.

¹⁶ These are for the creation of inter-tidal habitats on grassland, where the operation is regarded as unfamiliar to farmers and irreversible, and the management of historic features in the upland landscape, which relates to small remote areas and the payment is not area-related.

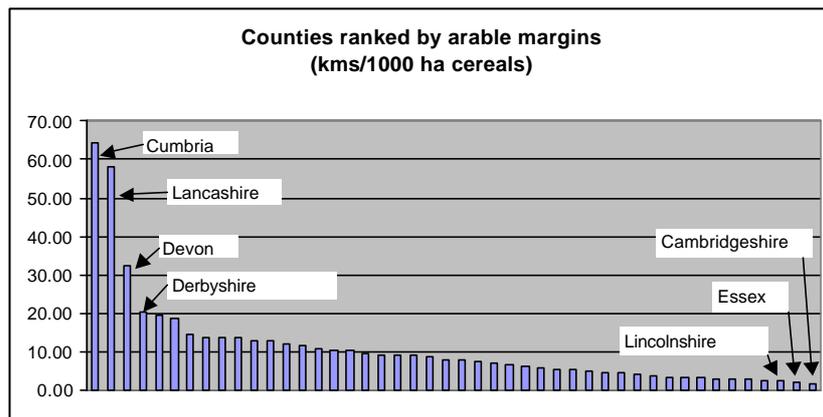


Figure 6.2: Counties ranked by length of arable margin per 1000ha cereals

The Figure illustrates the wide range between counties in terms of the proportion of cereals area that has arable margins and the predominance of this measure in the upland, less intensive counties.

In practice there are inherent problems with fixed price national schemes in that it will be those land managers with the lowest compliance cost (opportunity cost plus additional expenditure incurred) who wish to enter. Thus for arable margins we would expect farmers in the less productive areas to offer their land at lower prices than farmers on prime arable land. This is reflected in the evidence on uptake.

However, this may not in itself be a concern. It is not a problem if the environmental gains from a prescription are equal wherever the take-up is located. In fact it follows the logic of buying conservation where it is cheapest. However, it is likely to result in a regional distribution of uptake that may be seen as unacceptable and the selection process may not be able to compensate for this bias unless the payment rate is sufficiently high so as to attract the required numbers of applications in every region. This reflects the same problem that arises with fixed contracts in ESAs.

If the present scheme is leading to unsatisfactory regional distributions of uptake there is a case for applying differentiated payments. This would be far more efficient than raising the fixed price across the board and using the selection mechanism to determine participation. A price-segmented scheme in relation to variation in compliance costs has everything to recommend in on value for money grounds. In fact, it is not clear that there is a 'problem' in the case of arable margins. There have been relatively 'high' levels of applications for the arable margins scheme and it is has been possible to limit the numbers accepted by prioritising margins adjoining watercourses and other features and linking habitats (Nicholson, *personal communication*).

We sought information on percentage of applications being accepted so that it would be possible to compare success rates across different types of agreement and different region, but the information appears not to be available. While there are many reasons for an application being unsuccessful, such as concentrating on a single objective or not demonstrating to required enhancement, nevertheless, systematic differences between

elements within CSS and between regions may well indicate inadequate payment rates for particular types of environmental benefit.

Attention has recently been drawn to the loss of Lincolnshire grazing marshes and a view that the levels of payments on offer are insufficient to halt this loss. Given the inherent profitability of the intensive agricultural use, it may be necessary vary the payment rate in order to achieve the environmental objective. This might in principle be done by raising the regional payment rate, but that would be a relatively crude method of addressing a local problem. This implies a need for more locally specific means of addressing particular local objectives. This could offer higher payments based on land quality or within particular Natural Areas, perhaps by means of an are-wide special project. Or it could simply accept tenders from applicants specifying what rate they would require for participation. This would move the approach towards a complete tendering process.

As we have noted in the context of ESAs, it is not only payment rates that determine the levels of applications to enter agri-environment schemes. The role of professional advisors and the support from umbrella organisations, such as National Parks, is also of importance.

6.5 Value for money

Table 6.5 gives a framework for assessing the performance of agri-environmental prescriptions in relation to cost. A strong argument is often made for expenditure on maintenance prescriptions (Tier 1) because of the difficulty and perhaps impossibility of re-creating lost habitats and historical interest. Maintenance costs are relatively low so the correspond benefits need not be great but should be evident. With no additionality data there is a concern that maintenance expenditure may merely be paying farmers to do what they would be anyway. In the classical framework for analysis, the benefits from maintenance depend on the value of the asset and the probability of loss or depreciation. With some assets, depreciation is an inherent quality (e.g. stone walls) but this by no means universal.

Maintenance expenditure is well justified in situations where there is clear evidence of potential loss or deterioration and where the asset is sufficiently valued for it to be maintained (or to respond to enhancement measures)¹⁷. In this respect there could be undue emphasis on enhancement in CSS in that, aside from the apparent inequity in directing support towards those land managers who have previously harmed the environmental quality of their holding rather than those who have conserved it, could rule out payments for the maintenance of valued environments under threat. A maintenance element in policy is also strengthened when enhancement or re-creation of environmental asset is very costly or impossible to achieve (as with loss of archaeological assets). This would reflect the same criteria identified as warranting a conservative approach under a sustainable development objective.

¹⁷ An interesting example of questionable maintenance expenditure occurred in some Scottish ESAs where wall repairs took the majority of the ESA budget but for which the public revealed relatively low rank in their preferences (see Crabtree *et al.*, 2002)

Table 6.5 Cost and benefits of environmental strategies

Prescription type	Relative cost per ha	Factors determining Benefit to Environmental Capital (EC)		Additionality
Maintain (ESA Tier 1, some CSS prescriptions)	Low	Risk of loss or depreciation of EC	Value of EC at risk of loss	Difficult to demonstrate
Maintain/Strengthen /Enhance (higher ESA Tiers/CSS)	High	Probability of success	Value of EC retained /enhanced	Yes
Enhance/Increase (higher ESA Tiers/CSS) e.g. arable reversion, moorland re-creation	Very High	Probability of success	Value of increase in EC	Yes

Originally, ESA policy was introduced precisely to maintain valued habitats and landscapes from loss where the probability of loss was high. It is far from obvious that these risks still exist although others may be present. For example, risks of environmental loss in the uplands may change as the LFA payments arrangements are progressively modified. What is needed is an explicit analysis that identifies the perceived risks of loss, and re-focuses agri-environment expenditure accordingly. This will be particularly important if a ‘unified’ scheme is launched which has a stronger maintenance component that is present in CSS.

Table 6.6: Comparison of reimbursement rates in ESAs and CSS

Payment as % of IFs	% elements in ESAs	% elements in CSS
> 120	0	2
101-120	27	16
81-100	32	23
61-80	27	22
41-60	12	29
40	3	7
Total	100	100

Source: ERDP

Expenditure on enhancement is often problematic because costs can be high when major changes in land use are required (as in arable reversion to grassland or wetland). Success may not be assured. This implies that enhancement activity has to be concentrated on habitats and landscapes where the marginal value to the public and interest groups is very high, and where there is an acceptable chance of success. Despite its limitations and the difficulty of

comparing the outcomes of the two schemes because of differences in monitoring methods, the evaluation evidence suggests that CSS has been more successful than ESAs at wildlife enhancement and at generally lower payment rates. A comparison of the reimbursement rates is shown in Table 6.6. Whether taxpayers will be prepared to finance measures that require payments in perpetuity to maintain an enhanced or re-created assets is open to question (Crabtree, 2002).

6.6 Conclusions

While there are attractions in principle to payments based on outputs rather than inputs there are inevitable complications in practice. However there may well be potential advantages to be gained from a move in this direction in specific contexts. More attention should be given to these possibilities and to possible arrangements for improving incentives while sharing risk between the government and individual agreement holders, such as through the use of incentive payments for the successful achievement of target outputs.

The use of some measure of income forgone is probably inevitable in the absence of a fully competitive process. While the value of the environmental outcome is an important factor, it should not govern the level of payment. Rather the model is one of government procurement, where the purchaser seeks to acquire the desired output in a cost-effective way. The valuation of the output determines whether or not the good is to be procured at all.

Reimbursement rates in ESAs and in CSS are generally well below the maximum rate permitted under EC rules. There is thus scope within the rules for raising them in order to increase participation rates. However, whether this is efficient depends on the value for money achieved by the marginal expenditure. As the payment rate increases to encourage the marginal entrant, so higher payments are made to all the existing entrants without any alteration of their behaviour. Thus value for money requires an optimal rather than a maximum uptake rate. Some flexibility in the payment rates offered in CSS could offer a means by which particular problems can be addressed. However, there is not a clear and simple relationship between payment rates and uptake and so other factors, such as the use of advisors, the role of umbrella organisations and the need for collective decision-making, should also be considered in specific contexts.

Experience in Scotland and Wales

In this section we consider experience in Scotland and Wales. Clearly the environmental, legal and cultural contexts in these counties are very similar to those in England and indeed many the same approaches have been adopted. In particular we concentrate on the introduction of single scheme approaches with regard to the possible merger of schemes in England.

7.1 Agri-environment schemes in Scotland

Introduction

ESAs were originally launched in Scotland in 1987. The scheme was extended to 10 ESAs and re-launched in 1993. Around £23.5 million expenditure was committed to the scheme by 1997 (Crabtree *et al.*, 1999). A second agri-environment scheme (Countryside Premium Scheme, CPS) which was discretionary, competitive and not area-targeted (more along the lines of Countryside Stewardship) was launched in 1996. This was more strongly focussed on environmental enhancement and had no payments purely for protection.

Under the Rural Development Regulation the opportunity was taken to re-vamp the schemes and launch a single new Rural Stewardship Scheme (RSS) in January 2001. No new entrants to the previous schemes are permitted and contracts are not expected to be renewed. One of the main reasons for this major change in the agri-environment measures was a growing unease about the performance of the ESA scheme. A number of factors had emerged from experience with the scheme and the more formal socio-economic and environmental evaluation. These were:

- There was evidence (e.g. Crabtree *et al.*, 1999) that the scheme had low additionality. Entrants received a type of Tier 1 management payment of up to £2,000 per year (depending on the ESA) for adherence to a basic prescription. It usually involved little or no change in farming practice. Farmers were also adept at selecting from the prescription menu those activities that minimised the changes to their farming practices.

- The arrangements for producing an environmental audit and management plan required by the scheme were such that farmers were often not closely involved in the establishing the management plan and had little sense of ownership of the scheme.
- Management prescriptions were not always sufficiently tight with the result that farmers interpreted prescriptions in different ways.
- The area targeting of ESAs was perceived as too narrow in the Scottish context and a scheme which procured environmental gain throughout the farmland of Scotland was seen as highly desirable. The special area concept underlying ESAs was never as credible in Scotland where valued (or at risk) habitats and landscapes are not concentrated in specific localities.

These issues were addressed in the creation of RSS. The new scheme was planned to deliver clearly defined environmental gain in a cost-effective way. Every effort was made in its structure to involve the occupier in ownership of the management plan for the holding.

Objectives

The RSS aims to encourage farmers, crofters and common grazing committees to adopt environmentally friendly practices and to maintain and enhance particular habitats and landscape features. The main thrust of the scheme is to *enhance existing habitats and biodiversity*. Measures directly relating to the landscape are limited to some capital works such as wall building.

The scheme aims to enhance habitats for particular bird species, species-rich areas, moorland, wetland, field boundaries and margins, arable areas, woodland and scrub, historic sites, and small units (crofts).

Mechanism and Incentives

There are 23 management options each with its management prescription. The capital works relate to the enhancement of designed landscapes, field boundaries, black grouse breeding areas and farm ponds. Where capital works complement the management options (e.g. fencing, rhododendron control) these can also be grant aided. The scheme is open to all occupiers of agricultural land. Applicants must produce an environmental audit for the holding¹⁸. This is financed under the RSS and proved a basis for the agreed prescriptions.

The 5-year contract has up to four elements as indicated in Table 2.4. Payments are at fixed rates with no upper limit on the total payment under a plan.

¹⁸ Where applicants apply for moorland management payments a Moorland Management Plan must be prepared).

Table 7.1: Structure of the Rural Stewardship Scheme

Element	Type	Payment
Basic environmental standards (Good Farming Practice)	Mandatory – applies over the whole farm	None
Selected management prescriptions	Voluntary	Fixed annual payment per ha of prescription
Selected capital works to benefit habitats and features	Voluntary	Single fixed payment per unit of capital works
Selected capital works associated with management options	Voluntary – only available in the context of the relevant management option	Single fixed payment per unit of capital works

Discretionary selection of participants

A transparent scoring system is used to rank applications. Entry is competitive, the highest scoring applications being selected. The scoring takes into account the number of activities proposed and the contribution to national and local BAPs. IACS businesses already involved in other agri-environment, conservation or woodland schemes are given additional points. The scoring system favours large ecologically diverse holdings and makes it difficult for land with a limited range of habitats to enter even if these are of exceptional quality. Pressure from crofters who found it difficult to enter the CPS has resulted in special prescriptions for small units (< 10 ha inbye) in the RSS and this increases their chance of successful application.

In the first year of operation there have been 476 applications at a cost of £28.5 million. The scheme is likely to be over-subscribed. Two applications exceed £0.5 million. This raises a number of issues about the efficiency and equity of the scoring system. Some large farms and estates will be highly competitive because of the diversity of habitats present. This concentration of expenditure may represent high value for money by targeting payments to high-environmental gain sites. However, this needs to be evaluated.

It seems likely that such concentration is less than ideal from a rural development perspective. It is possible that a wider spread of expenditure would be associated with greater employment benefits.

Over-subscription of schemes also raises the issue of pricing. Higher payments increase application rates and allow greater selection. However, this is at the cost of higher rents to non-marginal entrants.

Review

The scheme has had 476 applications in its first year with an associated cost of £28.5 million. The key characteristics are:

- It has a well-selected range of environmental enhancement measures that clearly indicate the environmental objectives pursued.
- It contributes to achieving BAP objectives by giving greater priority to BAP-relevant proposals.
- It should give high additionality and effectiveness because it focuses resources on enhancement; all prescriptions are expected to lead to some beneficial change in management activity.
- The scheme uses a Good Farming Practice requirement to ensure a degree of environmental protection across the holding at no direct exchequer cost.
- It uses discretionary entry and scoring to select high value for money applications, hence raising efficiency in procuring environmental gain.
- It leaves open the scope for facilitating entry amongst ESA entrants by raising their weighting if this is considered necessary to prevent any loss of environmental gain from the ESA scheme.
- The main issues in design that need to be explored are:
 - the design and operation of the scoring system. At present it gives high weighting to the diversity of habitats included in the plan, without taking any direct account of environmental quality. This means that large environmentally diverse holding are most competitive.
 - The question of whether some payments are too high and do not take adequate account of lower opportunity costs and private benefits on some (large) holdings.

7.2 Agri-environment schemes in Wales

Introduction

There are five ESAs in Wales. The Countryside Commission launched a second agri-environment scheme (Tir Cymen) for Wales in 1986. This had similarities to CSS in England, and originally operated as a pilot scheme operated in three target areas. In 1999, a modified version of Tir Cymen (Tir Gofal) was launched as an all –Wales scheme. It forms part of the Rural Development Plan for Wales under 1750/1999. Tir Gofal is operated by the Countryside Council for Wales (CCW) on behalf of the National Assembly for Wales. The existing ESA and Tir Cymen schemes have been closed to new applicants. This development in policy reflected a growing dissatisfaction with area-targeted schemes that did not provide opportunities for farmers throughout the entire country. Whilst both the ESA scheme and Tir Cymen were perceived as having been successful, a new non-locational scheme with entry on environmental merit was considered. The aim was to offer new opportunities for all farmers and give wider scope for environmental enhancement. It is understood that ESA and Tir Cymen entrants will not be offered special entry to Tir Gofal when their contracts end.

Objectives

The objectives of Tir Gofal are:

- To benefit wildlife on agricultural land by promoting positive management of existing wildlife habitats and by encouraging habitat restoration and re-creation;
- To protect characteristic rural landscapes and promote the management and restoration of significant landscape features;
- To protect the historic environment, including both historic landscapes and features by encouraging farming practices compatible with their conservation and enhancement; and
- To integrate delivery of public access to the countryside.

Unlike the Scottish RSS, the focus is on habitats and prescriptions but fails to give clear objectives in terms of targeted species or environmental outcomes.

Mechanism and Incentives

Tir Gofal operates a 5-year contract which consists of three sections each with its set of management prescriptions (Table 7.2). There are 17 mandatory management prescriptions and 26 voluntary prescriptions. Incentives are paid for all activities, including the Whole Farm Section. The argument for this incentive is that the requirements go beyond those for Good Farming Practice and include such activities as not introducing non-native species, and limits on stocking rates. Tir Gofal does not require an environmental audit to support the application. CCW staff assess the veracity of applications.

Table 7.2: Structure of Tir Gofal

Element	Type	Payment
Whole Farm Section- Good Farming Practice and other additional requirements	Mandatory – applies over the whole farm	Per hectare payment, declining with areas
Management prescriptions	Mandatory	Fixed annual payment per ha of prescription
Voluntary Options including landscape and historic features, habitat creation, capital works and access	Voluntary	Fixed annual payments per ha or unit.

Discretionary selection of participants

Tir Gofal uses a transparent scoring scale with a requirement for 100 points on the scale to qualify for automatic entry after verification of the application. It was originally a competitive scheme but this has been modified because it tended to concentrate funding on fewer farms where the diversity of habitats was greatest. Distributional issues have led to a modification in the entry arrangements. The scoring is based on a mixture of presence/absence criteria and weighting according to habitat areas under the voluntary element. Like all scoring systems it can readily be criticised for failing to fully account for all aspects of environmental quality and quantity. No points are awarded for contributions to BAP or HAP targets.

The cut-off scoring system is different from a competitive one and there may well be significant environmental and distributional impacts. In practice the scoring has favoured small, un-intensive farms and large ecologically diverse holdings. The cut-off system changes the pressure on applicants to offer high-scoring applications (an expected feature of a competitive system). It will tend to result in more applications and lower environmental gains per application. On environmental grounds the competitive system should produce greater environmental gains and a greater variety of environmental activity including more habitat creation. The cut-off distributes the benefits from the scheme more widely among the farming community and is thus likely to perform well on other non-environmental objectives for rural development.

Review

In 2001 the scheme had 1,107 applications with the 100 points minimum. Funding was set at £10.9 million.

There has recently been a stock take of the scheme because of some problems with its operation. The scoring system has favoured both small and large holdings with the lowest probability of entry in the 30 -100 ha size range. This has proved politically unsatisfactory because 'family' farms are not benefiting to the same extent as small farms. There are proposals to change the scoring to give more points for arable options and multiple enterprises. This will give extra points for more typical 'family' farms with some other options given less points to leave the cut-off 100 points unchanged. Whilst these changes may have some limited environmental justification, the main aim is to make the scheme more accessible to middle sized, family farms. The administrative arrangements for the scheme were also perceived as slow and expensive. New arrangements are proposed.

No evaluation or monitoring of Tir Gofal has been undertaken but its main characteristics are:

- The scheme has a well-selected range of environmental measures and the strong whole-farm and mandatory element will both protect and enhance existing habitats.
- It does not have the clarity of environmental targets and explicit weighting for BAP contributions that are desirable. However, it is claimed that the scheme is 'playing an important role in achieving BAP targets' (Countryside Council for Wales, 2001)

- The scheme attempts to balance environmental outcomes against other rural development and distributional objectives through its scoring and cut-off system and this appears to be a useful way of meeting the diversity of interests in the scheme.
- There is some cost to this as compared with a more competitive approach. It is likely to be at the expense of greater additionality and diversity in the environmental activities offered by applicants. The suspicion is that environmental value for money is being traded off against distributional gains. Comprehensive evaluation is needed to investigate this aspect.

8

Experience in other European countries

8.1. Introduction

Agri-environment schemes have been introduced in other European countries under the same European regulations, but there are notable differences in the ways in which this has been done. These often reflect differences in environmental characteristics and historical and cultural conditions. But there are significant differences from the approaches adopted in England that may offer pointers as to the options available here.

Agri-environmental policy emerged for the first time in some of the northern European countries in the early 1980s, notably in Britain (with the introduction of management agreements on SSSIs) and in the Netherlands (with the Relatienota programme). Over the last two decades, agri-environmental schemes modelled on these first-generation programmes have become adopted on a larger scale throughout the EU and have become a significant element of the CAP. During this period, the approach has evolved, and different countries have taken quite distinct routes in developing their agri-environmental programmes – distinct in terms of the environmental objectives pursued, the type of measures taken, payment rates offered, the speed of implementation, and the overall amount of public money spent on agri-environment. The many different solutions and the variety of measures established across the EU have often been praised, but they have also limited the comparability and have made an effective evaluation of the programmes far more difficult. This section aims to: identify patterns and styles of scheme design and implementation; review evaluation studies; and look in greater detail at the experience gained in two countries, Denmark, Austria and Ireland, representing three very distinct models of agri-environmental policy. We also consider the introduction of the contrat territorial d' exploitation (CTE) in France.

8.2. Implementation of Agri-environment schemes in the European Union

Regulation 2078/92 granted Member States a large measure of discretion for designing their own schemes, matching them to local conditions and advancing regional priorities. This discretion resulted in a wide variety of measures with a range of objectives and management prescriptions, implemented at different geographical scales – from local to national.

Classification of rural environmental agendas

The great variety of patterns and styles of scheme design and implementation reflects, to an extent, different cultures, traditions and preferences of individual Member States and regions. Following Buller (2000), we distinguish three policy traditions and concerns that have strongly influenced the elaboration and adoption of existing rules:

(1) *Nature and landscape protection*: a preoccupation of countries with a strong naturalist tradition. The UK has been, to some extent, a driver of policy in this field, with a long tradition of contractual environmental management of agricultural land and a strong and active set of institutions and interest groups that have, since the early 20th century, promoted landscape management. Germany, Austria and Sweden too are marked by strong naturalist traditions which have found expression in the key notion of cultural landscapes formed by centuries of agricultural activity. In other states such as France and Denmark, concern for landscape and nature protection has been focused on specific issues or geographical areas rather than being part of an all-embracing protectionist rural culture.

(2) *Regulation of agricultural pollution*: while concern for agricultural pollution has developed its own regulatory agenda, some Member States have placed pollution reduction high on the 1992 European agri-environment programme (AEP) agenda. Germany and Denmark stand out in this respect. Both countries have developed their own detailed schemes for addressing pollution problems of intensive agriculture since the mid 1980s, and both sought to continue this particular emphasis under Regulation 2078/92 and the Rural Development Regulation.

(3) *Support for marginal agricultural activities and compensation for natural handicaps*: this concern is more prevalent in states and regions with a high proportion of marginal land and large agricultural populations operating in remote rural areas. This is the case in southern France, parts of Spain and Portugal, much of Greece, but also Sweden. The dominant rural environmental agenda is that of combating the environmental and socio-economic effects of land abandonment and farming withdrawal. Agri-environmental measures thus focus on the maintenance and support of agricultural activities threatened by the economic marginalisation of production activities and by the socio-economic decline of rural communities. Concerns for maintaining marginal (often extensive) agricultural activities have linked in well with the emerging European interest in 'high natural value farming systems'.

Agri-environmental objectives and types of measures on offer

According to the diversity in environmental agendas, a wide variety of objectives for agri-environmental schemes has emerged across Europe. Bignal and Baldock (2002) distinguish four main groups of objectives:

(1) *maintenance of low-input farming systems*: particularly grassland but including some arable land and permanent crops, such as certain types of orchards. Most schemes concentrate on the maintenance - against the threat of abandonment - of low-intensity livestock systems, particularly beef cattle and sheep, covering large areas of permanent grassland. Often these areas are of high nature conservation or landscape value, although not all schemes have precise biodiversity or landscape conservation objectives.

(2) *reduction of pollution from agricultural land*, for example, by reducing inputs of fertilisers and pesticides. Usually, the main purpose is to reduce pressure on water resources, although some of the early schemes also pursued supply control objectives.

(3) *conservation of valued habitats and landscapes*: schemes are similar to the first group, but are more precisely directed to specific objectives and often targeted on specific geographical areas or landscape types. In contrast to the schemes from the first group, most programmes aim at maintaining traditional, low-input systems against the threat of intensification (rather than abandonment). The objective often is to maintain the status quo, although some schemes seek active environmental enhancement and enrichment, for example by converting arable land to low-input pasture.

(4) *promotion of organic agriculture*: schemes are in place in all Member States to assist farmers to convert to organic production. All, with the exception of France and the UK, provide ongoing support for those who maintain organic production after the conversion period.

A range of more specialised schemes address the conservation of rare breeds, access to land, regional issues such as irrigation water management or forest fire protection, and training, albeit on a limited scale. Table 8.1 gives an overview of the different types of measures on offer across the EU. A number of countries, including Germany, France, Italy, Austria and Spain, have implemented a wide ranging package of extensification measures, while Finland, Greece, the Netherlands and Sweden offer far fewer. Support for organic farming is the only measure offered by all member states, although the commitment of member states to such methods is highly variable. Measures involving extensification of grassland (including conversion from arable land) or the extensification of arable land are widely available, while extensification of multi-annual crops, educational projects and access to land for leisure pursuits feature in only a few countries. Farmer training schemes, and more the specialised schemes which encourage of access to farmland or the preservation of rare animal species have had a relatively limited adoption. Austria stands out in that it offers some form of "basic support" to farmers enrolled in the OPUL scheme. This is available to all farmers who agree to abide by certain elements of a code of good agricultural practice (Sinabell and Hofreither, 2001).

Table 8.1: Agri-environmental measures (regulation 2078/92) on offer in EU-member states

Type of measures	B	DK	D	Fin	F	GR	IRL	I	NL	AT	P	S	E	UK
1 meadows and pastures														
2 arable land														
3 reduced stocking rates														
4 rare breeds														
5 permanent crops/viticulture														
6 maint.. of abandoned land														
7 20-year set-aside														
8 loss of domest. plant species														
9 nature conservation														
10 organic farming														
11 demonstration projects														
12 education and training														
13 'basic' support														
14 access to land														

Source: R. Plankl, FAL Agricultural Research, special issue 231, 2001, p. 5.

The European Commission in their first five-year review of measures implemented under Regulation 2078/92 provides a different perspective on the measures adopted by Member States. Classifying the range of schemes into five broad groups, the Commission report identifies budget spending per group by Member State (Table 8.2).

Table 8.2: Percentage of agri-environmental budget spent on different groups of measures in selected Member States

	A	DK	F	GER	GR	P	ES	S	UK
	%	%	%	%	%	%	%	%	%
Organic farming	17	24	3	1	14	4	4	15	2
Farming with environmental improvements	59	46	15	56	35	18	35	6	53
Maintenance of low-intensity systems	21	16	79	21	0	68	15	71	30
Non-productive land management	3	14	3	21	50	6	42	1	14
Training and demonstration projects	0	0	1	1	0	4	4	7	0
Total	100	100	100	100	100	100	100	100	100

Source: Buller, 2000, p. 236.

The figures in Table 8.2 confirm the highly variable application of Regulation 2078/92 across Member States and reveal different national preferences in the types of schemes adopted. Greece and Spain, for example, stand apart in the importance accorded to the management of non-productive (marginal) land. Spending to promote organic farming varies widely between Member States, with Denmark allocating the highest proportion of its agri-environmental budget to organic farming.

Buller (2000) notes that the presence of an established agri-environmental policy prior to implementation of Regulation 2078/92 plays an important role in determining the national strategies of adoption. States in which an established agri-environmental programme already existed (e.g. UK, Germany, Denmark, and the Netherlands) have often been most creative in developing policy further, influencing the European policy agenda. In contrast, progress in agri-environmental policy development has been relatively slow in countries such as Portugal, Spain or Greece, where agricultural modernisation and intensification have dominated (or still dominate) the agricultural policy agenda.

Finally, administrative structures play a role in determining the types of measures adopted. For example, the German experience has been highly regionalised, reflecting both the federal structure of the state and the existence of multiple rural environmental agendas.

Organisation of schemes

A common distinction in organisational forms exists between "broad and shallow" schemes on the one hand and "deep and narrow" schemes on the other. The former apply to large areas, often to a country's the entire agricultural area, but seek no major changes to existing farming practices. The latter are usually targeted on certain areas of high environmental sensitivity and involve more restrictive management prescriptions and, as a result, offer generally higher payments. Baldock et al (1998) offer a matrix of broad scheme types (Table 8.3). Many of the wide focus horizontal schemes are, in fact, frameworks within which a number of individual measures operate.

Table 8.3: Types of scheme organisation

	Horizontal measures	Targeted schemes
Wide focus	OPUL (Austria) KULAP (Germany) MEKA (Germany)	ESA (UK) ESA (Denmark) ESA (Sweden)
More specific focus	Organic schemes Grassland Premium (France) Landscape and biodiversity scheme (Sweden) Spanish extensification scheme	NSA (UK) Operations locales (France) Spanish pollution reduction measures

Source: Buller (2000), adapted from Baldock et al (1998).

Budgets and payment rates

Another way of classifying agri-environmental measures is to analyse how much priority, in terms of funding, different Member States give to AE policy. There have been (and still are) vast differences in the levels of expenditure between countries. Table 8.4 shows the expenditure on Reg 2078/92 by Member State in 1997.

Table 8.4: EAGGF expenditure on Regulation 2078 by Member State against total UAA by Member State for 1997

State	EAGGF expenditure (MECU)	Total national UAA (1000 ha)	Expenditure ratio (ECU per hectare)
Austria	265	3,487	76.0
Belgium	2	1,350	1.4
Denmark	9	2,756	3.3
Finland	143	2,669	52.9
France	144	30,335	4.7
Germany	304	17,136	17.7
Greece	10	3,930	2.5
Italy	336	17,215	19.5
Ireland	100	4,444	22.5
Luxembourg	4	126	31.7
Netherlands	12	1,986	6.0
Portugal	58	3,882	14.9
Spain	54	26,930	2.0
Sweden	83	3,342	24.8
UK	36	17,775	2.0
Total	1,557	137,393	11.3

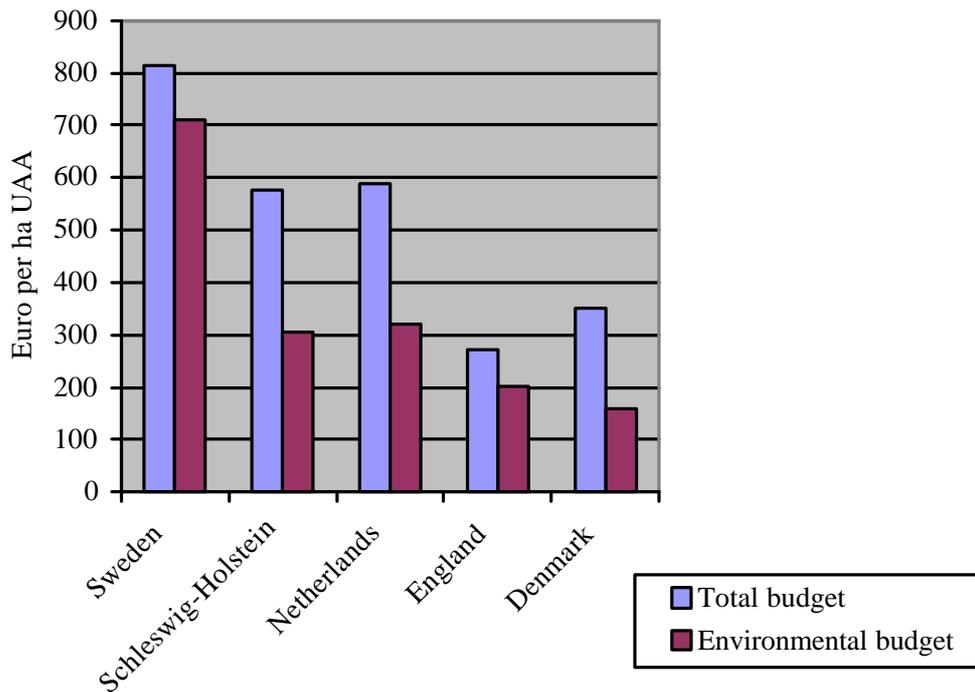
Source: Buller (2000) based on Eurostat and EC data

Countries with high agri-environment spending per hectare of UAA include Austria, Sweden, Finland, Ireland and Luxembourg. On the other extreme are countries such as Belgium, Denmark, France, the Netherlands and the UK which, in 1997, spent very little money per hectare on agri-environmental measures. Countries such as Germany, Italy and Portugal take a middle ground. Among the high-spending countries, we find three mountainous states where the UAA covers only a small proportion of the total land area.

The UK which, like Denmark, has a strong tradition of national agri-environmental concerns, features among the countries with the lowest level of spending per hectare. This partly reflects spatial targeting strategies adopted in the two countries. States with low budgets per unit of land have, in general, adopted geographically targeted schemes, while those with higher spending ratios have frequently implemented wide horizontal national schemes (Buller, 2000).

A recent study by Primdahl et al (2001) comparing the implementation of agri-environmental policy in 5 EU countries/regions shows that the variations in the spending ratios persist. Figure 8.1 shows the budgets for the Rural Development Programmes on a per-hectare basis. The Swedish RDR budget per ha is roughly three times as high as the English. Significantly, Sweden and England appear to place greater priority on environmental measures within the RDR compared to the other three countries in the study.

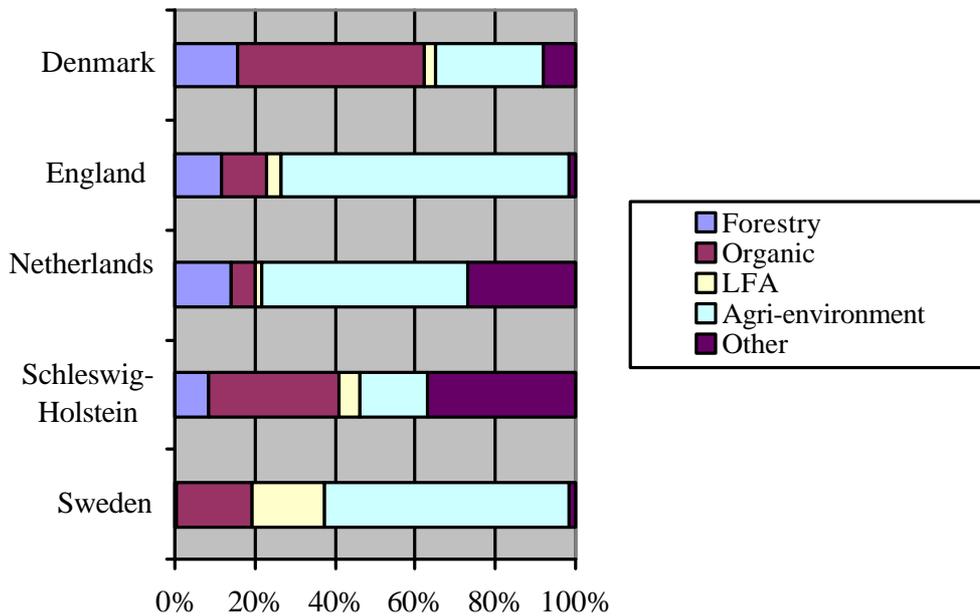
Figure 8.1: Budgets for the Rural Development Programmes (totals over the 2000-2006 period)



Source: Primdahl et al (2001)

A closer look at the composition of the environmental expenditure reveals further insights into environmental priorities in the five countries (Figure 8.2), with Denmark placing much emphasis on its organic scheme, while England and Sweden spend a disproportionately high share of their budgets on traditional agri-environmental measures.

Figure 8.2: Composition of the environmental budgets within the Rural Development Programmes, 2000-2006



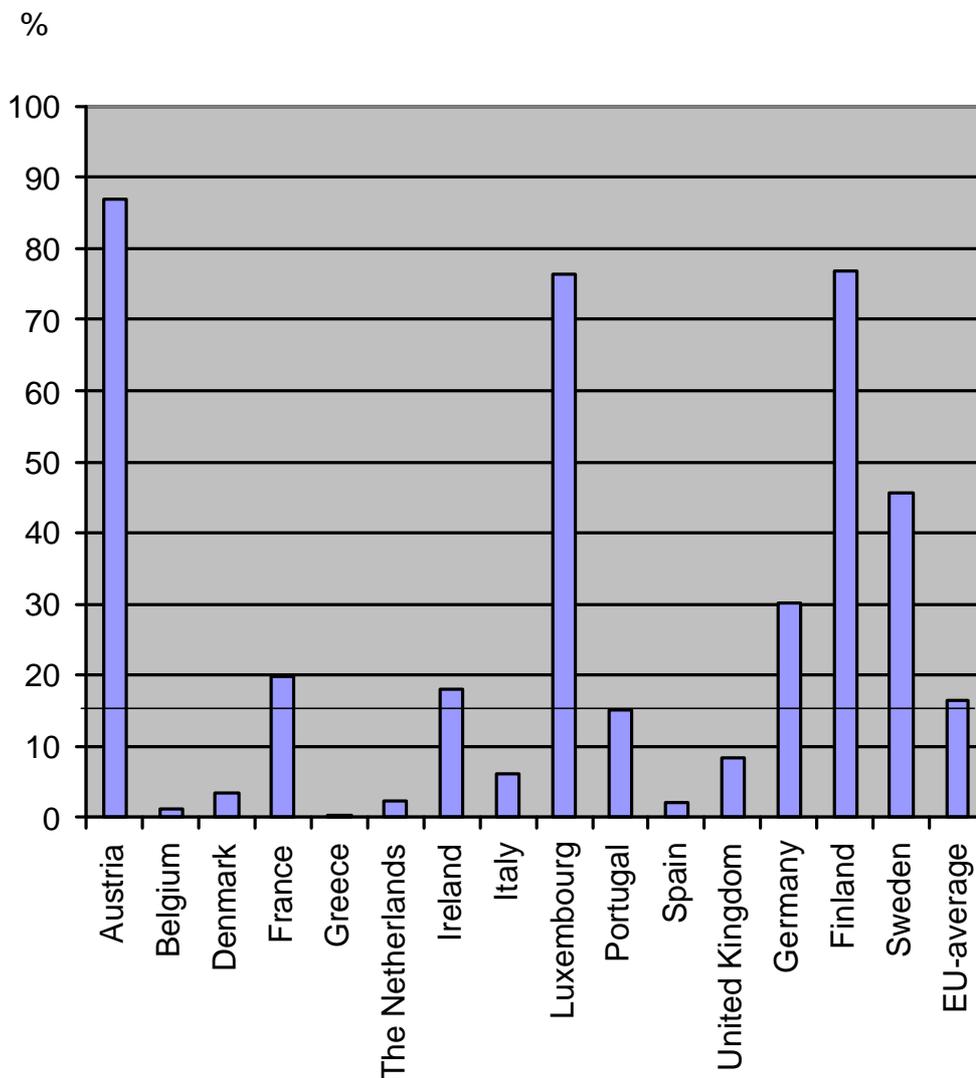
Source: Primdahl et al (2001)

Scheme uptake

Clearly, different payment rates have given rise to varying rates of scheme uptake across the EU. By 1999, around 1.8 million individual agri-environmental contracts had been established within the EU-15 (Buller, 2000). The states of Germany, France and Austria collectively represent 67% of all contracts signed within the EU by 1997. By way of contrast, the four southern European states Portugal, Spain, Italy and Greece accounted for only 16% of all contracts. The latter four states account for 68% of all farms in the EU, while the former group represents only 23% (Buller, 2000). This disparity suggests that agri-environmental policy under Regulation 2078 had responded more to a northern European agenda than to a southern European one, although it must be borne in mind that at the time of Buller's (2000) survey different countries were at different stages in the implementation of Regulation 2078.

Figure 8.3 clearly reveals the uneven distribution of agri-environmental contracts across the EU.

Figure 8.3: Proportion of total UAA under agri-environmental contract, 1997



Source: adapted from Plankl (2001)

The following patterns seem to emerge. Countries with a high percentage of their UAA in marginal areas (Austria, Sweden, Finland) show a high proportion of their agricultural land placed in agri-environmental schemes. In contrast, uptake rates are very low in intensive lowland states such as Belgium, The Netherlands, Denmark and, to an extent, the UK. Luxembourg seems to form an exception from this rule. Uptake is also low in southern European countries which do not have a tradition of agri-environmental policy (Spain, Greece, Italy). The relatively low take-up rates in the UK can probably be largely attributed to the “deep and narrow” approach adopted by this country.

The analysis shows that the spatial impact of agri-environmental policy is far from evenly spread across the EU. The primary beneficiaries, in terms of uptake, are for the most part

among the richer agricultural areas of Europe. Within the beneficiary states, the principal areas concerned are in upland regions where extensive agricultural systems prevail. The predominance of schemes aimed at maintaining such low-input, often grassland-based systems is a central element in this geographical variation. Buller (2000) concludes that agri-environmental policy can, on the face of these geographical variations, only be said to constitute a partial force for the redistribution of agricultural aid within Europe.

Evaluation studies

Impediments to evaluation

Uptake statistics undoubtedly give an encouraging image of EU agri-environmental policy. With about 17% of the EU agricultural land area under contract and around 19% of EU farmers involved, agri-environmental policy has become a major element of the agricultural policy scene. It is less clear, however, how effective the schemes have been in terms of their environmental impacts. There have been numerous evaluation studies and one five-year review of Regulation 2078/92 published by the European Commission (CEC, 1997). However, it is still difficult to judge the precise impact of schemes on the ground. Rigorous evaluations have been impeded by the sheer diversity of schemes, the frequency of changes in rules, imprecise and sometimes diverse and non-prioritised objectives, lack of baseline data, and the high costs of introducing effective monitoring and evaluation regimes (Bignal and Baldock, 2002). It appears that only in those Member States where pre-existing measures were carried over into the Agri-Environmental Regulation and, later, into the Rural Development Regulation, has any long-term monitoring been possible (Buller, 2000). The problems have been exacerbated by the fact that Regulation 2078 is itself very vague with regard to its own monitorability. Its objectives are imprecise, and it offers no targets against which the performance of individual schemes could be judged.

Besides these practical impediments, there are a number of conceptual problems in evaluating the environmental performance of schemes. One is that evaluations of the effectiveness of agri-environmental measures focus upon their ability to deliver improvements in environmental quality. Yet, most schemes seek to maintain existing agricultural practices and farming systems and, consequently, environmental conditions, rather than to encourage land management changes. This is particularly the case in the southern and mountainous areas of the European Union, where the maintenance of low-intensity systems against the threat of further extensification and abandonment takes priority over other goals. In such areas, any evaluation methodology based on assumptions of induced change and verifiable improvements in environmental quality is unlikely to be of any value (Buller, 2000).

Another conceptual problem arises from the time lag between management changes and the appearance of verifiable environmental change: it may take several years for effects to become apparent.

On balance, it is probably fair to say that “deep and narrow” schemes lend themselves to evaluations of their environmental impacts more than “broad and shallow” type schemes. The latter often offer farmers a menu of management options to choose from. The overall effect clearly depends on the combination of options selected and will thus be highly farm-specific, making it difficult to draw broader conclusions on the effectiveness of the schemes.

Overall, the evidence from evaluation studies is mixed. On the one hand, there are success stories of well designed and well managed schemes achieving their environmental objectives (Haug, 1996). On the other hand, there is evidence that some schemes simply do not achieve their objectives or possibly even have adverse ecological effects (Kleijn et al, 2001) (although see also Stoate and Parish, 2001 and Carey, 2001).

Examples of German evaluation studies

This section briefly reports the results of recent evaluation studies of agri-environmental schemes in Germany with a view of giving the reader a feel for the depth and breadth of evaluations outside the UK.

Saxony's Environmentally Friendly Agriculture Scheme (Menge and Vopel, 2001): Saxony's environmental problems mainly relate to nitrate leaching and water erosion. A three-tiered package for arable land was introduced in 1993/94 which offers: (1) some basic support for environmentally friendly farming when some basic management practices are followed on all the land of a farm; (2) additional support for a 20% reduction of nitrogen fertiliser input on all arable land of a farm; and (3) additional support when certain land management practices such as mulch-drilling and intercropping are adopted. Farmers have the option of combining the basic tier (1) with the soil conservation measures of tier (3). In parallel, extensification measures on grassland (reduced input, extensive meadows, extensive pastures) are available.

On average, roughly two thirds of Saxony's arable land is enrolled in the scheme, at an annual expenditure of €50 million spent on the arable scheme alone. The environmental evaluation was based on 1021 autumnal field-tests for nitrate on farms of participants and non-participants. The report concludes that all of the main objectives of the scheme had essentially been achieved. The length of the fallow period, an important indicator for both the loss of nitrates and erosion damage, had been reduced by scheme participants, compared to non-participants, by 12-19% in the second tier, and by 25-40% in the third tier. Organic farming, on average, had similar or longer fallow periods as non-participants. In the second and third tier, the use of pesticides had been reduced by 37% (34%). Interestingly, the group of farms that participated only in soil conservation measures used 17% more pesticides than non-participants, possibly due to zero-tillage.

A 5-year average shows no significant impacts on farm income between non-participants and participants for any combination of measures. In terms of market relief/supply control, a significant reduction of cereal crops could be observed: 4% in the first tier, 21-24% in the second and third tier, and 57% on organic farms (5-year average), compared to non-participants. Participants' incomes, however, were fully compensated for yield losses and additional measures taken.

The Bavarian Cultural Landscape Programme – KULAP (Köbler, 2001): KULAP supports just under 100,000 farms (1999) with a total of DM455 million (just under DM1000 per farm). A critical evaluation by Köbler (2001) found the environmental effects of the programme to be positive in principle (e.g. in terms of ground water protection) but identified several areas for possible improvement. He criticised in particular the lack of spatial targeting and problem-specific tailoring of payment rates and management prescriptions. Measures

relating to reduced tillage have not been taken up sufficiently in certain regions and it is recommended that these be linked in with other measures. The limited uptake of measures supporting organic farming is explained by a lack of suitable marketing channels. Also, the difference in payment rates for organic farming and general grassland extensification is very small. The concentration on measures supporting grassland extensification reflects the natural conditions of Bavaria, but environmental problems mainly tend to arise in arable areas through soil erosion, nitrate leaching and short rotations.

The Grassland Extensification Scheme of Northrhine-Westphalia (Anger et al, 2001): An evaluation study of grassland extensification programmes in the upland regions of Northrhine-Westphalia by Anger et al (2001) looked at two types of measure: those aiming at preventing nutrient losses and those focusing on nature conservation. While both types of scheme were found to be beneficial in terms of preservation of natural resources, the authors noted that these effects could be enhanced if the environmental objectives were spelled out more clearly. Remuneration should be linked to the successful achievement of objective criteria. They suggested two indicators in particular: the number of certain species on conservation land, and nutrient balances of individual farms. These could be measured and monitored with relative ease. With regard to the economic effects of the programmes the result were variable, depending on the prior use of the grassland and on the input (labour and special machinery) required to meet the management prescriptions. The report suggests that constraints on the timing of mowing should be made more flexible to allow for better time management and better quality of the forage produced. This would improve the economic efficiency of the programme and possibly also make it more acceptable to farmers.

Transaction costs of scheme administration

Given the variations in scheme characteristics between countries, it will be no surprise that there are also considerable differences in transactions costs. However, the measurement of transactions costs, and comparisons between countries represents a considerable challenge.

Some comparative analysis has been undertaken by Falconer and Whitby (1999). As part of a project comparing agri-environment policies in eight EU countries, data were assembled on public sector administrative costs for a variety of schemes. Thirty seven schemes were selected based on pragmatic criteria relating to data availability and coverage of different approaches. A number of qualifications to the comparisons are necessary. In the absence of direct evidence of administrative costs, estimations were made of the total time required to undertake administrative tasks relating to scheme operation, to which a standard salary rate was applied. There was some variation between countries in the range of scheme components included, such as in the extent to which the costs of initial area surveys, scheme monitoring or redesign were covered. For instance, in the UK data on administrative costs included significant expenditure on environmental monitoring. The data are presented as a starting point for further work.

Average figures for annual administrative costs per hectare, per scheme participant and per ECU paid as compensation were calculated for all the case-study schemes in each member state across the period of study for each scheme. The results are shown in Table 8.5. The annual administrative costs for each scheme were weighted according to its value for each given denominator rather than simply taking the arithmetic average in order to account for the scale of each scheme.

Table 8.5: Weighted average annual administrative costs for case-study agri-environmental schemes in each member state in the mid-1990s

	Average annual administration costs, ECU per hectare ¹	Average annual administration costs, ECU per participant ²	Average annual administration costs ECU per 100 ECU paid as compensation ³
Austria	20.5	216.9	8.8
Belgium	58.6	388.6	63.4
France	75.6	1522.0	87.1
Germany	10.2	177.5	12.3
Greece	59.7	470.1	8.6
Italy	13.1	140.0	6.6
Sweden	9.1	190.4	11.3
UK	48.0	2445.5	47.9

¹ area-weighted; ² participant weighted; ³ expenditure weighted.

Source: Falconer and Whitby (1999)

The results indicate the relatively high level of administrative costs as a proportion of total scheme costs for agri-environment schemes, well in excess of the typical levels for commodity support regimes. We should note however that, at least in the UK, the level of administrative costs has declined since these data were assembled. Comparisons between states should be treated with caution. There are considerable differences amongst the schemes included within individual countries as well as different between the states. But there are clearly influences of scheme characteristics on administrative costs. Some agri-environment schemes, such as KULAP in Germany or *prime · l'herbe* in France, are characterised by broad approaches covering the whole territory suggesting less emphasis on the provision of specific environmental benefits or to variations in farm costs. They were observed to have low administrative costs relative to total scheme spending compared to other agri-environment schemes.

The wide variation in administrative costs per hectare will presumably relate to similar factors. The average costs of small schemes will be more affected by fixed costs than larger schemes. Some schemes in the UK had low participation levels, such as the Moorland and Habitat schemes. The high costs per participant in the UK probably reflects the relatively large number of schemes in place at that time and, at least in part, the relatively large average farm size. The relatively high figure for costs per ECU compensation expenditure in Belgium was affected by the fact that the Belgian data-set included information for a scheme in which no compensation was included.

There was a downward trend in the levels of administrative costs and in the numbers of staff hours required per hectare over time. Most schemes required less than 20 hours per hectare and less than 200 hours per agreement made. In France, the arable conversion scheme used around 0.2 hours per hectare compared to 75-140 hours per hectare for the long-term set-aside scheme.

to be filled with management prescriptions as determined by the counties.

Table 8.6 gives an overview of the range of national measures, most of which are only available in ESAs. Most of these can be classified as safeguards against intensification or measures to combat the adverse environmental impacts of intensive farming methods.

Table 8.6: Agri-environmental measures in Denmark 1996: objectives and targeting

Measures	Targeted land
Reduced use of nitrogen	All agricultural land but with higher payments in ESAs
Ryegrass as groundcover	All agricultural land but with higher payments in ESAs
Maintenance of extensive grassland	ESAs
Spray-free margins	ESAs
20-year set-aside	ESAs
Organic farming	All agricultural land but with higher payments in ESAs
Cultivation-free field margins	ESAs (some exceptions outside ESA)
Reduced drainage/raised water levels	ESAs (some exceptions outside ESA)
Management of grassland	ESAs (some exceptions outside ESA)
Recreational access	ESAs (some exceptions outside ESA)

Source: Andersen et al (2000)

By 1996 some 93,000 hectares were covered by agreements, of which 35,000 hectares fell under the organic farming scheme. The by far most popular option turned out to be the grassland schemes, accounting for 85% of the agreement area under the agri-environmental programme. Andersen et al. (2000) explains the high popularity of the grassland options with the fact that the grasslands in question were relatively marginal to agriculture and that the agreements affected existing management practices only to a limited extent. Uptake of agri-environmental measures in the arable landscape has remained low. However, the organic farming scheme has exceeded its original budget expectations. This is, in part, due to its insertion into a much wider set of organic support mechanisms extending to virtually all parts of the Danish agri-food chain (Andersen et al., 2000).

8.4. The Austrian experience

Within the EU, Austria's agriculture plays a relatively insignificant role. Almost 70% of all farms are run on a part-time basis, and farms are small-sized in terms of area and livestock numbers. Agriculture in Austria is characterised by the influence of the Alpes. Less than 50% of its agricultural area is located in regions that are climatically and topographically favourable for agricultural production. Much of the remaining area is dominated by grassland, its use being limited both by climatic conditions and by cultivation difficulties. One of the main objectives of agricultural policy is to keep these areas in agricultural use.

In spite of its small size, Austrian agriculture claimed almost 17% of EAGGF funds in 1997, thereby spending more or less as much of the guaranteed funds as Germany and almost two or three times as much as Finland and Sweden, countries that joined the EU at the same time as Austria. On average, since 1995, the total value of agricultural production has been 3.5 billion Euros, in relation to a total of 2 billion Euros support payments. 560 million Euros

were spent through ÖPUL, the single agri-environmental programme in Austria (Sinabell and Hofreither, 2001).

ÖPUL can be characterised as broad and shallow in as much as it is a nationwide (horizontal) programme offering a number of undemanding land management options. In terms of participants, funding and the range of individual measures on offer, ÖPUL is one of the largest and most ambitious agri-environmental programmes in the EU. It explicitly mentions farm income as an objective. The scheme addresses environmental problems arising from abandonment of marginal land on the one hand and from intensification of productive land on the other.

ÖPUL consists of a menu of 34 measures grouped in six categories (Table 8.7). Farmers can choose individual options or numerous combinations of options. A distinctive feature of ÖPUL is the availability of a basic subsidy option. Farmers who agree to follow some very basic code-of-good-practice type measures qualify for this basic payment, which ranges between €36 and €73. According to Sinabell and Hofreither (2001), this option serves as a point of entry for many farmers, some of whom subsequently adopt further options from the menu. Another relatively undemanding option from the menu is “crop rotation stabilisation” which requires farmers to contain the rotational share of certain crops within given limits.

ÖPUL accounts for over a third (37%) of the entire Austrian budget for direct payments, the remaining 63% consisting of MacSharry compensatory payments as well as compensatory allowances under Objective 5a. The wide range of measures on offer, combined with relatively high payment rates (Table 8.8) has been instrumental for the very high uptake rates. In 1997, the area covered by ÖPUL amounted to 2.6 million hectares or 76% of Austria’s UAA. 85% of Austrian farmers hold ÖPUL contracts; yet, participation in individual measures has varied greatly. The least demanding options (basic subsidy and crop rotation stabilisation) account for much of the expenditure, followed by organic farming as another popular option. Measures aimed at maintaining low-input farming systems such as Alpine pasturing have also proved to be relatively popular, while farmers have largely avoided more demanding measures such as the erosion prevention options.

Table 8.8: Development of payment rates for selected ÖPUL measures

	ÖPUL 95	ÖPUL 98	ÖPUL 2000
	Euro per hectare	Euro per hectare	Euro per hectare
Basic subsidy	47-51	36-51	36-73
Organic farming	218-727	218-727	160-799
Non-application of yield enhancing agents	145-218	145-218	160-436
Crop rotation stabilisation	65-138	36-87	51-109
Extensive cereal production	174	145	98-142
Extensive grassland (field scale)	116-131	116-131	160

Source: Sinabell and Hofreither, 2001

In terms of uptake rates, ÖPUL is likely to be among the most successful agri-environmental schemes across Europe. However, evaluation studies reveal no clear image of its environmental effectiveness (Sinabell and Hofreither, 2001). It is unlikely that the scheme has been particularly successful in terms of environmental impact and effectiveness, although maintenance is a significant purpose, but the income objective has always played an important role.

Table 8.7: Measures under ÖPUL

1. Extensive forms of cultivation (whole farm)	2. Extensive arable land (specific areas on the farm)	3. Extensive grassland use (specific areas on the farm)	4. Environmentally friendly farming practice and conservation of biodiversity	5. Creation and conservation of landscape elements	6. Educational measures
<p>1.1 Basic subsidy</p> <p>1.2 Organic farming</p> <p>1.3 Non-application of specific yield-enhancing agents</p> <p>1.3.1 Grassland and arable land</p> <p>1.3.2 Fruit, vine and ornamental plant growing</p> <p>1.3.2.1 Integrated controlled fruit growing</p> <p>1.3.2.2 Integrated controlled viticulture</p> <p>1.3.2.3 Integrated production of ornamental plants</p> <p>1.4 Extensive grassland cultivation in traditional areas</p> <p>1.5 Reduction of livestock density</p> <p>1.6 Crop rotation stabilisation</p>	<p>2.1 Extensive cereal production (foodstuff sector)</p> <p>2.2 Non-application of specific yield-enhancing agents</p> <p>2.2.1 Growth regulators</p> <p>2.2.2 Easily soluble commercial fertilisers and growth regulators</p> <p>2.2.3 Easily soluble commercial fertilisers and synthetic chemical crop-protection agents</p> <p>2.2.4 Fungicides</p> <p>2.2.5 Synthetic chemical crop-protection agents</p> <p>2.2.6 Integrated production in vegetable cultivation</p>	<p>3.1 Non-application of easily soluble commercial fertilisers and extensive use of chemical crop protection in grassland</p> <p>3.2 Mowing restrictions</p>	<p>4.1 Erosion prevention in fruit growing</p> <p>4.2 Erosion prevention in viticulture</p> <p>4.3 Erosion prevention in arable farming</p> <p>4.4 Keeping and rearing endangered breeds</p> <p>4.5 Regional projects</p> <p>4.6 Mowing of slopes and mountain meadows</p> <p>4.7 Alpine pasturing and herding supplement</p> <p>4.8 Upkeep of ecologically valuable areas</p> <p>4.9 Growing of rare agricultural crops</p> <p>4.10 Upkeep of abandoned agricultural and woodland areas</p>	<p>5.1 Landscape elements and biotope development areas with 20-year set-aside</p> <p>5.2 Provision of areas for ecological objectives (5-year set-aside)</p> <p>5.3 Provision of areas for ecological objectives on selected cyclical set-aside</p>	<p>Not yet implemented</p>

Source: Groiber and Loibl (2001)

8.5 Ireland - the Rural Environment Protection Scheme

Agriculture in Ireland is heavily dominated by the production of livestock and livestock products. For instance, in 1997, only 9.3% of the area farmed was under arable crops. The main environmental impact of agricultural production (Emerson and Gillmor, 1999) has been associated with water pollution from silage effluent and animal slurry and from chemical fertilisers. Erosion damage to western hill land and peat bogs caused by overgrazing has also been recognised as a problem and there are concerns about the impacts of chemical fertilisers and pesticides on wildlife, loss of habitats through reclamation and drainage, damage to historic sites, and intrusion of modern farm buildings on the landscape. However, the impacts have been small compared with those in other more intensively farmed countries within the EU.

Agri-environment policy in the Republic of Ireland is implemented predominantly through a single scheme, the Rural Environment Protection Scheme (REPS). This was first introduced in 1994 under the EU Council Regulation 2078/92 as a voluntary scheme generally available to all farmers. A new, slightly revised scheme, REPS 2000, was introduced in November 2000 as part of the Ireland Rural Development Plan.

REPS is described on the government's website as "an income support scheme for farmers run by the Department of Agriculture, Food and Rural Development." Farmers must generally have at least 3 ha of utilisable agricultural land and have to submit an application together with an agri-environmental plan for the entire holding produced by an approved agency. There are 11 measures that must be implemented in the general programme over the 5-year period of the plan and some further supplementary measures for which there is extra payment, although this is only made for one measure.

11 compulsory measures under REPS

- Follow a farm nutrient management plan to REPS specifications for the total area of the plan.
- Adopt a grassland management plan that avoids soil erosion, poaching and overgrazing.
- Protect watercourses and wells.
- Retain wildlife habitats like woodlands, wetlands and natural and semi-natural vegetation.
- Retain and maintain boundary and roadside fences, stone walls and hedgerows, except with specific approval.
- Retain and maintain any features of historical or archaeological interest.
- Maintain and improve visual appearance of the farm and farmyard.
- Produce tillage crops leaving a specified field margin and without burning straw of stubble.
- Become familiar with environmentally farming practice
- Prepare, monitor and update the agri-environmental plan and keep such farm and environmental records as may be prescribed.

Supplementary measures under REPS

- Rearing animals of local breeds in danger of extinction

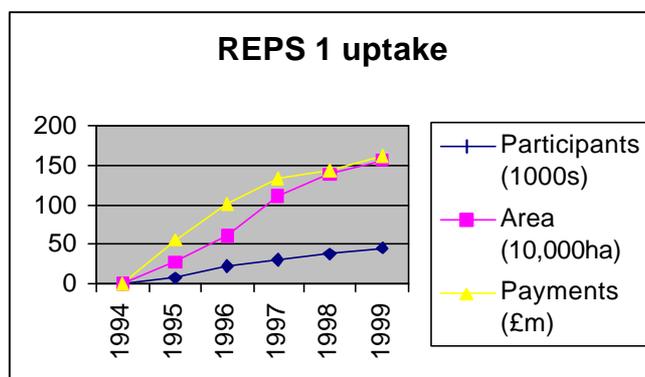
- Long-term set-aside (20 years) - Riparian zones
- Organic farming

There are additional mandatory measures (Measure A) where a farmer has land that is designated as environmentally sensitive (Target Land). These are Natural Heritage Areas (NHAs), Natura 2000 Sites, farmland-based Special Areas of Conservation or Special protection Areas, and commonages. Plans covering conservation, environmental protection measures and stocking regimes, must be drawn up with an approved planner and an environmentalist.

For the General REPS programme, farmers receive 151 euros per ha up to a maximum of 40 ha. There is a 10% increase for farmers with holdings of less than 20 ha. Target land is paid at a rate of 242 euros up to 40 ha with much lower rates for areas beyond this.

A training scheme was offered in the initial REPS scheme, but under REPS 2000, it becomes a requirement that farmers must attend approved education courses lasting to at least 20 hours. This has to be attended before the end of the second year in the Scheme, for which farmers receive a payment of about IR£100. A requirement in the original scheme that banning growth regulators on tillage crops has been dropped in the REPS 2000 programme.

Figure 8.4: Uptake of REPS in Ireland



Source: Rath (2001)

Participation and payments on the REPS 1 scheme are shown in Figure 8.4. The REPS 1 scheme closed to new entrants at the end of 1999 and it is anticipated that the great majority of farmers will transfer from the REPS 1 scheme to REPS 2000. By the end of the scheme, something over 30% of agricultural land had been entered.

An evaluation of REPS 1 in 1999 (reported by Sinnott, 1999) concluded that the REPS approach was appropriate and should be continued. Take-up of the General Scheme was very close to the target level. Take-up in designated areas and of the organic measure were twice the target level, while take-up of the riparian supplementary measure was less than 6% of the target, aimed particularly at the protection of salmonid water bodies. Take-up was highest amongst sheep farmers (46% in 1998) and lowest amongst specialist dairy farmers (17% in

1998). It was estimated that in 1998, REPS participation increased family farm income from £229/ha to £339/ha (McEvoy, 1999). A significantly higher proportion of REPS farm holders had off-farm income and smaller farm businesses. REPS farms had a greater increase in total output than other farms but they also showed a greater reduction in chemical phosphorus use and a smaller increase in both organic and chemical nitrogen than on other farms. This suggests an increased efficiency in resource use. REPS farms had lower stocking rates than other farms.

Various criticisms have been made of the scheme. Given the standard rates of payment available to all farms, the scheme faces the usual problem of adverse selection. It is most attractive to lower intensity farms that may be expected to be causing the least environmental impacts, and it is not targeted on areas where environmental problems are of most significance. There is a concern that REPS planners may have insufficient environmental background and training (e.g. IPCC, 2002) and that while plans often cover designated nature conservation areas, Duchas, the nature conservation agency has no input to them (www.compass.ie/gap/31reps.html). Finally there has been concern at a lack of appreciable improvement in overgrazing on commonages, particularly along the western seaboard. Commonage Framework Plans, drawn up by multidisciplinary teams, are being introduced to provide individual farm plans that are compatible with the overall strategy laid down in the framework plan (Bleasdale, 2000).

8.6 The French contrat territorial d' exploitation (CTE)

The CTE (Ministère de l' Agriculture, 2002) was introduced in 1999 as voluntary whole-farm development contract. It is now the principal mechanism for implementation of the RDR in France, the main instrument for agri-environment policy and a key symbol of the socialist's agricultural policy. It will largely replace existing agri-environment schemes. Originally it was intended to be the sole mechanism for non-market support to agriculture in France. However, this proved impractical and RDR spending occurs outside the CTE on pre-retirement, young farmers, forestry and training.

Structure

The CTE is a comprehensive approach to sustainable rural development that provides grant aid for a wide range of activities. It is made up of two dimensions – a socio-economic dimension and a territorial/environmental dimension. The socio-economic dimension promotes local employment and assists in generating additional income through quality products, farm diversification, farm investment and modernisation (Table 8.9). The territorial and environmental dimension is concerned with the maintenance and improvement of the environment and includes the quality of water, soil and air, biodiversity and landscapes, natural risks and energy. Aid is also offered for organic conversion, measures to improve animal welfare and public access. This second dimension incorporates the schemes previously operating under 2078/92.

Table 8.9: The two dimensions of the CTE

Socio-economic dimension		Territorial and environmental dimension	
Theme	Objective	Theme	Objective
Employment	<ul style="list-style-type: none"> ○ maintain and create employment; ○ facilitate the installation of young farmers; and ○ help farm inheritance. 	Water	<ul style="list-style-type: none"> ○ Maintain and improve water quality; and ○ Improve water resource management.
Work	<ul style="list-style-type: none"> ○ Adapt farmer competencies and qualifications; and ○ Improve working conditions. 	Soil	<ul style="list-style-type: none"> ○ Preserve the physical, chemical and biological fertility of soils; and ○ Prevent soil erosion.
Product quality	<ul style="list-style-type: none"> ○ Improve product quality; and ○ Improve food health security. 	Air	<ul style="list-style-type: none"> ○ Maintain and improve air quality.
Animal well being	<ul style="list-style-type: none"> ○ Improve the well being of farm animals. 	Biodiversity	<ul style="list-style-type: none"> ○ Protect natural species and biotopes; and ○ Preserve and improve the biodiversity of domestic species.
Economy, autonomy	<ul style="list-style-type: none"> ○ Strengthen the economic organisation of producers ○ Diversify farm and non-farm activities ○ Improve food marketing and transformation systems and networks ○ Increase the added value by reducing production costs and making more sustainable use of natural resources 	Landscapes and cultural heritage	<ul style="list-style-type: none"> ○ Preserve and benefit from the built heritage; and ○ Preserve and benefit from landscape quality.
		Natural risks	<ul style="list-style-type: none"> ○ Prevent erosion, flooding, fires and avalanches.
		Energy	<ul style="list-style-type: none"> ○ Reduce energy consumption; and ○ Develop the use of renewable energy sources.

The CTE are designed primarily at the level of the *département*. A committee of relevant interests in each *département* develops a set of objectives and measures relevant to the conditions and needs of the *département*. The measures to be offered locally are drawn from a nationally prescribed set. There is some flexibility to change the national measures to meet local needs.

Application procedure

Individual farmers or groups of farmers may apply to join the scheme. The applicant must undertake a diagnostic exercise for the whole farm often with specialist assistance. This assists the farmers to construct a whole farm 5-year plan. The farmer then submits the dossier (the diagnostic report, the whole farm plan, the draft contract setting out what the farmer will do and the financial aid requested) to the regional Ministry office. Collective CTEs are also possible. Collective contracts involve a group of farmers working with other partners such as cooperatives, producer groups, National Parks or environmental organisations. The government is trying to promote collective contracts because it believes that this will produce greater impacts on the local economy and environment and is a way of getting the maximum number of farmers to participate.

Take-up and financing

To date 29,000 contracts have been approved and 23,500 signed. These include 1,200 collective contracts. The CTEs cover 1.6m ha (3.5% of agricultural land) and of this 60% is covered by environmental agreements. Grant aid is through a mixture of capital grants (maximum 30%) and direct payments per unit of activity. The average payment over 5 years is around £17,500.

The agri-environment measures focus on four main areas:

- Water quality
- Soil protection
- Preservation of the countryside
- Maintenance of biodiversity

55% of contracts include at least one measure to improve water quality. Measures to maintain biodiversity occur predominantly in the LFAs.

Analysis

The CTE represent a quite different approach to implementation of the RDR from that used in the UK (Lowe *et al.*, 2002). It uses agriculture as the engine of rural development and agricultural interests appear to be the main beneficiaries. The approach is strongly multifunctional and decentralised with intervention to assist agriculture in producing both benefits to local economies and environments. It reflects the greater importance of agriculture in the economies of many French *départements* and the beneficial knock-on benefits to rural economies from a viable and developing agriculture.

The UK approach to the RDR has a less central role for agriculture and the concept of multifunctionality is based on a wider rural/ countryside concept with social benefits that are not predominantly local. It adopts the tests of market failure and public benefit as the determinants of whether to purchase additional non-market goods from farmers. Even so, what is interesting about the CTE is that they provide a vehicle for implementing a wide range of policy measures according to a de-centralised set of priorities and measures. The collective contract idea is also interesting. However, it seems unlikely that the UK government would wish to offer the range of socio-economic and environmental measures found in the CTE in England. It would find expenditure on many of socio-economic measures difficult to justify. The administrative costs appear to be very high and it is not clear that the degree of de-centralisation adopted in France would be feasible or desirable in England where institutional structures are less well developed regionally and regional differences in priorities may be less evident.

It is too early to assess the effectiveness of the CTE scheme. It was initially criticised by the Commission for being too fragmented and lacking overall coherence. Some initial difficulties in implementation have been overcome and the initial target figures of 100,000 contracts have not been met due to the administrative complexity of the scheme (Le Monde, 27/02/02). However, there seems little doubt that uptake will expand over time.

8.6 Conclusions

There is clearly a variety of experience within the European Union in addressing similar types of agri-environment problem. Many of these differences reflect differences of environment, history and culture with the result that they could not be readily transferable to England. However, there would seem to be some lessons to be learned. Many of the schemes in other countries are directed at solving environmental pollution problems. These have generally not been addressed in England through agri-environment schemes. There would seem to be scope for some degree of redirection in this respect. This need not be in conflict with the polluter pays principle to the extent that it addresses historic problems or problems that arise despite landholder following a code of good farming practice.

In many countries the coverage is much greater than it is in England. To some extent this difference reflects similar factors as the differences noted between the treatment of the upland and lowland areas within England. It is possible too that it reflects a greater concern to maintain agricultural activities when the land might otherwise be abandoned. This will be an increasing concern in England as progress is made towards the fundamental reform of the CAP. The more explicit retention of an income support objective in some countries might have similar roots. It is not clear whether this objective should be interpreted as an objective to retain the land in agricultural use by paying farmers the minimum amount necessary to achieve this in order to maintain environmental and community public goods, or whether the income objective is intended to go further than this. As argued in Section 6, there is a need for greater clarity in terms of the language with which the objectives are articulated.

Beyond agri-environment schemes

9.1 Introduction

We noted in Section 2 that legitimisation of agri-environment schemes requires not only that benefits be seen to exceed costs but that also there should be no more efficient means of provision through the private sector. In this section we consider potential means for the provision of agri-environment benefits beyond those generally included within current agri-environment schemes. In some cases these are closer to the market than the more common approaches and are seen by some as a 'free market' alternative and we review some of these claims. Prior to this, we consider some of the fundamental limits to the implementation of policy through the use of environmental contracts. In some respects, this may effectively be seen as the inverse of the benefits associated with payments by outputs as considered in Section 6. We then review the extent to which alternative approaches might be more efficient in representing the demand for environmental quality and its provision at minimum cost.

9.2 The limits of environmental contracts

Agri-environment schemes are implemented through the use of various types of environmental contract. These are implemented on a voluntary basis between a government agency (DEFRA) and an individual landholder. The contract specifies the actions to be undertaken or not to be undertaken by the landholder and the payments that will be received in return. While this approach represents a significant innovation in policy terms and is as yet relatively underdeveloped, there are a variety of quite fundamental limits of to the general approach.

The determination and specification of target outputs

The objectives for environmental improvement are determined through government at various levels. In the absence of a market, there is no direct evidence of public demand for environmental goods and generally little sensitivity to variations in environmental priorities at the local level. The introduction of consultation in the development of objectives and the decentralisation of target setting helps to address the problem. But the emphasis has tended to be backward-looking, on the protection and re-creation of 'traditional landscapes' despite the fact that such landscapes were the product of historic patterns of prices, technologies and

institutions and may not represent the most appropriate solutions in today's or tomorrow's circumstances, from either supply or demand perspectives. Given the difficulties increasingly being recognised in economic valuation techniques, there is merit in mechanisms through which the public are given an opportunity to express and reveal their preferences for alternative landscapes more directly.

The implementation of policy by means of formal contracts also restricts the range of objectives and requirements that can reasonably be considered. It is in principle necessary to be able to write down the rules that a landholder will have to follow within all likely circumstances and then to be able to monitor and enforce them. The actions required of landholders thus have to be potentially observable. This limits the range of actions that can be introduced and the flexibility in response to changing circumstances or information.

Incentives to evade contract requirements

Assuming that the rules impose a burden on farmers, a profit maximising landholder, as the residual claimant, will always have an incentive to default on aspects of the contract that incur a net cost and which may not be readily observable by the government agency. This is a problem of asymmetric information leading to moral hazard (Latacz-Lohmann, 2000?). This may lead to environmental losses. Prevention will involve monitoring and enforcement costs, for as long as the environmental output continues to be demanded. In fact, property rights are never fully defined and enforced. Lack of information available to each party to an agreement leaves uncertainty as to whether an agreement is fully implemented and it will be impossible to foresee all possible exigencies (Barzel, 1989).

Lack of incentives for entrepreneurship

There are no incentives for producers themselves to seek out methods of reducing costs, especially in individually negotiated contracts. Rather, the problem of asymmetric information suggests that landholders will seek to exaggerate costs. The nature of the contracts may limit the incentives and opportunities for co-operation between landholders, such as in coordination over water level management. Standardised contracts agreed between individual landholders and a government agency are unlikely to have the flexibility to be able to take these opportunities into account. But more generally there is no incentive to act entrepreneurially, to introduce original ideas or to be willing to take risks for the provision of countryside goods.

The transparency and cost of regular payments and the definition of property

The increased use of direct payments in agricultural policy has raised the profile of agricultural support to the general public. This is likely to imply a more critical scrutiny of the legitimacy of these payments and the return gained in competition with the many other demands made for on public expenditure. These transfers are not made without cost, both in terms of the disincentive effects on the economy of the taxation necessary to arise government funds and the transactions costs in implementing government policy. There may thus be public resistance to an indefinite policy of this sort.

Further, the establishment of a higher standard of environmental quality might come to be regarded as the status quo that landowners have a duty to maintain. This might, for example be seen as a duty of sustainable land management or good stewardship and not something for

which farmers should receive regular payment. Again, the implication is that the public could reject the continuation of payments for environmental contracts raising questions about the definition of property itself.

The ecological requirements for habitat creation

Characteristic landscapes and conservation values are generally only created at a landscape scale and over significant periods of time. Remaining sites of high nature conservation value are often small and isolated, threatening the survival of the wildlife populations that are dependent upon them. In some cases they may not be of a sufficient size to sustain a viable wildlife population at all. Thus, the protection of these high value sites often depends upon the land uses in the adjacent wider countryside, by linking existing sites, creating new sites and establishing buffer areas to protect sites from changes in the wider countryside. Small areas created or maintained in isolation may not be effective; they may simply not provide an adequate food supply for a viable wildlife population or else small populations may be at risk from a narrow gene pool or from predators. Scale need not rely on contiguous areas but the area effectively available may be enlarged by linking habitats. There may thus be a need to create lattices of habitat or wildlife corridors in the wider countryside to link isolated sites of high conservation value. This sort of thinking lies behind the Dutch Nature Policy Plan that defines core areas, large areas already of ecological value, nature development areas, where new ecological values can be developed and corridors that connect small nature areas (Horlings and Gersie, 1995).

At the same time, the development of landscape only occurs over significant periods of time and thus relatively long-term agreements are necessary so as to permit the development on new environmental assets. However, once the term of the contract has expired, there can be no guarantee that the conservation assets will continue to be maintained. Even if government continues to offer a contract, higher agricultural prices or new market opportunities may persuade farmers to return to more intensive forms of agricultural production at the expense of any conservation benefits that have been achieved. This also raises questions about the ownership of the environmental assets generated through environmental contracts. The public may feel that they have a proprietary interest in the environmental assets to the extent that they have been created through the contribution of public funds. Farmers may anticipate this problem and so be reluctant to enter into environmental contracts in the first place, the concern being that restrictive designations might subsequently be introduced to protect long term environmental gains.

At the same time, the short term nature of the contract may also be a concern to the landholder. Agri-environment contracts generally require a reduction in fertility that takes place steadily over time. Once a contract has ended it may take the producer some years to return the system to full profitability. Thus the landholder also faces a risk associated with the termination of a contract.

Capturing goodwill

Many landholders are already willing to forego income in order to maintain a certain standard of environmental management. There is recent debate in economics on the extent to which government policies may drive out public spirited behaviour and so potentially be self-defeating (Frey, 1997). In fact it might be argued that the payment of compensation tends to stimulate 'badwill', acting as an incentive to threaten damage, to exaggerate costs and to deny

any personal enjoyment of the environment. Payments for positive actions in preference to compensation for lost opportunities can reduce some of these incentives, but the incentives associated with asymmetric information remain. At the same time, the public is willing to contribute voluntarily towards the conservation of the countryside, through donations, voluntary labour and bequests, but agri-environment schemes fail to promote opportunities for this.

9.3 Alternative approaches towards agri-environment policy

There are thus grounds to examining alternative approaches towards the delivery of agri-environmental benefits. The aim must be to establish institutional arrangements that give all legitimate interests an appropriate opportunity to have an influence on resource allocation decisions and to establish mechanisms whereby funds may be transferred from beneficiaries, or their representatives, to those directly bearing the opportunity costs.

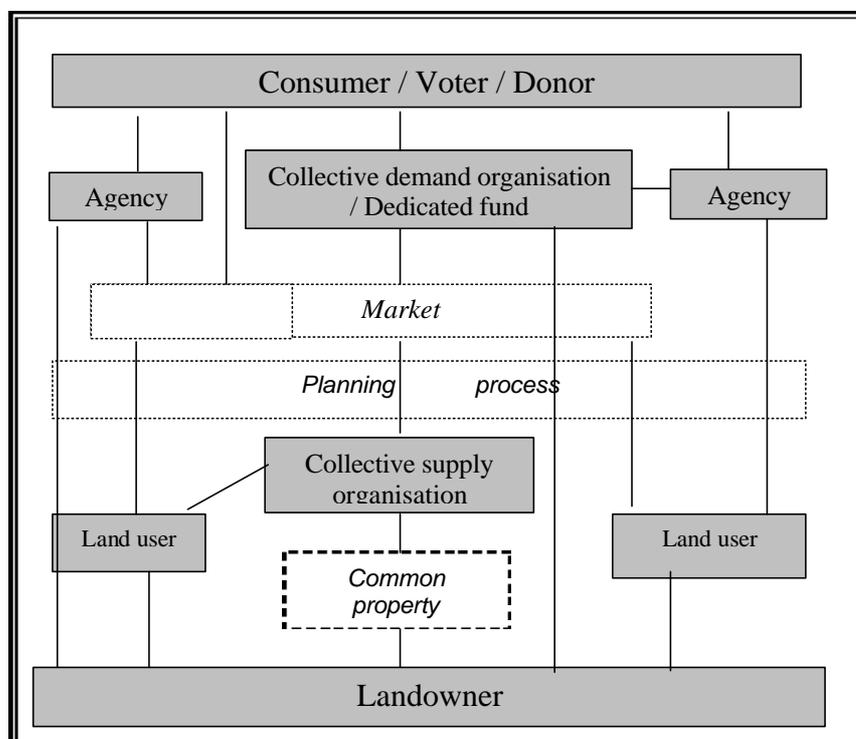


Figure 9.1: Alternative linkages in the provision of agri-environmental benefits

Figure 9.1 illustrates schematically the types of linkages that might be adopted in mechanisms for the provision of agri-environmental benefits. Environmental contracts in agri-environmental schemes are represented by a direct link between an agency and a land user. However, other arrangements may be more effective, in revealing demand within a market context, by establishing incentives for landholders to co-ordinate their actions, or by reducing the requirements for public expenditure. Policies may seek to alter the way in which property is owned or may operate through an intermediary organisation representing

the collective demand of consumers or co-ordinating the actions of suppliers. Arrangements may establish incentives for the owners of land to think entrepreneurially, to develop agri-environmental benefits without regular payments from government and without a continuing burden of transactions costs to the public sector. Opportunities may be developed for landholders and others to make voluntary contributions for the benefit of environmental conservation.

9.4 Market provision

Some markets for agricultural products can generate incentives for the provision of environmental benefits. This relationship could apply in markets for organic products, for certain 'niche' products or for tourism. More careful definition of products and the provision of further information to consumers can enhance the return to production practices that are more consistent with the goals of conservation. This can stimulate markets for quality products that are associated with environmentally friendly agricultural practices, sometimes referred to as 'niche markets' (OECD, 1995). Perhaps the most obvious examples are labelling for organic products or *Appellation d'Origine Contrôlée*. Consumers may be willing to pay a premium for these, either through a belief that the products are of better quality or safer than the alternatives, or for a less direct personal benefit as a contribution to environmental conservation. Land managers who produce both agricultural and tourism products will have an incentive to manage their agricultural activities in such a way as to enhance the environment within which they supply their tourism products.

There is a clear role for government here in establishing and maintaining the markets for such products. Trading rules and product standards themselves have public goods characteristics and there may be increasing returns to scale in the establishment of such markets. The extent to which this offers a means of delivering a higher environmental quality depends on the extent to which the superior environmental quality is necessarily produced jointly with the agricultural or 'niche' product. Some environmental gains are likely to be obtained, but there will generally remain a degree of flexibility in the production relationship such that producers will be unwilling to bear the increased costs of environmental management unless there is a direct return for that activity itself. Thus in none of these contexts is the total demand for the environmental quality likely to be fully transmitted to the land use decision-maker through existing markets. While organic production is generally accepted as providing a higher standard of environmental quality than conventional agriculture¹⁹, demand from consumers is likely to reflect the inherent characteristics of the product to a greater extent than the effects that its production has on the environment²⁰. Niche products represent a more varied group, but the same principles would apply. The position with regard to tourism is rather different in that the goods and services provided by the tourism sector (accommodation, recreational activities, souvenirs) are more often jointly *consumed* with environmental quality. However while farm-based tourism is an exception, they are predominantly supplied separately by different decision-makers. There is typically no market linkage between the economic returns to tourism and the incentives to maintain environmental quality.

¹⁹ The evidence on the environmental impacts of organic farming is examined in detail in Centre for Rural Economics Research (2002)

²⁰ Recent evidence for this is provided in a survey by Datamonitor (*Independent*, 22/3/02)

9.5 Institutional change: defining and rebundling property rights

There are some limited opportunities to create markets for what have traditionally been assumed to be public goods.

Definition of property rights

Institutional changes may be able to promote market opportunities for the provision of agri-environmental benefits. For example, the definition and assignment of rights to non-timber forest products, such as access rights for sport and recreation or rights to harvest medicinal herbs or mushrooms have become significant sources of revenue in some forest areas (e.g. Mendelson, 1994; Merlo, 1995, 1996).

Separating out property rights

It may be possible to partition property rights to certain aspects of environmental quality and for interested individuals or groups to acquire conservation covenants over land use through the market (e.g. Hodge *et al.* 1993; Wiebe and Meinzen-Dick, 1998).

Creating new institutional arrangements

This often relies on means of reducing the costs of exclusion or on new institutional arrangements, such as co-operation amongst suppliers. The sale of licences for access to new, private bridleway networks provides one example.

Similar arguments may be applied to the development of commercial tourism based on the environmental quality of the local area. This may be supported by giving rights to operate tourist enterprises to local communities so that decisions on land use are made by the beneficiaries of tourist activities. Such changes would promote the diversification of farming systems towards a wider range of activities. But it may still fail to provide full market incentives for the production of countryside goods, rather it establishes markets for products with varying degrees of jointness in supply with them. The scope in any particular situation will depend considerably on particular local circumstances. Hence the need for mechanisms that are responsive to the variability in local conditions.

9.6 Demand side institutions

Collective action by demand groups: Conservation Trusts

A number of private sector organisations have objectives which match quite closely those of the state. This is clearly the case in respect of most charities and includes a variety of conservation bodies, several of which have the provision of conservation goods by means of direct management of land among their objectives. Such organisations are referred to as Conservation, Amenity and Recreation Trusts (CARTs) (Dwyer and Hodge, 1996). These are non profit-making organisations with the aim of generating wide public benefit through nature conservation and environmental improvement, provision of amenity and opportunities

for public recreation and conservation of landscape heritage. An illustration of the variety of types of CART found within the UK is shown in Figure 9.2.

While agri-environmental policy involves agreements with existing owners, the CART model implies some change in the character of property owners. An alternative approach is therefore for the state to promote the actions of organisations which have objectives in common with those of the state. This may be done in terms of grants for the purchase of land, contributions towards labour costs and the tax relief generally available to non-profit organisations. Some funds are already provided for this purpose within England and elsewhere. For instance, in the Netherlands, government-assisted land acquisition is a major element of their overall nature management policy. The French also have a large-scale programme of state funded land acquisition for nature management.

The achievement of conservation goals can often require detailed information both about the ecology of the habitat being managed and about the agricultural system which is operated within it. In some circumstances, guidelines for management can provide sufficient information for a farmer without a detailed understanding of the ecosystem involved. However, in other circumstances, for instance where habitat is being re-created or where a rare habitat is being protected against external pressures, then a more proactive form of environmental management may be necessary. This would involve a more regular monitoring of the ecosystem and review of the appropriate management responses. This may require a range of skills which are not always available to the particular landholders who happen to be owners of the relevant conservation sites and may be difficult to write into contractual agreements.

Where such an organisation owns land which is being managed for landscape or wildlife conservation, it will be the residual claimant. As such, it will seek to maximise the value to it of the residual which is left after all costs have been paid. In this case, the value will include the non-monetary value of the conservation goods. The conservation organisation will have an incentive to seek out least cost ways of generating and protecting the conservation values under its particular circumstances. It will be prepared to trade off costs against conservation gains. In this, the implied price of conservation goods may not be different from that implied in government actions. Therefore such organisations will tend to act entrepreneurially, seeking new products and new methods of achieving conservation goals. It will respond to changes in relative prices and technology. This suggests that the conservation organisation will require less detailed monitoring than a conventional landholder and that in the longer term it would be likely to develop more cost-effective methods of conservation management.

Primary conservation CARTs - those for whom nature conservation is their main role, who buy or manage land as nature reserves

e.g. The Wildlife Trusts, Royal Society for the Protection of Birds, Elmley Trust, Otter Trust, Butterfly Conservation, British Herpetological Society

Primary heritage CARTs - those for whom the heritage value of land and landscapes are the main reason for acquiring and managing sites

e.g. National Trust, Landmark Trust; Painshill Park Trust, Elan Valley Trust; Oxford Preservation Trust

Primary amenity and recreation CARTs – groups for whom the ability to provide public recreation and amenity sites is the main reason for acquisition or management

e.g. Buchan Countryside Group, Bryson House Better Belfast Project, Magog Trust, Groundwork Trusts, Shetland Amenity Trust, Shenley Park Trust

Secondary CARTs - largely non-commercial groups whose objectives are mainly elsewhere but whose management of open land follows the same principles as CARTs

e.g. Educational Trusts with environmental emphases [Commonwork, Bridge Trust, Camphill Trusts, Findhorn],

e.g. Recreation groups with 'reserves' or conservation areas [Mountaineering groups, Wildfowling societies, Railway/Canal Trusts]

Source: Dwyer and Hodge (1996)

Figure 9.2: Types of CART

Conservation organisations may also be more flexible and less bureaucratic than many government agencies given their generally smaller size and the lack of democratic accountability. They may be able to respond more rapidly to opportunities which arise, such as in purchasing significant conservation sites when they become available on the market. Such organisations often specialise in particular types of conservation, such as the protection of birds, or may focus their efforts within a particular area. In this way, although they be relatively small organisations, they can build up a level of expertise within their own particular speciality. But at the same time, their activities are likely to be guided by the institutional and financial environment created by government.

*Not 'Free Market Environmentalism'*²¹

The activity of CARTs should not be interpreted as indicating that there is no role for government. Bohman *et al.* (1999) comment that "... multifunctional services do not necessarily require government provision. In some instances, club goods provide an

²¹ This term was coined by Anderson and Leal (1991)

alternative. Organizations like the Nature Conservancy and Ducks Unlimited, through admission and membership fees, finance the preservation of unique ecological niches". Club goods are defined by Bohman et al. (1999) as goods that are relatively non-rival but excludable. But clearly many of the benefits produced by such organisations, especially ecological conservation, are not excludable.

While having similar characteristics, CARTs are not the same as clubs. Clubs are groups of individuals who organise some activity collectively to provide themselves with a particular type of good. They can exploit the advantages of working together, such as economies of size or risk sharing and so achieve an outcome that would not be possible individually. A golf club might operate in this way. However, CARTs differ in having the objective of providing benefits available to all (Dwyer and Hodge, 1996). While clubs will exclude non-members from enjoying the benefits that they provide, CARTs deliberately aim to provide benefits for the general public. While CARTs often do have a membership who may enjoy some exclusive benefits, this is primarily for the purposes of fundraising. At the same time, CARTs are often highly dependent on public funding, including grants for land purchase and management and tax relief. They may also have a particular legal status. Thus the National Trust's powers to covenant and hold land inalienably give it an advantage not available to private organisations.

Policy by intermediary

Rather it may be more appropriate to regard CARTs as a policy by intermediary. A relatively close match between government and CART objectives means that government policy can operate by steering CART activity more readily than is possible by providing incentives to private individuals. This enable government to take advantages of CART entrepreneurship and reduces the level of monitoring costs.

Clearly CARTs as landholders do already benefit from agri-environment schemes. While this is important in facilitating certain activities, such funding does not support other sorts of activities, such as land purchase or the more general administrative requirements of organisations.

Dedicated funds

In many contexts there is no immediate way in which a linkage can be established between the demand for environmental quality and the decision makers who manage the environment. In such cases it may be possible to establish a fund operated to support environmental enhancement either within a local area or for a particular type of conservation. There are three main elements: fundraising, fund consolidation and disbursement, and some arrangement for the control of land. Expenditure from the fund is restricted to activities that advance the conservation objective.

Funds may be raised in various ways, depending on circumstances and objectives. They have been reviewed by Environmental Resources Limited (1993) and P A Cambridge Economic Consultants (1992). In some cases there may be opportunities for user charges. Charges may be more or less directly related to the benefit that the payer gets from the natural resources of the area and opportunities for this will depend on the nature of the benefits and the existence of property rights. This would implement a beneficiary pays principle. In such cases the

fund will be needed where those who are able to extract charges from visitors are not the same as those who would bear the opportunity costs of environmental management. Thus there is a need for some sort of redistributive mechanism.

As an alternative to a user charge it may be possible to raise a tax that is in some way linked to the benefit from the environmental quality. In practice, the distinction between a user charge and a tax may not be clear-cut, particularly as the item charged for becomes more remote from the direct consumption of the natural resource. Examples of taxes would be a bed tax charged on tourists staying in an area or airport taxes. There have for instance been suggestions for a tax on walking boots to help pay for the maintenance of footpaths. Two difficulties here are that the level of tax paid may not be closely related to the extent of the benefit which is gained from the amenity and secondly, in the United Kingdom at least, that the Treasury is generally unwilling to accept hypothecation; i.e. restricting the expenditure of revenue from a tax to specific purposes. Against this, experimental results suggest that people may prefer to make payments to a dedicated fund rather than to a general tax. Knetsch (1995) comments that “the feeling of loss is reduced if the funds are seen to be spent for actions related to the purpose for which the money was taken”. In practice taxes may have an additional objective of limiting the impacts of tourism or recreation to limit the external costs of these activities, although there is no reason to believe that a single rate could meet funding raising and internalisation objectives simultaneously.

Finally, donations may be solicited from those benefiting from the quality of the local environment on a voluntary basis, from the users directly, from firms whose business depends upon it in some way, or from people who have no direct connection with the area. Collection methods may range from simple collection boxes to more complex schemes such as linking payments to the use of particular credit cards. A few business chains have instituted a ‘voluntary dollar’ scheme, whereby customers are encouraged to make a voluntary donation that will be matched by the firm. Given the probable limits of voluntary donations, particularly because the public good nature of the benefits, more rigorous approaches are likely to be desirable.

The fund may be administered and used in many ways to promote local conservation. It may be operated by a local government or some non-governmental body. It may be used to finance environmental contracts or be directed through CARTs. Some illustrations of private dedicated environmental funds are shown in Figure 9.3. In practice these organisations become involved in a range of different types of activity in support of the environment so that the distinctions between the types of organisations are not always straightforward.

As with CARTs there are potential problems of unbalanced decision-making and poor financial management. Some sort of regulatory regime would be appropriate for funds that are not directly managed within the public sector.

Local area funds

Amenity societies and groups have developed in many areas to promote the conservation of a characteristic local environment. This sometimes is limited to seeking to apply political pressures, often to prevent local development. But these groups can also be active in securing funds and then providing advice and allocating grants for environmental improvements.

Friends of the Lake District was established to protect the natural beauty of the Lake District and the surrounding countryside. Among other activities, the group provides financial help for projects which will enhance the landscape and improve village amenities.

Environmental feature funds

Some organisations concentrate on specific components of the environment or types of habitat. At the same time they also generally have an association with a particular locality which acts as a focus for fundraising.

West Country Rivers Trust is an independent charitable organisation established in 1995 to protect and enhance the rivers and streams in the west of England through working with landowners. They raise funds for specific river projects and concentrate on creating practical improvements and enlightening attitudes towards river rehabilitation.

Species funds

Some organisations are established to promote the conservation of particular, usually emblematic, species seen to be at risk from environmental changes.

The Hawk Trust is dedicated to the conservation and appreciation of all birds of prey including owls, in particular species native to the UK. The Trust's policy is to promote the enhancement of farmland, woodland and upland bird communities, working closely with landowners, farmers, foresters and gamekeepers.

Figure 9.3: Types of dedicated fund

There is little systematic information on the operation of such funds, how they raise finance or how they are managed and controlled. It might be argued that the presence of such funds may help to reveal consumers preferences by providing an opportunity to make contributions towards valued environments. But there is still likely to be a limit to the extent to which they are able to capture fully the public good benefits that they provide due to the free rider problem.

9.7 Collective action by suppliers

Local landholders may take action collectively in order to achieve some co-ordinated land management towards a common goal. Co-operation in the purchase and use of inputs or in

the sale of outputs is common amongst farmers. Co-operation in the management of the environment depends more on the local environmental context and in the past has often been stimulated by the need to achieve certain conditions for agricultural production. The aim in the context of the provision of agri-environment benefits is to establish the conditions where groups of landholders within local areas can agree to adopt a co-ordinated or collective approach to resource management. There is thus a need to identify appropriate areas and to set an agreed approach to management. There is scope for the creation of new organisations within which common management decisions may be taken.

We noted in the context of payments by results that such an approach would create incentives for co-ordination amongst farmers in the provision of agri-environmental benefits. But even in the absence of this type of payment system it would be possible for government to promote such incentives. One way would be for the offer of contracts between DEFRA and groups of landholders (and potentially non-landholders). The conditions could be similar to those offered in individual contracts but the arrangements amongst the landholders would be left up to the discretion of the group. This would establish an incentive for the groups to exploit potential economies of size, perhaps in the acquisition of specialist and location specific information or in water level management (Hodge and McNally, 2000). This might also address the problem with individual contracts being unattractive to high cost entrants who, by not participating might prevent the participation of other local landholders. A collective scheme could recognise the legitimate claims that some individuals face higher costs and allocate the funds to them accordingly. There would also be an incentive amongst the group to monitor each others' behaviour and reduce government transactions costs.

At the same time, there are also risks, as reflected in the problems associated with the management of the upland commons. In the absence of an effective management regime, common property can descend into open access, where there are essentially no rules governing the way in which a resource is managed. In such cases, the option is either to privatise or to re-establish a system of collective management.

The Australian Landcare Program

The Landcare program in Australia has received considerable attention, suggesting a potential means by which landholders may be encouraged to improve their standards of resource management through collective action. It is described by Curtis and De Lacy (1998) as an important example of state-sponsored community participation in natural resource management.

Landcare is a locally-based approach to resolving environmental problems and protecting natural resources through collective activity. The approach was first introduced in Victoria in the mid 1980s and in 2001 there were more than 4,500 Landcare groups in Australia, including about 40% of all farmers. Initial government funding of some \$320 over 10 years was provided and this has been extended more recently by a \$1.25 billion programme over 5 years. A National Landcare Program provides an integrated funding scheme that seeks to combine nature, soil and water conservation in Landcare. It was established in 1992 to provide support from the Federal Government with the following objectives (Natural Heritage Trust, 2001) through working with all levels of government, industry and the community, to:

- assist in enhancing the long-term productivity of natural resources in Australia;
- promote community, industry and governmental partnership in the management of natural resources in Australia;
- assist in establishing institutional arrangements to develop and implement policies, programs and practices that will encourage the sustainable use of natural resources in Australia;
- assist in developing approaches that will help resolve conflict over access to natural resources in Australia; and
- assist in raising the natural resource and business management skills of landholders.

Rural communities were urged to form Landcare groups on the basis that individuals working on their own could not solve key issues such as salinity, soil erosion or weeds or animal pests. Membership would help landholders to share problems and ideas, working together to tackle problems more effectively; learning about land management at the property and catchment levels; accessing financial and technical assistance from government; and having greater opportunities for social interaction. Membership of Landcare groups is voluntary and open to any local person. There is no prescribed approach to Landcare groups, allowing communities to adapt to local circumstances and membership.

Curtis and De Lacy (1998) list the activities that Landcare groups have engaged in. Landcare groups hold meetings to discuss issues, identify priorities, develop action strategies and debate a range of resource management issues; conduct field days and farm walks and establish demonstrations sites; undertake a variety of educational and promotional activities such as hosting tours and other community groups, organise conferences, write newsletters and field guides, and prepare media releases; carry out a range of on-ground work including seed collection and tree planting, construct structures to control salinity and soil erosion, co-ordinate pest animal and weed control, and erect fencing to control stock access to creeks and streams and establish wildlife corridors; co-ordinate planning activities related to property and catchment planning, and are involved in the preparation of submissions for government funding.

Landcare groups have been effective in mobilising the participation of a large section of the rural population, promoting extensive community development activities and accomplishing on-ground work which is likely to have had a significant impact on land and water degradation at the local level. However, Curtis and De Lacy (1998) comment that “it would be unreasonable to expect Landcare to have made measurable improvements in environmental conditions, landholder viability or public health at the landscape scale”. At the start of the program it had been anticipated that Landcare would lead to significant changes in attitudes towards stewardship and hence to behavioural change. While some claim that this has happened, surveys of participants and non-participants in some areas found no evidence of differences between them. On the other hand, participation is associated with concerns about the economic impacts of degradation (Curtis and De Lacy, 1998).

A relatively recent phenomenon has been the trend for Landcare groups themselves to join together to form networks which act as umbrella organisations. These networks typically exhibit a more professional management approach and operate more independently of government than do most groups. Sobels, *et al.* (2001) refer to previous research indicating that Landcare networks can “deliver cost-effective co-ordination within and between groups, establish effective communication structures, increase access to resources, increase on-

ground works, recruit skilled community leaders, add to the power of groups and establish a regional sense of ‘community’”. They appear to bridge the gap between local landholders and regional planning bodies. The authors explain the success of these networks in terms of social capital, building trust to facilitate communication and reduce transactions costs. New linkages have intensified a sense of shared local /regional identity, increased knowledge exchange, increased opportunities to learn and provided more leadership roles.

There are however some limitations. Doubts have been expressed as to Landcare’s contribution to biodiversity, although Curtis and De Lacy argue that this is unjustified. Landcare participants are more likely to have larger holdings, to be more profitable landholders and a small number of groups have had access to disproportionate amount of Landcare funding (Curtis and De Lacy, 1998). There are concerns that the resources available to Landcare groups are excessively restricted and that there has been a failure to provide long-term funding for group co-ordination. It is argued that state governments have taken advantage of the availability of federal funds to reduce their own expenditures in rural areas.

Landcare has mobilised a large cross-section of the rural population, increased awareness of issues, enhanced landowner knowledge and skills and made a difference to the adoption of best-bet management practices. Despite the success of Landcare as a major social movement in rural Australia, Toyne and Farley comment that resource problems are continuing to worsen. Landcare groups have only had a marginal direct impact on environmental actions, which are on the whole initiated and paid for by individual farmers. They suggest that further progress is likely to be made by providing further funding for work on private land that generates identifiable community benefits. In return, landholders should accept the goal of sustainable land use and independent verification of the process towards it. This implies the concept of a ‘social contract’ between community and land users (Toyne and Farley, 2000).

The agricultural circumstances in the UK are very different from those in Australia. The significant resource management problems in Australia are primarily directly associated with the agricultural productivity of the land in the form of soil degradation, water pollution, salinity and the control of feral and native animal populations. This establishes a direct incentive for primary producers to become involved in Landcare groups. The concentration of the Australian population in a small number of major conurbations and the sparsity of settlement in the rural areas mean that there is almost no direct contact between primary producers and the general public. There are though no doubt lessons that can be taken from the Landcare experience. Collective action amongst farmers can support conservation by improving the exchange of information and promoting economies of co-operative activity. The building of social capital can reduce transactions costs. There is some commercial sponsorship for Landcare groups that might suggest options for similar support in England. Finally the involvement of non-farm residents and interests in Landcare groups would seem to be an aspect that might be more relevant to circumstances in England.

9.8 Conclusions

New priorities for the management of rural land create the need for new institutions. The existing institutions have developed primarily in order to facilitate the production of agricultural products at minimum cost. This represents a complex task in view of the diverse range of goods demanded, their public good characteristics and the range of environments

within which they are to be supplied. The aims of the mechanisms are to generate heterogeneity rather than homogeneity.

The voluntary provision of environmental benefits is probably more developed within the UK than it is in many other countries. However, while the voluntary approach does have a number of advantages, in practice relatively little of this activity is legitimately regarded as wholly 'free market'. The objective of the activity is typically to provide benefits well beyond any group of 'members' and the state typically plays a fundamental role in facilitation and support. There are a number of institutional arrangements that may promote voluntary agri-environment provision, including conservation covenants, Conservation Amenity and Recreation Trusts (CARTs) and the operation of dedicated funds.

The issue is one of finding an appropriate balance between the role of the private sector and public sector guidance and provision. There is also a need for a balance to be struck between government support for voluntary provision and the more direct provision that is undertaken by government through the existing agri-environment schemes. At present the two different approaches operate quite independently with little agri-environment funding being directed through the voluntary sector. While there may be some scope for addressing this balance in the short term, the more significant implication is probably for the longer-term development of agri-environment policy.

An approach to agri-environment schemes

10.1 Current proposals

Amongst a number of reviews of various aspects of agri-environmental policies, two have made specific proposals for the further development of policy. In 2001, Wildlife and Countryside Link²² proposed a ‘Green Print for the Future of Agri-environment Schemes in England’ (Dwyer, 2001). The Policy Commission on the Future of Farming and Food²³ reported in January 2002.

The Wildlife Link report followed a series of four workshops, three regional and one national, in the first half of 2001 involving a wide range of environmental NGOs, government agencies and farming and landowning interests. The national workshop took a series of central issues that had emerged from the regional workshops and developed them further through two working group sessions. Following from this, a ten-point action plan was prepared. The points are outlined in Figure 10.1.

The Policy Commission on the Future of Farming and Food (2002) argue for “a world where a healthy and attractive environment is respected and fostered by farming and food production again”. And that “moreover, we want to these benefits to some degree across the countryside at large. We do not believe that many would want to see a polarised countryside, with some areas zoned for intensive production while others are turned over to environmental theme parks”(p70). The Commission comments on “the pressing environmental problems in the countryside, and some of them – poor water quality, general loss and degradation of landscape features and archaeological sites, loss of species like the brown hare in western England, the skylark everywhere and the cornflower almost to the point of extinction – will not be solved by protecting isolated islands of countryside” (p79). However, “It will be

²² Wildlife and Countryside Link brings together 35 voluntary organisations concerned with the conservation and protection of wildlife and the countryside.

²³ The Policy Commission on the Future of Farming and Food was appointed following the Foot and Mouth outbreak in August 2001 to “advise the Government on how we can create a sustainable, competitive and diverse farming and food sector which contributes to a thriving and sustainable rural economy, advances environmental, economic, health and animal welfare goals, and is consistent with the Government’s aims for Common Agricultural Policy (CAP) reform, enlargement of the EU and increased trade liberalisation”.

necessary to prioritise. Some landscapes because of their special value deserve special treatment, while for others a less prescriptive approach will be appropriate” (p71).

Ten Point Action Plan

- 1** Create a much larger, unified scheme to involve the vast majority of farmers in England and deliver a broad range of environmental benefits across the country.

Building this national scheme, the Government needs to take the following five steps:

- combine Countryside Stewardship (CS), Environmentally Sensitive Areas (ESAs) and the Farm Woodland Premium Scheme (FWPS) into a single national scheme;
- allow for much greater local variation in payments, detailed targets and management guidance reflecting local needs and priorities, using local environmental and farming knowledge;
- broaden the environmental focus of schemes;
- reward the management of existing environmental value and encourage an enhanced standard of environmental management across the **whole** farm; and
- significantly increase the budget for agri-environment schemes, through UK funding and further CAP reform.

- 2** Reform payment rate calculations to ensure that payments reflect the true costs of management and planning to achieve environmental outputs.
- 3** Place new emphasis upon achieving area-wide benefits at a landscape scale.
- 4** Improve the delivery of schemes and their benefits through stronger shared ownership between community, environmental and farming partners, allowing more flexibility for schemes to address local conditions.
- 5** Make the most of the experience, enthusiasm and capacity for innovation shown by farmers who are already involved in schemes.
- 6** Ensure integrated high-quality advice and support which works with the business needs as well as the environmental potential of each applicant or agreement holder.
- 7** Strengthen local rural development links, recognising that agri-environment schemes need to be compatible with thriving businesses, involve local communities and work with other regional and local initiatives.
- 8** Develop a national strategy to promote agri-environment schemes in order to raise awareness of the real benefits of the schemes and strengthen the case for their expansion.
- 9** Strengthen the links between agri-environment schemes and other mechanisms, including regulation and cross compliance. Agri-environment schemes should stand on a foundation of environmental regulation and ‘good farming practice’ that protects the countryside against pollution and the destruction of valuable or irreplaceable environmental features and assets.
- 10** Continue to press for further reform of the CAP, ending farm subsidies that cause environmental damage and increasing resources available for rural development.

Source: Dwyer (2001)

Figure 10.1: Wildlife Link Ten Point Action Plan

The Policy Commission believe that existing agri-environment schemes should continue as a more intensive approach to conservation enhancing and restoring special habitats and areas of

environmental value. However the existing schemes should be merged to become the upper tiers of a new single stewardship scheme, and should at least retain their current level of spending. Streamlining and simplification would permit a reduction of transactions costs from their present level of 25% of total programme spend.

In addition there should be a broad and shallow, 'entry level' stewardship tier aimed potentially at all land managers. There would through be a separate approach in the uplands from that applied elsewhere. Entry to the basic stewardship tier should be linked to the preparation of a whole farm environmental plan and audit, for which a one-off payment should be made. The resulting farm map and plan should provide the basis for agreement on how the prescriptions within the basic tier of stewardship could be applied on that farm. The audit should cover natural resource protection as well as conservation issues. It should examine the farm against the existing and forthcoming legislative requirements in order to help farmers to identify and plan for the changes that they will need to make to meet forthcoming legislation. It is hoped that this would reduce the future burden of regulation. This audit and plan should be grafted onto the existing annual Integrated Administrative and Control System (IACS) return which will need to be paired with Geographical Information System (GIS) capacity.

Farmers who pass through the audit into the new basic tier of stewardship should receive annual payments calculated on a flat per hectare basis, set to cover farmers' costs and deliver an incentive to participate in the scheme over other alternative land uses. However, "so long as this did not make the scheme too complex" different rates could be payable to different regions and sectors to bring a measure of targeting into the system, and reflecting that farmers' costs of entering the scheme will not be the same for all prescriptions across all areas of the country.

In return land managers would have to engage for at least five years in a menu of simple but effective environmental management practices across the farm. As a general condition of receiving support under the scheme, recipients would be expected to implement good practice, such as that set out in the Codes of Good Agricultural Practice, to prevent and control pollution. "Participation in assurance schemes that include this good practice would provide a mechanism for farmers to demonstrate compliance with this condition" (p83).

It is suggested that the specific requirements of the scheme follow prescriptions for lowland arable and livestock farms suggested by RSPB, English Nature and the Game Conservancy Trust, such as for grass margins along field boundaries. Details of the managers' chosen options would be marked on the map prepared as part of the farm audit and monitoring would be undertaken together with current IACS monitoring arrangements.

In the uplands, the existing Hill Farm Allowance together with receipts from modulation to become a single 'broad and shallow' scheme for the hill areas.

10.2 Aims of agri-environment policy

Agri-environment policy dates from the mid 1980s. As such it has a relatively short history. An objective for government to seek to promote a particular rural environment in order to promote public enjoyment and resource conservation is a novel one. There is thus a need to consolidate on the experience gained so far.

At the same time, the circumstances of agri-environment policy have changed since the 1980s. At that time there were considerable pressures for the intensification of agriculture and the priority was to prevent the damage to agricultural landscapes and wildlife in the wider countryside in a cost-effective way. The circumstances have changed. While agricultural practices continue to have major environmental impact, in part at least due to excessive intensity, there are also concerns associated with low levels of agricultural incomes and the potential implications of fundamental agricultural policy reform. This raises new questions as to what mechanisms may be put in place to maintain the agricultural activities that are required to deliver environmental objectives in a form can be defended against 'free trade' interests in WTO negotiations.

It is also appropriate to review whether the present approach to agri-environment schemes is delivering the appropriate range of environmental benefits. A recent report by DEFRA (2002) has summarised evidence of the possible value of external costs associated with agriculture. This suggests substantial impacts from diffuse sources. The Policy Commission (2002) (p79) has suggested that these broader impacts will not be solved by means of the current approach to agri-environment schemes that are targeted on a relatively small proportion of the agricultural area. We have argued too that the present approach may be excessively directed towards 'amenity' outputs that can be directly appreciated by the general public rather than towards the maintenance of ecosystem functions and that the approach to evaluation may miss benefits associated with the reductions in external costs.

This re-focussing of concern might imply a lesser emphasis on the 'agri'- environment, and a greater emphasis on the broader 'rural' environment. This would suggest that less weight should be given to an aim to protect or resurrect 'traditional' farming systems and more weight to delivering new agricultural systems and land uses that meet the wider public interest.

Finally, it is appropriate to anticipate systems of agri-environmental payments that can be independent of traditional CAP support mechanisms and thus WTO proof. This clearly cannot mean that government should not make payments to farmers for the legitimate delivery of environmental conservation and enhancement but rather that agri-environmental schemes should meet certain criteria, such as those discussed by Ervin (1999) or Latacz-Lohmann and Hodge (2001).

As a means of working through the issues raised and their implications, we sketch out an overall approach towards agri-environment policy. While we do propose various detailed aspects of the approach, further analysis would be necessary before it could simply be adopted. Rather, we offer the discussion as a 'thought-experiment' designed to organise the analysis and work through the questions that need to be addressed. In particular the alternatives are not costed and we do not suggest a balance of expenditure towards the different elements. Adoption would also depend on external factors, especially the extent and rate of reform of other elements of the CAP. Comprehensive reform would permit a more radical approach to be adopted, permitting agri-environment schemes to cover considerably larger areas. Marginal change from the present position would only permit marginal expansion of the approach.

10.3 Basic requirement for good agricultural practice

A basic element of an agri-environment policy is needed to establish explicitly the basic requirements of landholding. These define the reference level of property rights and hence of environmental quality. They thus define the activities that may legitimately receive payment from government. This element of policy is currently recognised through the requirements in ESAs and CSS that participants are required to meet the conditions of the Codes of Good Farming Practice.

10.4 A broad and shallow scheme: basic land stewardship

What do we mean by 'broad and shallow'?

The possibility of introducing a more inclusive environmental scheme has received considerable attention, although as we have seen above, there are differences of opinion as to what this should imply. The 'broad' tends to relate to spatial coverage although Wildlife Link (2001) also argue that it should cover a wider set of environmental issues than are currently considered. Therefore, biodiversity, archaeology and resource protection would be given greater weight against landscape, amenity and wildlife. As we have seen, agri-environmental schemes on other EU member states often cover a substantially larger proportion of agricultural land.

The general perception is that the objective should be a basic level of environmental enhancement or protection implemented over a much wider area. Therefore the shallow relates to the demands put on managers but it also relates to the demands placed on administration. For example the Policy Commission argues that such a scheme should have a simpler set of targets with lower transactions costs. It should be able to be remotely monitored (cutting down on administrative costs) and that it should be non-competitive. This would attract wider participation and reduce the administration costs of entry procedures.

Rationale

A broad and shallow scheme, perhaps termed a Land Stewardship Standard, offers a number of possible advantages:

- There is scope for broader environmental enhancement. A broader coverage will benefit some species of plants and wildlife that the more targeted approach does not reach. This is particularly the case for farmland birds (one of the key sustainability indicators for government).
- The European experience with set-aside does indicate the environmental advantages of a scheme reducing agricultural intensity across a broad area. This is particularly relevant for intensively farmed areas. The Court of Auditors (2000) noted that relatively little benefit was gained from agri-environmental schemes in intensively farmed areas. But reform of the CAP (and potentially conditions in world markets) will remove the need for supply control mechanism of this sort.
- In Less Favoured Areas there is a widespread threat to maintenance of farming and the protection of the environment may be seen to be the primary rationale for public support

for farming. Neither the threat nor the environmental value is confined to the ESAs. The CSS does not fill the same role outside of the ESAs given its focus on enhancement, and in any case many farmers in the Less Favoured Areas (LFAs) may not be able to reach the standards required for acceptance. Therefore a broader environmental policy has the ability to maintain and enhance the desired environment.

- We have also argued that the location of ESAs may no longer reflect the main threats to rural environmental quality. A broader scheme would avoid this inflexibility in the face of changing agri-environmental priorities.
- The comprehensive administrative system under IACS and the digitisation of farm maps gives capability for administration of broad and shallow scheme at relatively low cost.
- There are also equity issues concerned with a broad and shallow scheme. As the Policy Commission notes if modulation is increased to fund rural development and environmental schemes, such a scheme would offer those whose income is reduced the opportunity to get their money back. This may offset some of the distributional concerns that are raised over the move from production support to broader support of the rural economy.

Wildlife link argue that it needs to be based on the twin concepts of rewarding the management of existing environmental value on each farm and encouraging an enhanced standard of environmental management across its whole area. This is important and relates to the perceived problem of the CSS which appears to penalise those who have maintained the countryside as opposed to those who have been poor environmental managers.

Implementation

There is clearly considerable scope for debate over what could be included. The circumstances are rather different in the LFAs as compared with other areas and, as suggested by the Policy Commission, we would propose a separate scheme.

In LFAs a Hill Farm Environment Scheme might operate combining the Hill Farm Allowance (HFA) with the lower tiers of the ESAs. Payment may be attained through checking certain questions on IACS form, as is the case with the environmental enhancements in the HFA. These might relate to simple verifiable characteristics, such as stocking traditional breeds, length of stone walls being maintained, field size, altitude, heather cover, and so on).

Outside the LFAs we suggest three potential models:

- The Policy Commission approach based on whole farm schemes entered on completion of a whole farm environmental plan and audit. Whole farm audit might be offered through a variety of routes, such as by farm assurance schemes, LEAF, registered organic producers or farmers adopting Integrated Farm Management techniques.
- A competitive tendering scheme for land diversion (CRER, 2001). Landholders would offer to divert land for conservation uses, such as uncropped fields and field margins, over wintered stubbles or buffer strips. Bids would be made by completion of a simple form. Bids would be scored centrally and those offering best value for money would be accepted. Enforcement would be through the IACS process.

- A simple IACS check box scheme open freely to all. Questions could offer similar options to those in the competitive scheme. It might also include extensification of grazing for livestock farms. With this approach too, it would be possible to give a higher payment for farms achieving certain audit standards, but this would not be a condition of entry.

It may be possible to envisage other considerations such as adopting practices such as zero till and other soil conservation techniques. This for example may offer benefits in reduced greenhouse gas emissions. It might also be possible to incorporate support for energy crops within such a wider environmental scheme. The aim here would be to reflect any environmental benefits associated with the production processes involved.

These alternatives highlight the fundamental trade off between the complexity of entry and the level of environmental enhancement. A whole farm plan and audit would involve a greater amount of work and so, to some degree at least, deter entry. However it would ensure that greater benefit is achieved than would be the case with a more simple scheme.

Similar trade offs can be found in terms of what is included. If the scheme is more ambitious in its coverage then this may reduce the simplicity of operation. For example if soil conservation measures are included compared to just leaving field margins uncultivated, then the complexity will increase.

A similar issue concerns whether the scheme should differ between locations. We have already argued that it should vary between upland and lowland areas. There may though also be a case for spatial targeting through payment differentials. This could arise if it is felt that the benefits from the scheme are greater in some areas than others. It may be necessary to offer higher payments to attract sufficient area into schemes in the more productive agricultural areas.

The choice between the alternative models depend on a number of factors, especially the funding available and the priority to expand the area under agri-environment schemes in the short to medium term. Clearly, at a given level of payment, the rate of expansion will depend on the ease of entry. A scheme requiring audits and whole farm plans has a number of desirable qualities, as discussed by the Policy Commission, but is likely to be adopted at a slower rate than one that is simply based on entry based on ticking options on an IACS form.

There may be a number of advantages in a more rapid transition. In the context of radical CAP reform there may be some urgency in getting payments to farmers in order to avoid the potential environmental damage that could be associated with structural change following from CAP liberalisation. We may note the experience in Ireland where a general scheme based on whole farm plans attracted some 30% of agricultural land over a period of five years. A proportion of farmers may find difficulty in meeting the audit requirements. Such farmers, and as a consequence the environmental standards of their holdings, may also be particularly vulnerable to the loss of support from policy reform. A simple scheme would enable them to be brought into a scheme rapidly so as to offer some means of support in the short term. In the longer term, it may still be desirable to introduce audits and farm plans.

10.5 Wildlife, landscape and resource enhancement scheme

Rationale

The ESAs have commonly been described as the ‘flagship’ of agri-environment policy. But the planned pattern of expenditure in the ERDP clearly relegates ESAs below CSS in this respect. Several proposals have been made for a merger between ESAs and CSS, such as Wildlife Link and the Policy Commission. Such an integrated approach has already been adopted in Scotland and Wales. Experience there suggests that there are potential advantages, but also potential problems, particularly in achieving an appropriate calibration of the system for scoring and ranking applications.

Within England, the increasing complexity of the ESAs suggests that in some respects, the schemes have anyway become more similar over time. This reflects the shift from the original purpose of ESAs in preventing environmental damage associated with intensification towards a greater emphasis on environmental enhancement. In any case, we envisage that at least some of the burden over the control of the intensity of agriculture will be taken by the broad and shallow scheme. Further, the uncertain optimality of the location of ESAs coupled with the changing nature of the objectives, do suggest the existing spatial pattern of ESAs may not be ideal and that there could be an advantage to the more flexible CSS approach.

While any comparison of the relative success of the two schemes is difficult, analysis does suggest that objectives under the CSS approach can be more readily tailored to specific situations and that CSS operates at relatively lower cost in terms of the rate of reimbursement. Of course, not all will see this as an advantage.

The most obvious possible drawback to the CSS model would be that it may involve higher administrative costs. DEFRA has been unable to supply us with any comparative data that could shed light on this and it is an issue that deserves further analysis. However, the increasing complexity of the ESA approach adopted in practice might suggest that administrative costs of the two approaches would become more similar. We assume that the greater administrative intensity is justified for a scheme operating above the broad and shallow scheme.

Scheme operation

This element of our agri-environment programme would provide a unified scheme procuring environmental protection and enhancement of wildlife, landscape, heritage and access. It would represent the tiers across the range of environmental objectives covered in ESAs beyond the opportunities under the broad and shallow scheme, together with CSS. It would be open to all agricultural and non-agricultural land and non-farming landowners and managers, including voluntary bodies, local authorities and community groups, as is the case currently with CSS.

We would expect this to be a whole farm scheme, reflecting the advantages of encouraging farmers to develop farm plans and promoting the farm audit approach advocated by the Policy Commission (2002). ESAs would close to new entrants and participants would be

expected to convert to the new unified scheme as ESA contracts reached the end of their terms.

Applications would be made in the same way as to the CSS which would need to demonstrate the benefits to be provided or maintained. Acceptance would be discretionary, with applications accepted selectively on the basis of scores giving priority for sensitive and valued habitats and features. These would take account of both the supply side (the scarcity of wildlife and landscape, the capacity of particular locations to deliver environmental outputs) and the demand side (the value of environmental benefits provided at particular locations, reflecting local population size and preferences). Increased weight might be given to resource conservation and the protection of ecosystem functions to take account of the objective of sustainable development.

It may be appropriate for a greater degree of decentralisation in setting the objectives, criteria to be applied in scoring applications and the terms of agreements. There would be scope for varying the rates of payment offered in order to achieve regional or local uptake targets. Indeed it may be possible to develop locally specific menus reflecting natural area / countryside character priorities and local interests. The general aim in selecting applications would be to maximise the value of benefits generated per unit expenditure. National and regional policy priorities would feed into the criteria applied to enhance coherence with other policies, such as UK BAP, designated sites and areas (SACs, AONBs and Public Service Agreements).

There are clearly significant interactions between the management of SSSIs and the achievement of targets for them to be in good condition. As a basic requirement, such considerations would be taken into account in seeking and prioritising applications. But closer integration might be achieved by incorporating the Wildlife Enhancement Scheme into this unified scheme. In some circumstances the state of an SSSI might depend on the management of the surrounding countryside. A judgement then has to be made as to what balance there should be between funds expended on the management of the SSSI itself and on the management of the surrounding area. This suggests that there should be a single process within which such decisions are taken. It might also provide a means for the application of CAP funds towards the maintenance of SSSIs. However, this would present a problem for compliance with EU audit rules so that it would be necessary for DEFRA (RDS) to take over the administration of the payment system from English Nature.

10.6 Collective initiatives for environmental enhancement

Rationale

We have argued that in certain circumstances there is a need for a high degree of co-ordination amongst landholders in the delivery of environmental benefits. Local landholders may take action collectively in order to achieve some co-ordinated land management towards the provision of agri-environmental benefits. The potential for collective provision depends on the local environmental context. The aim would be to establish the conditions where groups of landholders within local areas can agree to adopt a collective to environmental and resource management. There is thus a need to identify appropriate areas and to set an agreed approach to management.

There are moves towards more collective approaches in other European member states, such as the encouragement of collective bids to the CTE scheme in France or the introduction of collective nature plans in Denmark. Experience with Landcare also indicate the potential significance of the approach.

Scheme operation

This element of the agri-environment programme would provide funding on a competitive basis for collective applications. There is already a precedent for this in the way in which commons associations can be funded under CSS. The Supplement for Upland Commons Management item under the CSS sets out to address the low uptake of common land achieved in agri-environment schemes, 'even though many commons are of significant wildlife, historic and landscape importance'. The CSS item pays a supplement on the main items for managing upland moorland at a rate of £5 per hectare per year. It is paid to administering bodies for the commoners for them to distribute 'accordingly'. The ERDP notes that even with this extra amount, the payment remains within the 120% limit.

This scheme would build on the rules and practices under the unified scheme described above, but would consider a single application from a group of landholders and would offer funds explicitly to address the transactions costs, such as for the support for institutional development, and may pay higher rates in critical locations or for more valuable environmental outputs. We anticipate that the process of developing an application and the greater flexibility for varying requirements and payment rates amongst the members of the group would do more to stimulate genuinely co-operative activity. There may be scope to introduce initiatives for this type of scheme in the form of Special Projects as currently constituted under the CSS.

The focus on collective action and institution building would give this element of the agri-environment programme some parallels with the LEADER programme. The LEADER Programme (MAFF, 2000) sets out proposals for involving local communities in developing and testing innovative approaches to integrated and sustainable development. The focus is on local development strategies drawn up and implemented by local action groups, essentially local partnerships, involving representative sectors of the local community. Implementation is through small scale, innovative projects.

In its early stages, the approach would be innovative with the aim, again in parallel with LEADER, of supporting the best and most original strategies and projects which will promote sustainable development. In the longer term, as with LEADER, consideration needs to be given as to how the social capital created through the programme may be sustained in the future. The main distinction from LEADER is in that the primary objective would be the delivery of environmental benefits. Although even here it is to be anticipated that there would also be social and economic advantages arising from the projects supported.

This type of approach could have application in a number of environmental contexts:

- Furthering the opportunities for institutional development of commons associations in the uplands.
- Incentives for the development of Internal Drainage Boards as providers of environmental enhancement (see Hodge and McNally, 2000).

- Further development of communities of landholders within National Parks and on SSSIs. Some National Park Authorities have already supported similar sorts of initiative under Objective 5B and this scheme might offer means for extending these approaches.
- Such an approach may also offer a means for conservation boards, established in Areas of Outstanding Natural Beauty under the Countryside and Rights of Way Act 2000, to develop special schemes for the enhancement of natural beauty and to promote a sense of community amongst landholders within an AONB.
- Even outside such designations, it would be possible to groups of landholders to operate collectively for the promotion of traditional or novel landscapes or to provide habitat for the conservation of particular species, perhaps in the context of a species recovery programme or BAP. It might for instance provide a means whereby groups of landholders might make major changes, such as in the creation of areas of ‘wildness’ (Adams, 1996).
- Collective provision might be made within river catchment areas or amongst riparian owners for land management and river improvement for fisheries management.

10.7 Community engagement

Rationale

This element of our agri-environment programme aims to draw a wider range of actors into agri-environmental land management, particularly through support for demand side co-ordination and involvement. This addresses a range of issues associated earlier with the limitations of the environmental contract approach. The primary objectives would be for

- longer term environmental protection secured through land ownership by conservation trusts or conservation covenants.,
- to harness environmental entrepreneurship through support for non-profit organisations in the provision of public good benefits,
- to support an institutional framework which can lever in voluntary contributions both in cash and in kind,
- to support the establishment and operation of discretionary funds targeted at environmental enhancement, and
- to create further opportunities for the revelation of preferences for the environment.

Scheme operation

Funds would be allocated on a project basis through competitive tenders. Projects would be assessed in terms of their capacity to promote environmental enhancement in the long term. This would include the support for institution building where this can be expected to lead to future environmental provision. This would include support for the establishment of institutional arrangements capable of reflecting local community priorities and of leveraging in voluntary labour, donations and bequests.

Many of these types of activities are already supported by government, through various channels. An aim of this approach would be to provide a more systematic and consistent source of support for community engagement, balancing public support for alternative projects. It would also integrate this with agri-environment schemes and enable CAP expenditure to be directed through these alternative approaches.

10.8 The level of decision-making

The characteristics of the objectives of agricultural policy have substantially altered over the past decade. The primary objectives of agricultural policy have shifted from a concern for the maintenance of national food security and the regulation of commodity markets with respect to international trading opportunities to a primary concern to maintain and enhance environmental standards in rural areas and support local patterns of economic activity and local communities. This change from agricultural production support towards support for the rural environment might suggest a parallel change in the level at which decisions on agricultural policy should be taken. Some shift towards re-nationalisation clearly has occurred. The introduction of national or regional rural development programmes and modulation under the Agenda 2000 reforms signal to some degree at least an increasing degree of discretion available to national governments.

The principle of subsidiarity states that decisions within a political system should be taken at the lowest level consistent with effective action. In practice this has often been used, by some member states at least, as an argument for determining matters at a national level rather than giving them up to the EU. The Maastricht Treaty indicated that matters should only be determined at an EU level where actions cannot be sufficiently be achieved by member states. In fact, other interests, such as the German Lander looked to the principle to safeguard their powers to regulate in areas such as education (Jordan and Jeppesen, 2000).

It is possible to adopt an economic approach towards the issue, through the theory of the provision of local public goods. This suggests that local public goods should be provided at the scale that internalises costs and benefits. This indicates that funds should be raised amongst the grouping of the population who enjoy the benefits of the expenditure and funding decisions taken by their elected representatives, thus effectively internalising both the costs and benefits. The group would enjoy the benefits from consuming the public good as well as the opportunity costs in terms of expenditures not made.

In practice the decision is not quite so straightforward. Given the significance of transactions costs in policy implementation, economies of size in the delivery of policy may also be a factor in determining an optimal level for decision-making and implementation. And there may be a view that some degree of spatial redistribution of income should be incorporated into the system. Nevertheless, the spatial incidence of the benefits of the expenditure represents a significant consideration in the determination of the appropriate level for public decisions to be taken.

In the context of agri-environment policy, this might suggest that funding allocation decisions relating to public goods that are essentially enjoyed by the local community with no wider implications should be taken at the local level. If funds were raised locally, then the local community could determine what level of funding and expenditure would be appropriate. Even where funds are collected centrally and distributed to the local area, the local community could decide whether to allocate funds towards agri-environment expenditure or towards other areas of expenditure, thus bearing the opportunity cost of funding decisions. This suggests a further means by which the value of public goods may be revealed.

Not all agri-environment outputs have only local significance. Some landscapes are regarded as of national importance, as reflected in the designation of National Parks or Areas of Outstanding Natural Beauty. Similarly with nature conservation there are many national designations. There are also international commitments through, for instance, World Heritage sites and the International Convention of Biodiversity. This indicates that it will often be inappropriate to give total discretion to the local level. The same principles indicate that some decisions should be taken at the national or international levels.

There is an implication that there should be a shift towards greater decentralisation in decision-making, below the national level would seem to be justified, but remaining subject to national support and influence to ensure that it is consistent with national and international commitments. The current discussion of the potential development of a regional level of government suggests that this tier might have the institutional capacity to implement agri-environment schemes.

10.9 Conclusions

The idea of governments buying improvements to the quality of the rural environment is a novel one, first initiated in agri-environment policies in the mid 1980s. In the past environmental quality has either been a consequence of particular forms of land holding, technology and institutions, or else has been the deliberate objective of landowners for their own private enjoyment. In policy terms it is also unusual in seeking to deliver variety rather than homogeneity and to deliver standards over which there remains considerable differences of opinion and which are difficult to quantify. In this respect considerable progress has been made and we should expect a process of learning and policy development.

One of the government's current goals for agri-environment schemes is to increase simplicity. But perhaps more important is to consolidate and build on what has been achieved so far and to integrate the agri-environment schemes with other policies towards the rural environment.

A broad and shallow approach would offer a number of benefits and yet could be relatively straightforward to implement. It could take the coverage of agri-environment schemes to a larger proportion of the agricultural area and offer a more secure defence against the potential environmental damages associated with the fundamental reform of the CAP that is required. A higher level integrated environmental enhancement scheme could be more flexible and coherent than the current approach. ESAs have served an important role in the development of agri-environment policy, but this type of targeting appears to be less important against changing priorities and in the context an alternative approach towards basic land stewardship.

The collective and community engagement schemes add relatively little that is not being done already in some form or other. What is proposed is an enhancement for these elements of policy and for their integration into the mainstream of agri-environment policy. This may make it possible to seek European funding for a broader range of activity towards the conservation and enhancement of the rural environment. As noted above, this may be seen as signalling a shift from agri-environment schemes to rural environment policy.

References

- Adams, W.M. (1996) *Future Nature: A vision for conservation*. Earthscan, London.
- ADAS (1991). *Socio-economic monitoring of Stage I ESAs. Report for MAFF*.
- Agriculture, Fisheries & Forestry – Australia (2002) What is Landcare about?
www.affa.gov.au
- Andersen, E., Henningsen, A. and Primdahl, J., 2001. Denmark: Implementation of new agri-environmental policy based on Regulation 2078. In: Buller, H., Wilson, G.A., Höll, A. (eds): *Agri-environmental policy in the European Union*. Basingstoke: Ashgate, pp. 31-50.
- Anderson, T. and Leal, D. (1991) *Free Market Environmentalism*. Westview Press, Boulder.
- Anger, M., Malcharek, A. and Hoffmann, U., (2001). Evaluierung der Gruenlandextensivierungsprogramme im Mittelgebirge Nordrhein-Westfalens. In: Osterburg and Nieberg (eds): *Agrarumweltprogramme – Konzepte, Entwicklungen, kuenftige Ausgestaltung*. FAL Sonderheft 231, pp. 55-63.
- Badger, R. (1998). Effectiveness of Policy Intervention for Wildlife Conservation on Farmland. PhD These, University of Aberdeen.
- Baldock, D. and Lowe, P. (1996) The development of European Agri-environment policy, Chapter 2, pp8-25 in M. Whitby (ed.) *The European Environment and CAP Reform: Policies and Prospects for Conservation*. CAB International Wallingford.
- Baldock, D., Mitchell, K., von Meyer, H., Beaufoy G., 1998. *Assessment of the environmental impact of certain agricultural measures*. Institute for European Environmental Policy, London
- Signal, E. and D. Baldock 2002. *Agri-environmental policy in a changing European context*.
- Bleasdale, A. (2000) Towards a Partnership in the management of target areas - A Duchas perspective. Proceedings of the 2000 Teagasc REPS conference.
- Bohman, M *et al.* (1999) *The use and abuse of multifunctionality*. Economic Research Service, US Department of Agriculture, Washington, DC.
- Brotherton, I. (1989). Farmer participation in voluntary land diversion schemes: some observation from theory. *Journal of Rural Studies*, 5, 299-304.
- Brotherton, I. (1991). What limits participation in ESAs? *Journal of Environmental Management*, 32, 241-249.
- Buller, H., 2000. Regulation 2078: patterns of implementation. In: Buller, H., Wilson, G.A., Höll, A. (eds): *Agri-environmental policy in the European Union*. Basingstoke: Ashgate, pp. 219-254.
- Bullock, C. H. and Kay, J. (1997). Preservation and Change in the Upland Landscape: the Public Benefits of Grazing Management, *Journal of Environmental Planning and Management*, 40, 315-334.
- Burgess, J., Clark, J. and Harrison, C. (1998) Respondents' evaluation of a CV survey: a case study based on an economic evaluation of the Wildlife Enhancement Scheme, Pevensy Levels in East Sussex. *Area* 30 (1) 19-27.
- Cahill, C. (2001) The Multifunctionality of agriculture: What does it mean? *EuroChoices* Premier Issue, Spring, 36-40.
- Carey, P. (2001) Schemes are monitored and effective in the UK *Nature* 414, 687.

- CCRU (2000). Economic Evaluation of the Countryside Stewardship Scheme. Report for MAFF, Cheltenham and Gloucester College of Higher Education.
- CEAS (1997). Economic Evaluation of Stage II and III ESAs – Final Report for MAFF, CEAS Consultants (Wye)Ltd.
- CEAS (1998). Economic Evaluation of Stage IV ESAs – Final Report for MAFF, CEAS Consultants (Wye)Ltd.
- CEC (1997), Report from the Commission to the Council and Parliament on the application of Council Regulation 2078/92. COM (97) 620 final.
- Centre for Rural Economics Research (2002) *Economic evaluation of the Organic Farming Scheme*. Report to DEFRA. Department of Land Economy, University of Cambridge.
- Centre for Rural Economics Research *et al.* (2002) *ERDP Evidence Assessment*. Report to DEFRA. Department of Land Economy, University of Cambridge.
- CJC Consulting (2002) Impacts of the Woodland Grant Scheme and the Farm Woodland Premium Scheme in Scotland. Report for the Scottish Executive.
- Colman, D. (1994). Comparative Evaluation of Environmental Policies, in Whitby, M. (ed.) *Incentives for Countryside Management, The Case of Environmentally Sensitive Areas*, CAB International, Wallingford.
- Cook, C. and Harrison, P.A. (2001) *Climate Change and Nature Conservation in Britain and Ireland* MONARCH – Modelling natural resource responses to climate change. Summary Report. UK Climate Impacts Programme, Oxford.
- Countryside Commission (1998) Countryside Stewardship: Monitoring and Evaluation of the Pilot Scheme, 1991-1996. Research Note 3, Countryside Commission, Cheltenham.
- Countryside Council for Wales (2001). Annual Report 2000-2001, Countryside Council for Wales.
- Crabtree J. R., Chalmers, N. and Barron, N. J. (1998). Information for policy design: modelling participation in a farm woodland incentive scheme. *Journal of Agricultural Economics* 49, 306-320.
- Crabtree, J. R. (2002) Agricultural policy and nature conservation in the UK. In *Nature and Agriculture in the European Union*, ed Brouwer, F. and Van der Straaten, J. Edward Elgar, Cheltenham.
- Crabtree, J. R., Potts, J. and Smart, T. (2000). Statistical modelling of incentive design under limited information: the case of public access to farmland. *Journal of Agricultural Economics*, 51, 239-251.
- Crabtree, J. R. (1993). Effectiveness of standard payments for environmental protection and enhancement, in Lehmann, B., Popp, H. W. and Stuckie, E. (ed). *Direct Payments in Agricultural and Regional Policies*, Proceedings of the 30th EAAE seminar, Chateaux d'Oex, Switzerland.
- Crabtree, J. R., MacDonald, D. and Hanley, N. (2002). Non-market Benefits Associated with Mountain Regions. Report for Highland and Island Enterprise and Scottish Natural Heritage. CJC Consulting, Oxford.
- Crabtree, J. R., Thorburn, A., Chalmers, N., Roberts, D., Wynn, G., Barron N., Barraclough, F. and Macmillan, D. (1999). Socio-economic and Agricultural Impacts of the Environmentally Sensitive Areas Scheme in Scotland. Economics and Policy Series 6, Macaulay Institute, Aberdeen.
- Curtis, A. and DE Lacy, T. (1998) Landcare, stewardship and sustainable agriculture in Australia. *Environmental Values* 7, 59-78.
- DEFRA (2002) Sustainable Food and Farming: Economic Analysis and evidence. Annex B, Sustainable Food and Farming Working Together. DEFRA, London.
- DEFRA (2002). *Agriculture in the United Kingdom 2001*. DEFRA.

- DETR (1999). *A Better quality of life. A strategy for sustainable development for the UK*. Cm 4345, The Stationery Office, Department of Environment, Transport and the Regions, London.
- Dwyer, J. (2001) *Paying for the Stewardship of the Countryside: A Green print for the Future of Agri-environment schemes in England*. Wildlife and Countryside Link, London.
- Dwyer, J. and Hodge, I. (1996) *Countryside in Trust: Land Management by Conservation, Amenity and Recreation Organisations*, Chichester, John Wiley and Sons.
- Ecoscope (2002). Review of Agri-environment Schemes – Monitoring and R and D Results. Draft report for DEFRA, Ecoscope Applied Ecologists, Cambridge.
- Emerson, H.J. and Gillmor, D.A. (1999) The Rural Environment Protection Scheme of the Republic of Ireland. *Land Use Policy* 16, 235-245.
- Ervin, D. (1999) Towards GATT-proofing environmental programmes for agriculture. *Journal of World Trade* 33 (2) 63-82.
- Falconer, K. (2000). Farm-level constraints on agri-environmental scheme participation: a transactional perspective. *Journal of Rural Studies*, 16, 379-394.
- Falconer, K. and Whitby, M. (1999) The invisible costs of scheme implementation and administration, Chapter 4, pp 67-88, in G. Van Huylenbroeck and M. Whitby (eds.) *Countryside Stewardship: Farmers, Policies and Markets*. Pergamon, Amsterdam.
- FRCA (2000). Eligible Areas Data for ESAs, Report to MAFF. MAFF: London.
- Frey, B. (1997) Not just for the money.
- Garforth, M. (2001). Review of Targeting Mechanisms, Forestry Commission, Edinburgh.
- Garrod, G. D., Willis, K. G., Raley, M and Rudden, M. (1998) Economic evaluation of Access Provisions in the MAFF Agri-environment Schemes, Final report to MAFF, University of Newcastle upon Tyne.
- Gourlay, D. (1995). Loch Lomond and Stewartry ESAs: a Study of Public Perceptions of Policy Benefits, Unpublished PhD Thesis, University of Aberdeen.
- Groiber, M. and Loibl, E., 2001. Austria: towards an environmentally sound agriculture. In: Buller, H., Wilson, G.A., Höll, A. (eds): *Agri-environmental policy in the European Union*. Basingstoke: Ashgate, pp. 169-184.
- Hanley, I., Simpson, I., Parsisson, D., Macmillan, D., Bullock, C and Crabtree, R. (1996) *Valuation of the Conservation Benefits of Environmentally Sensitive Areas, Macaulay Land Use Research Institute, Economics and Policy Series 2, Macaulay Institute, Aberdeen*.
- Hanley, N. (2001) (ed). Estimating the Value of Environmental Features. Report to MAFF.
- Hanley, N., Spash, C. and Walker, L. (1995) Problems in valuing the benefits of biodiversity protection. *Environmental and Resource Economics* 5, 249-272.
- Hanley, N., Whitby, M. and Simpson, I. (1999). Assessing the Success of agri-environmental policy in the UK, *Land Use Policy*, 16, 67-80.
- Hanley, N., Kirkpatrick, H., Oglethorpe D. and Simpson, I. (1998). Paying for public goods from agriculture: an application of the Provider Gets Principle to moorland conservation in Shetland. *Land Economics*, 74, (1) 102-113.
- Haug, R., (1996). Hindeland - Nature and Culture – an alliance of extensive mountain farming with tourism. In: Poole, A., Pienkowski, M., McCracken, D., Petretti, F., Bredy, C. and Deffeyes, C. (eds). Mountain livestock farming and EU policy development. Proceedings of the 5th European Forum on Nature Conservation and Pastoralism. Cogne, Italy, 18-21 September 1996.
- Hodge, I and McNally, S. (2000) Wetland restoration, collective action and the role of water management institutions. *Ecological Economics* 35, 105-118.

- Hodge, I. and McNally, S. (1998). Evaluating the Environmentally Sensitive Areas: the Value of Rural Environments and Policy Relevance, *Journal of Rural Studies*, 14,357-367.
- Hodge, I.D. (1989) Compensation for Nature Conservation. *Environment and Planning A* 27 (7), 1027-36.
- Hodge, Ian (1994) Rural Amenity: Definition, Property Rights and Policy Mechanisms, Chapter 2, pp23-40 in Organisation for Economic Co-operation and Development, *The Contribution of Amenities to Rural Development*. Paris, OECD.
- Hodge, Ian (2000) Agri-environmental relationships and the choice of policy mechanism. *The World Economy* 23 (2) 257-273.
- Holling, CS, Schindler, DW, Walker, BW, Roughgarden, J (1995) Biodiversity in the functioning of ecosystems: An ecological synthesis. In C. Perrings, K-G Maler, C. Folke, CS Holling and B-O Jansson (eds) *Biodiversity Loss: Economics and Ecological Issues*. Cambridge University Press.
- Hossell, JE, A. MacGillivray, IR Hepburn, N Ellis and M. Harley (2001) Implications for policy needs and future research, Chapter 9 in P. Harrison, PM Berry, TP Dawson eds. *Climate Change and Nature Conservation in Britain and Ireland: Modelling natural resource responses to climate change (the MONARCH project)*. UKCIP Technical Report. Oxford.
- Hughes, G. (1994). ESAs in the context of a culturally sensitive area: the case of the Cambrian Mountains, in Whitby, M. (ed) *Incentives for Countryside Management, the Case of Environmentally Sensitive Areas*. CAB International, Wallingford.
- Hulme, M., Turnpenny, J. and Jenkins, G. (2002) Climate Change Scenarios for the United Kingdom: The UKCIP02 Briefing Report. Tyndall Centre for Climate Change Research, School of Environmental Sciences, University of East Anglia.
- IPCC (2002) IPCC Campaign Action. Irish Peatland Conservation Council.
www.ipcc.ie//currentaction2005-18.html
- Jordan, A. and Jeppesen, T. (2000) EU environmental policy: Adapting to the principle of subsidiarity? *European Environment* 10, 64-74.
- Kahneman, D., Knetsch, J. and Thaler, R. (1991) The endowment effect, loss aversion and status quo bias. *Journal of Economic Perspectives* 5 (1) 193-206.
- Kleijn, D., Berendse, F., Smit, R. and Gilissen, N., 2001. Agri-environment schemes do not effectively protect biodiversity in Dutch agricultural landscape. *Nature*, 413,. 723-725.
- Köbler, M., 2001. Evaluierung des bayrischen Kulturlandschaftsprogrammes - Stand und Perspektiven. In: Osterburg and Nieberg (eds): *Agrarumweltprogramme – Konzepte, Entwicklungen, kuenftige Ausgestaltung*. FAL Sonderheft 231, pp. 49-53.
- Kramer, L. (1995) *EC Treaty and Environmental Law*. 2nd Ed. Sweet and Maxwell, London.
- Latacz-Lohmann, U. and Hodge, I. (2001) Multifunctionality and free trade: conflict or harmony? *EuroChoices* Premier Issue Spring, 42-47.
- Lowe, P., Buller. H. and Ward, N. (2002). Setting the next agenda? British and French approaches to the second pillar of the Common Agricultural Policy. *Journal of Rural Studies*, 18, 1-17.
- MAFF (1989). *Environmentally Sensitive Areas*, HMSO, London.
- MAFF (2000) England Rural Development Programme 2000-2006. Ministry of Agriculture, Fisheries and Food, London.
- MAFF (2000a). Agriculture in the United Kingdom.1999, MAFF, London.
- MAFF (2000b). Environmental Objectives and Uptake Targets for ESAs in England, MAFF, London.

- MAFF (2000c). *Economic Appraisal of Proposed Expenditure under the Rural Development Regulation*. MAFF, London.
- MAFF (2000d) England Rural Development Programme, MAFF, London.
- MAFF (2001). The Countryside Stewardship Scheme. Information and how to apply. MAFF: London.
- McEvoy, O. (1999) Impact of REPS - Analysis from the 1998 Teagasc National Farm Survey. Proceedings of the 1999 REPS Conference
- Menge, M. and Vopel, H., (2001). Ergebnisse zur Wirksamkeit des Programms Umweltgerechte Landwirtschaft in Sachsen. In: Osterburg and Nieberg (eds): *Agrarumweltprogramme – Konzepte, Entwicklungen, kuenftige Ausgestaltung*. FAL Sonderheft 231, pp. 41-47.
- Ministère de l' Agriculture (2002). <http://www.cte.agriculture.gouv.fr>
- Morris, C. and Potter, C. (1995). Recruiting the new conservations: farmers' adoption of agri-environmental schemes in the UK. *Journal of Rural Studies*, 11, 51-63.
- Morris, J., Mills, J. and Crawford, I. M. (2000). Promoting farmer uptake of agri-environment schemes: the Countryside Stewardship Arable Options Scheme. *Land Use Policy*, 17, 241-254.
- Moss, J. (1994). A baseline assessment for a new ESA: the case of the Mourne Mountains and Slieve Croob, in Whitby, M. (ed) *Incentives for Countryside Management, the Case of Environmentally Sensitive Areas*. CAB International, Wallingford.
- NAO (1997). *Protecting Environmentally Sensitive Areas*. The Stationery Office, London.
- Newby, H., Bell, C., Sanders, P. and Rose, D. (1997). Farmers' attitudes to conservation. *Countryside Recreation Review*, 2 23-30.
- O'Carroll, L (1994). Competition with other environmental designations on a lowland heath; The case of the Breckland, in Whitby, M. (ed) *Incentives for Countryside Management, the Case of Environmentally Sensitive Areas*. CAB International, Wallingford.
- OECD (1994) *The contribution of amenities to rural development*. OECD, Paris.
- OECD (1996) *Amenities for Rural Development: Policy Examples*. OECD, Paris.
- OECD (1999) *Cultivating Rural Amenities: An Economic Development Perspective*. Organisation for Economic Co-operation and Development, Paris.
- OECD (2001) *Multifunctionality: Towards an analytical framework*. Organisation for Economic Co-operation and Development, Paris.
- Plankl, R., (2001). Entwicklung der Agrarumweltprogramme in Deutschland und der EU- ein Ueberblick. In: Osterburg and Nieberg (eds): *Agrarumweltprogramme – Konzepte, Entwicklungen, kuenftige Ausgestaltung*. FAL Sonderheft 231, pp. 1-11.
- Policy Commission on the Future of Farming and Food (2002) Farming and Food: A sustainable future. Report of the Policy Commission on the Future of Farming and Food. Cabinet Office, London. <http://www.cabinet-office.gov.uk/farming>
- Potter, C. and Loble, M. (1992). The conservation status and potential of elderly farmers: results from a survey in England and Wales. *Journal of Rural Studies*, 8, 133-143.
- Primdahl, J., Tom-Petersen, P., Kristensen, L. Busck, A., and Vejre, H., (2001). The integration of landscape and agricultural policies. Paper presented at the 5th annual Nordic Scottish Universities Network for Rural and Regional Development Conference. Esbjerg, 6-9 September 2001.
- Rath, F. (2001) REPS - Situation and outlook. REPS 2 conference proceedings.
- Scheele, M. (1999) Environmental services provided by agriculture: The setting of environmental targets and reference levels. Paper presented at the workshop on Non-Trade Concerns in a Multifunctional Agriculture. Gran, Norway.

- Simpson, I. A., Parsisson, D., Hanley, N. and Bullock, C. H. (1997). Envisioning future landscapes in the Environmentally Sensitive Areas of Scotland. *Transactions of the Institute of British Geographers*, 22, 307-320.
- Sinabell, F. and M. Hofreither, 2001. Wirkungen des Oepul und zukuenftige Konzeptionen. In: Osterburg and Nieberg (eds): *Agrarumweltprogramme – Konzepte, Entwicklungen, kuenftige Ausgestaltung*. FAL Sonderheft 231, pp. 77-86.
- Sinnott, M. (1999) RPES evaluation and its implications. Proceedings of the 1999 REPS Conference
- Sobels, J., Curtis, A. and Lockie, S. (2001) The role of Landcare group networks in rural Australia: exploring the contribution of social capital. *Journal of Rural Studies* 17 (3) 265-276.
- Stewart, L. Hanley, N. and Simpson, I. (1997). Economic valuation of the agri-environment schemes in the United Kingdom. Unpublished Report by the Environmental Economics Research group, University of Stirling, to HM Treasury and MAFF.
- Stoate, C. and Parish, D. (2001) Monitoring is underway and results so far are promising. *Nature* 414, 687.
- Toman, M.A. (1994) Economics and “Sustainability”: Balancing Trade-offs and Imperatives. *Land Economics* 70 (4) 399-413.
- Toyne, P. and Farley, R. (2000) The decade of Landcare: Looking backward - looking forward. Discussion Paper 30. Australia Institute, Canberra.
- Turner, RK, Brouwer, R , and Georgiou S. (2001) Ecosystem functions and the implications for economic valuation. English Nature Research Reports Number 441. English Nature, Peterborough.
- Whitby, M (1994). *Incentives for Countryside Management: The Case of Environmentally Sensitive Areas*, CAB International, Wallingford.
- Whitby, M. (2000). Challenges and options for the agri-environment. *Journal of Agricultural Economics* 51,317-332.
- Willis, K. and Garrod, G. (1993) Valuing landscape: a contingent valuation approach. *Journal of Environmental Management* 37, 1-22.
- Willis, K.G., Garrod, G.D. and Saunders, C.M. (1993). Valuation of the South Downs and Somerset Levels and Moors Environmentally Sensitive Area Landscapes by the General Public. A Report to the Ministry of Agriculture, Fisheries and Food. Centre for Rural Economy, Department of Agricultural Economics and Food Marketing. University of Newcastle upon Tyne.
- Wilson G. A. and Hart, K (2000). Financial imperative or conservation concern? EU farmers’ motivations for participation in voluntary agri-environmental schemes, *Environment and Planning A*, 32, 2161-2185.
- Wilson G. A. and Hart, K (2001). Farmer participation in agri-environmental schemes: towards conservation –oriented thinking? *Sociologia Ruralis*, 41, 254-274.
- Wilson, G. A. (1996). Farmer environmental attitudes and ESA participation. *Geoforum*, 27, 115-131.
- Wilson, G. A. (1997). Factors influencing farmer participation in the Environmentally Sensitive Areas scheme. *Journal of Environmental Management*, 50, 67-93.
- Wynn, G., Crabtree, R. and Potts, J. (2001). Modelling farmers entry into the Environmentally Sensitive Areas Scheme in Scotland. *Journal of Agricultural Economics* 52, 65-82.