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Design and Implementation of Agri-environmental Policy
Mechanisms: Are Guidelines Feasible?

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# Table of Contents

**Introduction**  
4

**Environmental objectives**  
5  
Objectives set within a strategic policy framework  
Multiple environmental objectives  
Secondary objectives  
Feasibility of providing guidelines on setting objectives

**Policy coherence**  
10  
The need for policy coherence  
The effect of governance on policy coherence  
Coherence of data  
Feasibility of providing guidelines on policy coherence

**The reference level for agri-environmental payments**  
12  
Why the reference level is important  
The impact of the reference level on agri-environmental payments  
Feasibility of providing guidelines on the reference level

**The evidence base**  
15  
Environmental evidence  
Socio-economic evidence  
Scale of data  
Availability of data  
Feasibility of providing guidelines on the evidence base

**Design and targeting**  
17  
Designing for long-term environmental impact  
Targeting environmental objectives  
Spatial targeting  
Structural targeting  
When intervention is required at a landscape scale  
Costs and benefits of targeting  
Feasibility of providing guidelines on design and targeting

**Delivery and ensuring compliance**  
20  
Administration  
Training, advice and information  
The value of pilot schemes  
Dealing with changing needs and circumstances  
Communication with farmers and stakeholders  
Ensuring compliance  
Feasibility of providing guidelines on the delivery process

**Policy evaluation**  
24

**Institutional capacity and budgeting**  
26

**Conclusions on the feasibility of providing guidance**  
28

**References**  
30
INTRODUCTION

Agri-environmental policies are becoming an increasingly important means of seeking to ensure that agricultural activities deliver environmental public goods not rewarded by the market in OECD countries. There is a range of agri-environmental policy mechanisms that can be used to achieve this aim, including incentive payments, taxes, standards and tradable permits. The OECD has recently published guidelines on how to determine the most appropriate agri-environmental policy mechanism to use (OECD, 2010).

The purpose of this paper is to explore the feasibility of providing guidelines on the design and implementation of agri-environmental policies, which would be generally applicable in OECD countries. These policies seek to influence the decisions and behaviour of large numbers of individual farmers in many different situations, and to achieve a wide range of environmental benefits. It is not an easy task to design and deliver policy instruments which will do this well, particularly in the case of agri-environmental incentive schemes where participation is optional. The provision and application of guidelines could help to improve the environmental impact, cost effectiveness and long-term benefits of these policies, and would be a means of sharing best practice among OECD countries.

This document is not intended to elaborate such guidelines, but to consider where guidance would be applicable and relevant, within the OECD. The policy mechanisms considered include binding environmental standards, environmental taxes and agri-environmental incentives, with an emphasis on payment systems and cross-compliance mechanisms. The recently published OECD guidelines also considered tradable permits, but these are not widely used at present in an agricultural context, and are not considered further in this report.

The paper is structured around the elements of policy design and delivery which address key questions:

- environmental objectives – what is the policy trying to achieve?
- policy coherence – how well will it work with other agricultural and environmental policies?
- the reference level for payments – what is the baseline of management expected of farmers?
- evidence base – is the problem clear and is the land management to solve it understood?
- design and targeting – what changes in farming practices are required, where are the priority farms and what are the appropriate incentives?
- delivery and ensuring compliance – what is the most efficient way of engaging farmers and ensuring they carry out the management required?
- policy evaluation – is the policy working, what has failed, how can it be improved?
- institutional capacity and budgeting – are the financial, staff and other resources in place to deliver and evaluate the policy?

The paper outlines the key decisions at each stage, the factors to be taken into account and the feasibility of providing guidance and criteria to inform these decisions across the diversity of environmental, agricultural and institutional situations in OECD countries. Illustrative examples are used, mainly from Europe, where there is 25 years’ experience of implementing agri-environmental policies, and 20 OECD countries (plus Estonia) now offer agri-environmental payments to farmers across the whole of their territory. At the beginning of each section there is a summary of key issues in providing guidelines on that topic.

The paper concludes with a discussion of the overall feasibility of providing guidelines on the design and implementation of agri-environmental policy mechanisms.
ENVIRONMENTAL OBJECTIVES

<table>
<thead>
<tr>
<th>Key points about guidance on environmental objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>• clarity and precision is required, but not always easily achieved</td>
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<tr>
<td>• environmental objectives will be set within a strategic policy framework justifying government intervention, which includes:</td>
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<tr>
<td>o policy objectives</td>
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<tr>
<td>o operational objectives</td>
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<tr>
<td>o performance objectives</td>
</tr>
<tr>
<td>• a decision on single or multiple environmental objectives will affect the rest of the design process</td>
</tr>
<tr>
<td>• secondary objectives may be important</td>
</tr>
<tr>
<td>• policy objectives may change over time</td>
</tr>
</tbody>
</table>

The objectives of Government interventions should be both specific and clear. A strategic policy framework setting out the government’s goals and justifying the need for the intervention is a good starting point. The framework usually defines strategic objectives as the highest level (these will often be national priorities or targets – or supra-national in the case of the EU), then elaborates the more detailed policy, operational and performance objectives which apply to specific mechanisms such as regulations, taxes or incentive payments.

**Objectives set within a strategic policy framework**

In the case of agri-environmental instruments, the policy framework justifies government action where there is clear undersupply of environmental public goods from agriculture, and intervention is needed to ensure that farmland provides the level of environmental services required by society. When markets fail to provide these services, governments may use a range of policy mechanisms, including regulation, taxes and/or incentive payments to achieve the required environmental management on farms.

Irrespective of the agri-environmental policy mechanism chosen, it is important that the different levels of objectives are defined as clearly and precisely as possible at the outset of the design process. There are several reasons for this:

- even if they are complex or multi-layered, clear objectives are needed to underpin the intervention logic, to determine the actions required of farmers and to inform the design and delivery of the chosen policy instruments;
- an explicit definition of objectives and their reflection in the policy mechanisms lays the groundwork for a correspondingly clear and robust monitoring and evaluation system. If objectives are not clearly defined it is difficult to choose appropriate indicators with which to measure progress and evaluate policy effectiveness;
- the success of most interventions, and especially payment schemes where the farmer has to make an active decision to participate, is at least partially dependent on the farmer having a clear understanding not just of ‘what’ is required, but also ‘why’. This should be clear in the objectives and the design that flows from them.

Many factors have to be taken into account in setting and prioritising objectives, ranging from international obligations, the economic impact of changing practice, the budget available, to the capacity to measure outcomes on the ground.

In many OECD countries international environmental commitments will influence the strategic objectives of agri-environmental policy. For example, the European Community’s obligation under the Council of Europe, Bern Convention was one driver for legislation requiring EU Member States to identify the Natura
2000 network of nature protection sites, and to ensure that these sites are managed to secure the long-term survival of Europe's most valuable and threatened species and habitats. At the level of operational objectives, a combination of regulation and agri-environmental payments are the key tools for improving the conservation management of those Natura 2000 sites which are farmland and account for about a quarter of the Natura 2000 terrestrial area in the EU. At site level, detailed environmental performance objectives are defined for the management of threatened habitat and species, and implemented through site-specific environmental standards and agri-environmental payments.

Objectives will be defined and quantified more precisely in some policy frameworks than others. For example, the strategic objective of ensuring a certain level of environmental quality for all surface waters and ground waters in the EU is translated into quantified national objectives for Member States, which must take action to control nitrate run-off from farmland so that the pollution load of both ground and surface waters does not exceed 50 mg/l of nitrates. Some of the operational and performance objectives to achieve this are quantified, others are more descriptive (see box below). In the case of environmental taxes the objective may be relatively simple, and quantifiable. For example, an inorganic fertiliser tax, levied at a particular rate may be intended to reduce the consumption of nitrate fertilisers by a specified proportion.

**Examples of operational objectives to reduce diffuse nitrate pollution in the EU**

| Within identified Nitrate Vulnerable Zones there are mandatory standards (no more than 170kg nitrogen per hectare per year from livestock manure) supplemented by detailed codes of practice which need to be adopted at national level. Implementation can be advanced by a range of different agri-environment payments for practices to reduce the risk of diffuse pollution, such as conversion of arable to grassland, and the creation of riparian buffer strips. In these cases proxy objectives (reducing the quantity of agricultural nitrates applied to farmland within a catchment) are used as a means of achieving the overarching objective (achieving a defined standard of water quality). |

In contrast to regulatory standards and taxes (which apply to all farmers, with limited exceptions) agri-environmental incentives rely on farmers choosing to participate in a very wide range of interventions. Here the strategic objectives may be more broadly framed, while the operational objectives define the scope of the intervention. This intervention logic for EU agri-environment payments under the CAP is shown in Figure 1, and an example from the UK in Table 1.

One of the most important considerations in defining objectives is the capacity to measure (directly or by indicators) the intended outcomes of the policy, particularly the environmental impacts. This should shape the way in which objectives at all levels are defined, and influences the whole process of policy design, from defining the management requirements for farmers to setting up databases. Lack of clarity and precision in the objectives makes it difficult to define and prioritise interventions, quantify and allocate financial and other resources, and ultimately to defend the policy.

Ideally, environmental performance objectives should also be specified at farm level, but in practice this is not always done for agri-environmental incentives, despite the problems this can cause during subsequent policy evaluation. Detailed performance objectives are more likely to be quantified at farm level for regulatory standards or for cross-compliance requirements because these affect the majority of farmers and must be enforceable through transparent legal processes.
Figure 1  Intervention logic for EU agri-environment payments (after Cooper et al, 2009)

Table 1  Objectives and targets for the Environmental Stewardship scheme in England

<table>
<thead>
<tr>
<th>Primary objectives</th>
<th>Targets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wildlife conservation (biodiversity)</td>
<td>• To improve the quality of the farmed countryside for wildlife.</td>
</tr>
<tr>
<td></td>
<td>• To maintain and restore nationally and internationally important wildlife sites in order to safeguard their value (including Sites of Special Scientific Interest (SSSIs) and Natura 2000 sites).</td>
</tr>
<tr>
<td></td>
<td>• To contribute to the implementation of Article 10 of the Habitats and Species Directive, the Gothenburg Protocol and the Kyiv Biodiversity Resolution to halt the loss of biodiversity in Europe by 2010, through helping to halt and ultimately to reverse the decline in farmland species and habitats identified as a priority in the England Biodiversity Strategy.</td>
</tr>
<tr>
<td>Maintenance and enhancement of landscape quality and character,</td>
<td>• To maintain and enhance and characteristic landscape features and to restore characteristic landscape features appropriate to the local area.</td>
</tr>
<tr>
<td></td>
<td>• To maintain and enhance the local distinctiveness of the landscape and to restore and create locally distinctive landscapes.</td>
</tr>
<tr>
<td>Protection of the historic environment</td>
<td></td>
</tr>
<tr>
<td>Promotion of public access and understanding of the countryside</td>
<td>• To improve and create public access routes, links and areas where their need has been identified (de minimis state aid).</td>
</tr>
<tr>
<td></td>
<td>• To increase public enjoyment and understanding of the countryside, its history, landscape, wildlife, culture and agriculture (de minimis state aid).</td>
</tr>
<tr>
<td>Natural resource protection</td>
<td>• To contribute to enhancing the quality of inland and coastal water bodies including ground water in line with objectives for Water Framework,</td>
</tr>
</tbody>
</table>
Habitats, Ground Water and Bathing Water Directives

- To contribute towards Diffuse Water Pollution from Agriculture (DWPA) short term (2008) objective of stabilising nitrogen and phosphate losses from agriculture.
- To conserve soils and to maintain and restore their healthy functions in line with the objectives of the Defra Soils Action Plan and future Soil Strategy.

Secondary objectives

Flood management

- To make land available for flooding (to assist in flood risk management).
- To implement relevant resource protection measures that will also reduce the likelihood of localised flooding incidents.
- To contribute to (sustainable) coastal defence management.

Genetic conservation

- To contribute to the conservation of traditional and locally distinctive breeds of farm animal and varieties of fruit tree where their conservation also contributes to the primary objectives of the Environmental Stewardship Scheme.

The objectives of policy may change over time, in response to external factors (e.g. the impact of climate change) or as a result of improved knowledge, or changes in political demands. For example, in the US the federal commitment to wetland protection has evolved from a strategic policy objective of ‘no net loss’ to one of ‘overall gain’ in relation to the quality and quantity of the area of wetlands. Agri-environmental payments have been used to slow the rate of wetland loss on farmland, as part of the ecosystem management approaches introduced for the Great Lakes, Chesapeake Bay, the Florida Everglades, the Gulf of Mexico and numerous other watersheds (OECD, 2009). In Europe, the objective of agri-environment payments under the CAP in several countries has shifted from limiting the negative environmental impact of agricultural intensification in selected ‘environmentally sensitive areas’ in the 1980s, to the current use of payments as a means of achieving a broad range of environmental policy commitments and aspirations. This is illustrated by the European Commission’s guidelines for the use of CAP funding to finance agri-environmental payments and other environmental land management measures (see box).

The European Commission’s strategic guidelines for CAP expenditure on environmental land management (under Axis 2 of the European Agricultural Fund for Rural Development)

'To protect and enhance the EU’s natural resources and landscapes in rural areas, the resources devoted to axis 2 should contribute to three EU-level priority areas: biodiversity and the preservation and development of high nature value farming and forestry systems and traditional agricultural landscapes; water; and climate change. The measures available under axis 2 should be used to integrate these environmental objectives and contribute to the implementation of the agricultural and forestry Natura 2000 network, to the Göteborg commitment to reverse biodiversity decline by 2010, to the objectives laid down in Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy, and to the Kyoto Protocol targets for climate change mitigation.'


Multiple environmental objectives

Although there is a case for pursuing individual objectives with specific individual measures, this may not be appropriate when a large number of agri-environment objectives would mean a proliferation of different measures. Multi-purpose interventions have a role despite the potential hazards involved.
For example, it can be argued that the most significant environmental public goods associated with agriculture are water quality, water availability, soil functionality, climate stability (reducing greenhouse gas emissions and improving carbon storage), air quality, agricultural landscapes, farmland biodiversity, and resilience to flooding and fire (Cooper et al., 2009). The relative importance of the different strategic objectives associated with the long-term provision of these goods will differ both between and within OECD countries, varying with political preferences, different variations in bio-geographic conditions, climate and agricultural systems. In practice the operational objectives of agri-environmental interventions will often seek to deliver several of these objectives simultaneously.

Many of the changes in farming practices sought through agri-environmental actions can be designed to deliver different performance objectives. For example, keeping vegetative cover on arable fields during the winter will reduce the risk of soil erosion, but if the winter cover used is a leguminous crop it will also provide winter food for farmland birds and reduce the quantity of mineral nitrogen needed for the next crop, thus helping to minimise pollution of surface waters. In this example three different objectives are targeted (soil erosion, biodiversity and water quality) but articulating the different objectives separately makes it easier to prioritise them. This may be necessary to address locally specific environmental problems and opportunities. Cooper et al (2009) showed that in Europe some farming systems are better than others in providing multiple environmental public goods, notably low-intensity livestock and mixed systems, traditional permanent crops and organic systems. In such cases, where the environmental benefits are clear the operational objective of intervention may be to support the whole farming system, not just individual practices.

Secondary objectives
In some cases there may be significant secondary objectives, environmental or social, to pursue alongside a primary one. One of the specific agri-environmental objectives under the EU regulation is ‘the sustainable use of agricultural land’1. Attempting to deliver secondary social objectives alongside the primary environmental objectives can be very effective but requires careful measure design. For example the Tir Gofal agri-environment scheme in the UK provided an incentive for farmers to use locally grown oak timber for gates. This was not just because it was appropriate in the landscape but also as an economic incentive to improve the management of local native woodlands (a specific objective in itself) and to support jobs within the rural community. These secondary objectives are rarely evaluated (often because they were not clearly articulated) although they may prove to be significant.

Feasibility of providing guidelines on setting objectives
Guidance on the need for objectives and on their structure and definition is potentially applicable to all policy interventions. It could focus on distinguishing different types of objectives (e.g. strategic, operational, performance) and discuss tools such as establishing a logic of intervention. It could seek to clarify the relationship between objectives and policy monitoring and evaluation. It should be feasible to provide guidelines at this level applicable to OECD countries, covering the purpose of defining agri-environmental objectives, the process and the level and types of objective that may be appropriate. More detailed guidance on setting specific objectives may be less appropriate because of the considerable range of conditions within the OECD, but examples could be given.

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POLICY COHERENCE

Key points about guidance on policy coherence

- design should seek to maximise synergy and minimise conflict with other government policies:
  - agri-environmental in relation to broader environmental
  - agricultural in relation to agri-environmental
- agri-environmental policies need both internal and external coherence
- policies may be implemented by different levels or institutions of governance
- problems can be expected with the coherence of agricultural and environmental data

The need for policy coherence

It is clearly important that government polices do not conflict with each other, and desirable in terms of both cost effectiveness and efficiency that opportunities for synergy between different polices are exploited. At worst, policy conflicts can negate the benefits of one policy, inhibit delivery or impact on both, and lead to criticisms of inefficient use of public funds as well as lack of effectiveness. It is important to screen for policy coherence, and take appropriate action, at an early stage in the design process, after the framework of objectives has been established, because it is very difficult and often impossible to remedy policy conflicts after the intervention is established.

In terms of governance, internal policy coherence is usually sought by an appropriate institutional division of responsibilities (for example between government departments). External policy coherence is achieved through formal arrangements for joint working (for example inter-departmental working groups or public and stakeholder consultation processes). This applies to agri-environmental policy, although it does not always fit neatly into this model. It is a relatively new and rather complex policy concept, which uses mainly agricultural policy tools (to influence farmer behaviour) as the principal means of delivering environmental policy objectives. A further complexity is that in some situations environmental pressures or the undersupply of environmental public goods is a direct or indirect consequence of long-established agricultural policies. These can arise, for example, from specific forms of income or commodity support, causing an elevated area of arable land or number of livestock.

The key areas to be examined for policy coherence, which are likely to be relevant in every OECD country (albeit to differing extents) include:

- coherence of proposed agri-environmental policy and existing or proposed environmental policy. Examples might be differing agricultural and environmental priorities for reducing the risks of soil erosion, or the need to capture environmental priorities from outside the agricultural sector such as giving priority to an environmental need to reduce diffuse agricultural pollution of estuaries that are important feeding grounds for migrating birds;
- internal coherence with other agricultural policies, in at least two ways. Firstly policies should be designed to avoid conflict. For example agri-environment payments to support low-intensity land management systems (such as traditional mixed cropping, agro-pastoral systems, and dryland cropping) could be negated if farmers are offered more attractive investment support to intensify production or install irrigation systems. Secondly, coherence can improve synergies, for example by designing support for marketing and product development to include elements specifically tailored for farmers pursuing practices delivering high levels of environmental benefit, to help them develop niche market sustainable products;

The need to scrutinise for coherence applies to all policy mixes of instruments including payment schemes, where the detailed implementation is often locally flexible and not subject to the advance scrutiny that
applies to regulatory standards or changes in property rights. It is not always possible to achieve complete policy coherence, especially when one policy has a much broader scope or geographical coverage than the other and the addresses include a wide range of farm types and circumstances. Failure to achieve coherence can be costly, as illustrated by the situation in the EU before 2005, where livestock support payments per head of cattle or sheep over a long period had led directly to environmentally damaging overgrazing of semi-natural habitats in the UK and Ireland. Agri-environment schemes addressed this by paying farmers to reduce livestock numbers, but the payments to compensate for income foregone as a result of removing the animals had to cover not just the lost market income but also the lost subsidy payment. In this case one part of the CAP budget was being used to ‘buy-off’ another part of the budget. The issue was resolved when most CAP support payments were decoupled from production in 2005.

The effect of governance on policy coherence

Environmental and agricultural policies may be implemented together or in parallel by different levels of governance (federal, regional or local) or by different agencies at the same level responsible for different environmental issues (for example water supply and quality, soil conservation, habitat protection). Clarity of roles and relationships in policy formation may be particularly important where agri-environmental interventions with almost identical objectives are delivered across several geographical and administrative boundaries. For example there are different environmental standards and agri-environment payments all targeted at reducing diffuse agricultural pollution of the River Danube as it flows through Germany, Austria, Slovakia and Hungary.

There will be a nationally distinctive combination of governance structures and institutions in each OECD country, but some general principles and issues can be identified. Coherence between agencies should be addressed first at the level of policy objectives (for example between a national agri-environment payment scheme and local conservation management agreements in a nature reserve or national park), but coherence is also required in policy design, data collection and ‘farm-gate’ delivery. The aim should be to avoid conflicts and make best use of opportunities for synergy at all scales down to the level of the individual farmer, who may be confused or discouraged by apparently unrelated government incentives and requirements applying to the same land. This takes time, requires considerable effort, and depends on establishing good communications between institutions not necessarily used to working together. The benefits come from more efficient delivery of shared objectives and improved acceptance by farmers.

Coherence of data

One common problem is lack of coherence or complementarity between the agricultural and environmental data sets needed for effective policy targeting and delivery, and for subsequent monitoring. Different authorities may use varying definitions, sample frames, mapping systems and databases to collect environmental and agricultural information that needs to be shared for the effective design and targeting of agri-environmental policy mechanisms. Such problems may be surprisingly difficult to resolve – for example if the GIS environmental data identifying the location of priority habitats cannot be transferred to the agricultural GIS system used to target habitat-specific agri-environment payments. Prior planning and coordination could help to obviate such issues. For example, in designing the Caring for Our Country agri-environmental scheme the Australian Government has addressed the problem of coherence through inter-departmental committees and a National Plan for Environmental Information.

Feasibility of providing guidelines on policy coherence

It should be feasible to elucidate the process of seeking policy coherence, and to identify some of the common problems encountered, particularly when setting up agri-environmental polices for the first time. Given the considerable variations in governance, administrative capacity and data in OECD countries, it
will not be possible to provide detailed guidance on how to achieve policy coherence in specific situations, although a range of examples (of both success and failure of coherence) could be helpful.

THE REFERENCE LEVEL FOR AGRI-ENVIRONMENTAL PAYMENTS

Key points about guidance on the reference level for agri-environmental payments
- the reference level defines the baseline environmental performance expected of a farm
- it comprises legislation and other standards and will reflect social preferences
- agri-environmental incentive payments are offered above this baseline
- reference levels vary between farms, countries and over time
- an explicit reference level is usually helpful, but can only be defined locally
- setting too demanding or too low a reference level has risks for the associated agri-environmental policies

Why the reference level is important
The reference level is a key element in designing agri-environmental policy, particularly in relation to payment schemes, and a clear understanding of its definition and role is important for both policymakers and farmers. The reference level effectively defines an individual’s property rights, stipulating what someone may or may not do in managing their land. There are no set rules for where property rights (or the reference level) should be set, nor is there a prima facie reason for granting or denying property rights to one particular group of farmers or another, despite the fact that the allocation of property rights does have economic implications for the individual farmer.

The concept of the reference level
The concept of the ‘reference level’ as a cost allocation mechanism was developed by the OECD in the 1990s, recognising that, to achieve environmental outcomes more ambitious than those required by law, farmers will often need a financial incentive to influence how they use their land, labour and capital (Bromley and Hodge, 1990). The reference level serves to distinguish between those costs associated with the achievement of environmental outcomes that must be borne by the land manager, and those which should be remunerated (OECD, 1998; Scheele, 1999). This is illustrated in Figure 2.

Figure 2 Provision of environmental benefits above and below the reference level
(Source: Cooper et al., 2009)

The remainder of this section discusses the impact of the reference level on agri-environmental payments, the policy instrument most affected, but of course agri-environment regulations will be part of the reference level, and agri-environment taxes, levies or quotas may exist independently but will have an
influence on the effective application of the reference level, although this may be difficult to measure (for example when data on water abstraction is incomplete).

**The impact of the reference level on agri-environment payments**

The reference level defines what environmental goods and service a farmer is obliged to deliver without remuneration, whether or not the farmer chooses to accept agri-environment payments beyond this level. The question of where to set the reference level is not necessarily determined by the desired environmental outcome or the biophysical characteristics of land. Rather, it is largely a matter of legal tradition, political history and choices and considerations of equity and fairness. This explains why reference levels may be set at different levels in different countries. A farmer in one country may receive an agri-environment payment for an action that, in otherwise identical circumstances, is a legal requirement in another country (see box below).

**Example of the effect of different reference levels**

Depending on where the reference level is set, a farmer – as the owner of a plot of land that provides a habitat for rare species – may have the right to plough it up for conversion to a more profitable land use, and therefore to destroy the habitat, or regulations may exist that require the habitat to be maintained in line with standards laid down in legislation. In the first case, although there is a right to plough, the farmer nevertheless may be willing to allocate factors of production towards the preservation of the habitat if offered a payment to do so which is sufficient to cover the income foregone. In the second case, the destruction of a habitat is not within the property rights of the farmer, who therefore would have to bear the opportunity costs of being denied conversion (Cooper et al., 2009).

The reference level in the EU has a further dimension, in that it not only defines the baseline above which agri-environment payments may be made, but certain elements of the reference level also feature as part of the farmer’s contractual agri-environmental obligation. The farmer must comply with a list of so-called ‘cross-compliance’ standards or risk the losing some or all of the agri-environment payments (in addition to any specific penalties for breaching regulations). These cross-compliance standards are verifiable at farm level and comprise:

- Statutory Management Requirements (SMR) which are existing regulatory requirements under certain pieces of EU legislation; and

- standards of Good Agricultural and Environmental Condition, defined by Member States within a common framework (see Table 2 below).

The reference level may also include other national or regional legislation, which is not part of cross-compliance.

The reference level not only varies from country to country, but may also vary between farms within one country, depending on their circumstances. Relevant factors include regional variations in regulations, the farm’s location relative to designated areas for water or soil protection or nature reserves, and the type of farming (for example, mixed farms will have to comply with regulations aimed at both arable and livestock systems). The reference level will also vary over time, as new regulations are introduced (e.g. on water quality and soil conservation, or to deliver carbon targets).

Given its key influence on the public/private distribution of the costs of providing environmental goods from farmland, there would appear to be an incentive for governments to set relatively demanding reference levels. However this has obvious risks, firstly of simple non-compliance as farmers balance the real cost of compliance against their perceived risk of detection and penalties, and secondly of discouraging uptake of agri-environment payment schemes because the financial reward is perceived as insufficient to justify the cost and effort required to meet reference level standards (Jones, 2008).
### Table 2  EU Framework of issues and standards for Good Agricultural and Environmental Condition

<table>
<thead>
<tr>
<th>Issue</th>
<th>Compulsory standards</th>
<th>Optional standards</th>
</tr>
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<tbody>
<tr>
<td>Soil erosion: Protect soil through appropriate measures</td>
<td>- Minimum soil cover</td>
<td>- Retain terraces</td>
</tr>
<tr>
<td></td>
<td>- Minimum land management reflecting site-specific conditions</td>
<td></td>
</tr>
<tr>
<td>Soil organic matter: Maintain soil organic matter levels through</td>
<td>- Arable stubble management</td>
<td>- Standards for crop rotations</td>
</tr>
<tr>
<td>appropriate practices</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Soil structure: Maintain soil structure through appropriate measures</td>
<td></td>
<td>- Appropriate machinery use</td>
</tr>
<tr>
<td>Minimum level of maintenance: Ensure a minimum level of maintenance</td>
<td>- Retention of landscape features, including, where appropriate, hedges, ponds,</td>
<td>- Minimum livestock stocking rates or/and appropriate regimes</td>
</tr>
<tr>
<td>and avoid the deterioration of habitats</td>
<td>ditches trees in line, in group or isolated and field margins</td>
<td>- Establishment and/or retention of habitats</td>
</tr>
<tr>
<td></td>
<td>- Avoiding the encroachment of unwanted vegetation on agricultural land</td>
<td>- Prohibition of the grubbing up of olive trees</td>
</tr>
<tr>
<td></td>
<td>- Protection of permanent pastures</td>
<td>- Maintenance of olive groves and vines in good vegetative condition</td>
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<tr>
<td>Protection and management of water: Protect water against pollution and run-off, and manage the use of water</td>
<td>- Establishment of buffer strips along water courses (implemented by 2012)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Where use of water for irrigation is subject to authorisation, compliance with</td>
<td></td>
</tr>
<tr>
<td></td>
<td>authorisation procedures</td>
<td></td>
</tr>
</tbody>
</table>

Note: Standards shown in *italics* were added in 2009  

**Feasibility of providing guidelines on the reference level**

It would be desirable to have clear guidance on the function of the reference level in the context of agri-environment payment schemes, explaining the background, rationale and how the reference level works in practice, to ensure that public money is not used to pay for management that is a legislative requirement. Examples could be given, however it would not be feasible to provide detailed guidance on the specific scope and content of the reference level in different OECD countries because of major variations in the environmental, agricultural and regulatory contexts.
THE EVIDENCE BASE

<table>
<thead>
<tr>
<th>Key points about guidance on the evidence base</th>
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<tbody>
<tr>
<td>• analysis of evidence supports successful policy design by helping to:</td>
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<tr>
<td>o identify environmental problems and opportunities</td>
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<tr>
<td>o define operational objectives</td>
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<td>o analyse relevant methods of conservation</td>
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<tr>
<td>o select the most effective management interventions</td>
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<td>o provide a baseline against which delivery can be measured</td>
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<tr>
<td>o anticipate perverse effects of agri-environmental interventions</td>
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<tr>
<td>• environmental evidence is needed of both the scale and nature of agricultural impacts on the environment and of the effectiveness of the alternative land management options</td>
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<tr>
<td>• socio-economic evidence will be important in targeting and delivery,</td>
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<tr>
<td>o current use of farmland</td>
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<tr>
<td>o agricultural structures, farming systems and dynamics</td>
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<tr>
<td>o drivers that influence farmers’ decisions, effective ways of changing attitudes</td>
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<td>• the scale and availability of data may limit the evidence base</td>
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All policy interventions should be based on sound evidence which helps to shape the framework of objectives and interventions, define the reference level, support the justification for using public funds, inform the choice of the delivery methods and targeting and, not least, guide the actions of those managing the land. Further evidence for the purpose of evaluation should be gathered throughout the period in which the intervention is delivered – this is discussed in the section on policy evaluation.

**Environmental evidence**

The correct analysis of the environmental and related agricultural situation and problems to be addressed forms the background to any successful scheme design (IEEP, 2002). Most policy interventions will need to be underpinned by environmental evidence including, biological, landscape, physical, and resource (soil, water) data, particularly where these relate to existing regional, national, or supra-national policies and targets. This can help to:

- identify the characteristics and location of environmental problems and opportunities associated with agricultural land management that need to be addressed through some form of policy intervention;
- define the operational objectives of the policy (for example by assessing the scale of diffuse pollution by fertilisers, or identifying the type and location of soils most prone to erosion);
- provide evidence of the efficacy of proposed management interventions based on pilots or field trials (for example techniques to restore degraded heathland, or the effect of different grazing regimes on breeding success of threatened ground nesting birds);
- provide a baseline against which the delivery of objectives can be measured (for example surveys of the distribution and populations of farmland butterflies).

Environmental data sets may be held by many different organisations – government departments, research institutes, universities and sometimes NGOs (for example the British Trust for Ornithology in the UK and the Audubon Society in the US have collated bird census data for many decades). Reliable experimental evidence may be available to differing degrees for different environmental issues, however. For example there tends to be good data from water and soil research institutes on measures to control agricultural pollution or soil erosion, but less available research on interventions for habitat and species management, although observational scientific studies can be informative in their place.
Where habitats or landscape elements are the main focus of agri-environmental management it is important that the evidence base not only covers the extent and location of such features but also their condition, the environmental problems that may be affecting them and the most appropriate conservation management (whether for maintenance, restoration or enhancement). The appropriate agricultural management of semi-natural features may be very different from that required to address the negative environmental impacts of certain types of farming over a wider area. In both cases gathering evidence may require technical data collection techniques such as water sampling, soil nitrogen monitoring or vegetation surveys.

Although there are extensive agricultural datasets at farm level in most OECD countries, these may provide little environmental information. For example the ten yearly Farm Structural Survey across the EU provides detailed time series data on the type of agricultural management (crops and livestock) but very limited information on the intensity of management, which is often the aspect of most interest to the designer of agri-environmental polices. However these datasets can provide some insight into farm structures and broader trends in farm management, for example trends in the quantities of agro-chemicals used by arable farms within a region. There is generally very little information available in most countries on the condition of different habitats or landscape features, with the exception of those in some designated protected areas.

**Socio-economic evidence**

Participation in most agri-environmental payments is voluntary for farmers. Therefore understanding the dynamics and socio-economic characteristics of the farming systems being targeted is an important element of the evidence base, because these factors can have a powerful influence on participation rates and uptake of relevant management practices. The farmed environment of OECD countries is highly variable both within and between countries, reflecting market demands, historic structures, existing and previous policies etc. The socio-economic evidence base covers the way land is used and the factors driving (and limiting) that use. Land use practices are important because they relate environmental factors with socio-economic drivers. Information on cropping systems, rotations, input use, stocking densities, profitability and farm structure should be accessible from agricultural data. Also important, but easily overlooked, is an understanding of farmer attitudes, land use history, and current land tenure, which may be much more difficult evidence to obtain. In most cases agricultural expertise, previous experience within extension services and local knowledge will be needed to capture this information. This is another reason to involve stakeholders at an early stage in the design process, including representatives of the farmers at whom the scheme is targeted.

Individual attitudes have been shown to be particularly important in the uptake of scheme options. For example, uptake of some agri-environment in-field options have been low in some of England’s agri-environment schemes despite their having attractive payment rates, in contrast to wider uptake of options that are easier to implement and can be separated from normal farming operations. A recent survey of farmers indicates that this difference may be due to the way that farmers perceive their role as land managers and regard environmental management and farming as two separate activities, rather than an integrated whole. The evidence base for the design of agri-environmental policy mechanisms should therefore account for such drivers and attitudes, where possible, particularly in setting payment rates and using advisory efforts to broaden uptake of particular management options.

**Scale of data**

The scale of the data required depends on the objectives of the policy, the features and problems to be targeted, and the geographical scope of the scheme. Horizontal schemes, covering a whole territory or region, will require data covering a wide geographical range. Such schemes tend to operate at a lower level of complexity and the data requirements may be less onerous. Zonal schemes, where efforts are focussed on more narrowly defined areas, often have more complex data needs. Although they may require less
geographically widespread data, this will be at a much greater resolution and level of detail. In the case of zonal schemes evidence may also be necessary to define those zones or areas in which to focus delivery (see section on targeting) if they are not already predefined by other national and supra-national designations.

**Availability of data**

Usually the evidence base for agri-environmental policy design is likely to be incomplete, quite fragmented, out of date and not specific to the task for which it is required. Often there will be insufficient time or resources to gather more evidence before the policy is implemented. In countries where agri-environmental policy mechanisms are being designed for the first time, evidence may be particularly scarce. To make best use of limited data and to fill gaps in knowledge it is often necessary to rely on expert judgement and advice. Care needs to be taken to ensure a balanced approach in gathering such evidence, and advice should be sought across a range of stakeholders and partners.

Specialist institutes and NGOs are often a valuable source of expertise – for example, the advice of specialist ornithologists was sought in designing an agri-environmental payment to protect nesting sites of the 1,500 pairs of a globally threatened grassland bird, the corncrake, which return to the Czech Republic to breed each spring. Sharing knowledge and experience with other countries or regions may also be useful way of filling gaps in the evidence base, especially if farming systems and environmental problems are similar. Farmers themselves should not be ignored as a valuable source of detailed information. Many farming systems are complex and may have developed over a long period in some cases in conjunction with the semi-natural habitats and wild species targeted by agri-environmental payment schemes.

**Feasibility of providing guidelines on the evidence base**

General guidance, supplemented by illustrative examples, could be provided on the scope, type, scale and potential sources of evidence required for designing and implementing agri-environmental payment schemes in OECD countries, and examples could be given. Given the diversity of data collection systems, farming and environmental problems, it would be rather difficult to specify the data sets required, or to comment on their availability or suitability.

**DESIGN AND TARGETING**

**Key points about guidance on design and targeting**

- scheme design and targeting seeks to optimise cost-effectiveness and environmental efficiency, by focusing resources and effort
  - on clear objectives and priorities
  - on priority areas and spatially coherent outcomes
  - on priority farms, farm types, management operations and environmental outcomes
- targeting is applicable at different levels, including the landscape scale
- it can be applied alongside tailoring, which seeks to match interventions to specific conditions
- the initial costs and long-term benefits of targeting should be considered over the lifetime of the scheme

**Designing for long-term environmental impact**

It is rare that any agri-environmental policy is backed with sufficient resources to deliver against all its objectives across the whole territory for an indefinite period of time. Policy design will have to take account of the timescale required for some environmental management to take effect, and the need to
encourage long-term delivery of environmental benefits, and changes in farmers’ attitudes beyond the duration of a particular payment scheme. This will have an impact on the duration of agri-environmental contracts (for example these may be as short as one year or as long as twenty years).

Targeting agri-environmental interventions is a means of optimising cost-effectiveness and environmental efficiency by focusing resources and effort on the problems, opportunities, and farmland where the environmental objectives and targets are most likely to be achieved.

Depending on the nature of the agri-environmental policy a range of different targeting approaches may be required. Broadly speaking there are three types of targeting:
- objective targeting, relating to the specific environmental objectives or features to be protected or managed through the scheme;
- spatial targeting, relating to the geographical extent and zones in which to deliver objectives; and
- structural targeting, relating to specific farm types to be covered.

Essential prerequisites for targeting are a clearly defined policy framework with a hierarchy of objectives and the availability and accuracy of a suitable evidence base.

**Targeting environmental objectives**

Objective targeting refers to the process of refining the operational objectives into specific performance objectives at farm level for regulations, taxes or payments. This has largely been covered in the discussion of the hierarchy of objectives and will not be discussed in further detail here, apart from to note that both spatial and structural targeting rely on well-defined and targeted performance objectives. Regulations, taxes and horizontal agri-environmental payment schemes, which apply across the whole territory, may have little if any spatial or structural targeting and may be entirely targeted at performance objectives.

**Spatial Targeting**

Spatial targeting is mainly concerned with focusing resources (especially funding and staff time) into a defined geographical area to deal with specific environmental issues (Vojtech, 2010; Allen and Reid, 2005). As resources become increasingly limited within national budgets it may not be feasible to deliver or attempt to deliver all scheme objectives equally across a territory (Allen, 2007). The target area may already be defined by national (or other) designations, for example Nitrate Vulnerable Zones in the EU where there is a high risk of nitrate pollution from agriculture, or Natura 2000 habitats or target areas may be defined by locally specific environmental criteria, for example water-dependent ecosystems in the Murray-Darling Basin in Australia.

This application of resources to geographically defined areas is a defining feature of zonal agri-environmental payment schemes, which can be closely tailored to local conditions and particularly suited to more demanding and complex land management activities involving greater restrictions on farm management. For example, for the Higher Level tier of the Environmental Stewardship agri-environment scheme in England, target areas to deliver specific environmental objectives are defined using a combination of existing designations, known locations of features, administrative boundaries and expert advice. Farmers within these target areas are actively approached and encouraged to apply for the scheme.

The defining of target areas often is not straightforward, particularly if they are geographically rather than administratively based. This may be as a result of limited data availability or compatibility and the lack of coherence between environmentally defined areas and administrative boundaries. For example the latter may follow mountain ridges or main rivers, dividing large-scale habitats and catchments. Another difficulty in defining target areas is reaching a consensus amongst stakeholders. The early involvement of
stakeholders in the design process, and the management of their expectations, is an important consideration.

Spatial targeting often requires a greater administrative effort in scheme delivery. It can also lead to frustration among farmers outside the target area, especially where the borders are not based on immediately obvious geographical differences, who may feel they are being denied an opportunity to participate (IEEP, 2002). On the other hand where regulations or taxes are zonally targeted, it may be the farmers within the target area who feel that their land management is being unfairly restricted.

**Structural Targeting**

It may be necessary to target different farming sectors, types of farm or tenure systems in order to address economic and environmental difference, social structures and other drivers of scheme uptake. Different farming sectors vary markedly in their profitability and motivations and may have very different attitudes to agri-environmental payments, depending on the impact on both their farm management and farm income. For example, it may be appropriate to target payments at small economically marginal livestock farms where a high proportion of the farm is semi-natural grazing, delivering high levels of environmental benefits, such as in the Iberian Peninsula and agri-environmental payments may help to maintain both environmental benefits and farm income.

Regulations often apply to all farmers in an administrative region but compliance efforts may have to be structurally targeted, especially when the regulations are first introduced – for example small and medium sized dairy farms may cause proportionally more water pollution problems than their larger counterparts, simply because they have lacked the resources to invest in appropriate manure storage facilities (and perhaps knowledge). Similarly, large profitable arable farms may be a more appropriate target for payments to manage a proportion of their productive land for wildlife, because economies of scale apply to both the habitat provision and the impact on total farm income.

**When intervention is required at a landscape scale**

The effectiveness of agri-environmental payment schemes often relies on the participation of many farmers within a given area, each delivering smaller parts of a larger objective. This may involve management at a catchment scale for soil and water protection, maintenance of cultural landscapes with small, mixed farming systems, the management of large scale open habitats as feeding and breeding grounds for raptors or the provision of habitat networks across farmland. In some cases, single contracts with a group of farmers may be the only option, for example on common land where many farmers have only rights of usage, often for grazing, but neither own nor rent the land. More often it will be desirable to bring multiple, and preferably contiguous farms into agri-environmental payment schemes to achieve these landscape scale impacts, but this is not easy when participation is voluntary. Some OECD countries have already used different ways of encouraging collective action.

For example, farmers already see the benefits of marketing co-operatives (as illustrated by the very large national dairy co-operatives in New Zealand) and in a similar way co-operatives can be used to organise collective participation in agri-environmental schemes. This may through a range of structures, such as drainage boards, nature conservation reserves or catchments, as illustrated by Dutch environmental co-operatives (Franks and McGloin, 2006). As these environmental co-operatives have moved beyond being simply groupings of farmers with a shared commercial interest, to engaging a much wider community of stakeholders, they have become more similar to the Landcare Groups that developed from the initial Landcare movement of 1986 in Victoria. This built strongly on voluntary participation to improve soil management and environmental stewardship (Hodge and Reader, 2007). Co-operative implementation of this kind could be applied not just to agri-environmental payments for land management but also to payments for providing agri-environmental training, advice and information.
Costs and benefits of targeting
The voluntary nature of many agri-environmental policy mechanisms means that their effectiveness is largely dependent on farmer participation. Ensuring that the right voluntary management options are attractive enough to be taken up at a sufficient scale is critical to scheme success. Targeting agri-environmental policy mechanisms is a complex and resource intensive exercise both for the administrative body delivering the scheme and the farmers carrying out the management. Complexity, transaction costs, and administrative capacity are therefore important elements to consider throughout the design, targeting, and delivery of objectives.

The benefits of successful targeting are in improved achievement of environmental impacts, both in scale and intensity, greater efficiency as well as effectiveness. A concentration of effort can have specific benefits such as the potential positive impact on farmer attitudes when a large proportion of farmers within an area or a group of specialist producers participate.

Feasibility of providing guidelines on targeting
Guidelines could be provided, OECD countries, on the types and principles of targeting agri-environmental interventions, the possible range of targets to be considered and the potential benefits for achievement of policy objectives and examples given.

DELIVERY AND ENSURING COMPLIANCE

<table>
<thead>
<tr>
<th>Key points about guidance on delivery and ensuring compliance</th>
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<tbody>
<tr>
<td>• administration of a voluntary incentive payment scheme requires separation of the functions of:</td>
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<tr>
<td>o inviting and processing applications, selecting and setting up spatially specific contracts</td>
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<tr>
<td>o making payments, monitoring and ensuring compliance</td>
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<tr>
<td>o evaluating effectiveness, and applying the results in reviewing and revising the scheme</td>
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<tr>
<td>• providing training, advice and information for delivery staff, advisers and farmers, throughout the life of a scheme, but especially for new entrants</td>
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<tr>
<td>• pilot schemes can be a cost-effective way of improving both design and delivery of schemes</td>
</tr>
<tr>
<td>• delivery systems must be able to deal quickly and effectively with changing needs and circumstances</td>
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<tr>
<td>• two-way communication with farmers and stakeholders is important throughout the scheme</td>
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<tr>
<td>• success depends on farm-level monitoring and use of advice and penalties to ensure that a large proportion of farmers are meeting the requirements of management</td>
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Designing and implementing an effective and efficient process of delivering agri-environment payment schemes is not a simple task. The detail of the delivery scheme will depend on many local factors and circumstances but there are key elements of the process that will be common to most situations. There are valuable lessons that have been learned in practice, both from countries such as the USA where a range of models have been applied and in Europe where there are important variations in experience of an essentially similar model adapted to circumstances as different as Germany and Bulgaria.

Administration
It is beyond the scope of this report to consider all of the different administrative structures and processes required to deliver regulations, taxes and payment schemes. The remainder of this section covers the main components of the delivery processes required to administer agri-environmental payment schemes.

The administrative functions required for delivery can broadly be divided into processes:
• Inviting applications from farmers, selection of successful agreements, setting up and servicing long term contracts;
• Payment and compliance monitoring; and
• Evaluation of effectiveness (environmental and financial) and review of scheme design.

The first two functions often are separated administratively for reasons of financial accountability, either between different organisations (in the EU typically a government agricultural department and a separate payment agency that handles all government payments to farmers), or between two separate departments of the same organisation. The aim is to ensure the absence of any link between staff setting up contracts with farmers and staff dealing with payments and it is a helpful general principle.

Managing large numbers of agri-environment contracts will usually require databases designed for the purpose. The importance of map-based information was discussed earlier under the section on policy coherence, and is equally important for delivery. Reliable and consistent mapping systems at farm level are an important means of both defining the terms of the contract with the farmer, and monitoring uptake and effectiveness of targeting. The scale of spatial specificity will, at a minimum, be the farm boundary but more often will need to be individual parcels or precise locations within parcels (for example to identify where buffer strips should be placed to control diffuse pollution or to locate important habitats that need protecting). This means that most contracts should be accompanied by maps, or at least detailed reference to specific parcels of land. However the data held by agriculture departments rarely shows environmental features in sufficient detail (or even at all). Another very common and time-consuming problem, often not apparent until delivery is underway, is the level of discrepancy between the farmers’ records, government records and actual measurements on the ground defining the size and precise location of land parcels within the farm. Ideally, these discrepancies should be resolved before the contract is set up, to provide an accurate baseline against which payments can be made and compliance assessed. Many countries now use GIS based mapping systems, which are particularly useful if mobile IT equipment allows these to be taken onsite and shown to the farmer.

Training, advice and information
The role of training, advice and information is to ensure efficient and environmentally effective delivery of agri-environment payment schemes. It is easy to underestimate the need for training and advice, particularly when the scheme is being delivered by organisations already in contact with the target population of farmers. However, both the delivery authorities and the target farm population must understand clearly that agri-environment payments are a completely different concept from more familiar agricultural support policies. Farmers may find it quite difficult to accommodate the shift in focus from production to environmental objectives initially. In some circumstances the management required may not only be unfamiliar but viewed by some as contrary to their perception of ‘good farming’, especially if it involves new techniques or less intensive farming practices which may be perceived as old-fashioned or inefficient. This can be a significant barrier to overcome, not just in the perception of farmers but most importantly in the attitudes and knowledge of their agricultural advisers, and of the staff administering and monitoring the scheme. Cultural acceptance of environmental management by the farming community has a significant influence on uptake. Ensuring that farmers understand why they are being asked to change their management and what outcomes are sought requires considerable proactive advisory, information and training effort. This is especially important at the start of a programme but should continue throughout, addressing the needs of each new intake of farmers. Farmers need to be confident that measures have been assessed, are technically proficient and are applicable to them.

The value of pilot schemes
Testing the design and delivery of agri-environmental policy mechanisms through pilot schemes is a valuable way of refining the policy and identifying potential problems, and is particularly useful for
voluntary agri-environmental payment schemes. Implementing pilot schemes takes time and resources, but helps to avoid potentially expensive long-term problems, and to improve both efficiency and cost-effectiveness. It also familiarises delivery staff and farmers with the new policy and gives them and stakeholders an opportunity to provide feedback to refine the final design. Pilot schemes normally operate for a year, in several different areas selected to provide a broadly representative range of farm types, environmental objectives and administrative structures. The example of Bulgaria’s experience illustrates the potential value of using pilot schemes.

**Bulgaria’s experience of developing an agri-environment pilot measure**

Valuable lessons were learnt about capacity building, in both institutions and the farming community, as Bulgaria prepared its first agri-environment scheme in 1999:

- farmers were very keen to “try” the agri-environment scheme, but the majority could only be expected to implement one agri-environment action (from a possible nine) because at the start of the programme the level of training and know-how among farmers, their advisers and the administrators was insufficient;
- there was good cooperation and partnerships forged between government and NGOs for the development of pilot projects, but a lack of specific experience in the process of implementation, monitoring, evaluation, etc;
- the late establishment of an Agri-environment Division in the Ministry of Agriculture meant that when the scheme was implemented most of the newly appointed experts lacked experience in agri-environment and needed time to adjust; and
- not enough resources were allocated for the targeted development of pilot projects.

(Source: after Kazakova, 2000))

**Dealing with changing needs and circumstances**

A significant degree of uncertainty about results is inevitable in agri-environment payment schemes, and the need to maintain the desired management over a period of many years makes it even more important to provide some flexibility for delivery agencies. During the life of the scheme they will need to make adjustments to the schemes and to individual contracts, whilst ensuring rigour in the pursuit of environmental objectives, and transparency and accountability in the use of public funds.

Participation is voluntary, and farmers’ behaviour, even if they do choose to enter an agri-environment contract lasting many years, cannot be predicted with certainty. Usually it is influenced by many factors. At the start of a contract the management or outcomes required might need to be adjusted to fit the environmental opportunities of the farm, and to a certain extent this can be accommodated by offering several variants of a single management requirement. A classic example is where farmers are paid to delay mowing species-rich hay meadows so that the plants can set seed. The dates at which mowing starts will be significantly earlier for farms at low altitudes than for farms in the mountains; where the growing season begins later. Despite these refinements, in some years extreme weather conditions will mean that detailed requirements such as grazing regimes and dates of sowing or harvesting crops will have to be altered for all farmers. Over the longer term many participants will see changes in profitability of their main enterprises, size and structure of the farm, and availability of labour, all of which may require contractual changes, and/or revision of payment rates.

Perhaps most important of all is the flexibility to alter the design of the scheme if it is not working, and to do this quickly in response to feedback from delivery staff, before the problem becomes a disincentive for farmers to participate.
Communication with farmers and stakeholders

The benefits of effective communication between the managing authority, other stakeholders and the farming community are obvious at the design stage and the initial phases of delivery, when time and resources must be allowed for this. What is less well recognised, but equally important, is to maintain this communication as a two-way process for the life of the scheme. This provides opportunities for farmers to raise concerns and seek advice, improves management at farm level, and conveys the message that society is interested in how farmers are delivering these new environmental objectives – a subtle but important objective when most farmers will enter an agri-environment contract for many years, but during that time their only contact with staff be occasional visits from field inspectors, looking for compliance failures.

Ensuring compliance

The success of all interventions depends on a large proportion of farmers complying with the requirements. For all policy mechanisms compliance is normally encouraged by provision of advice and information throughout the duration of the intervention, targeted at the wider farming community, farm advisers and individual farmers. The choice of methods for checking compliance, penalising failure and remediying consequential harm will vary, depending on the type of intervention and the specific environmental objectives as well as national cultures. Cost and synergies with other forms of farm inspection will be important considerations identifying failures of compliance may involve administrative checks (of written notifications, discharge permits, tax documents, livestock movements, dates of ploughing and harvesting), on-farm visual inspections of the location and state of areas under environmental management (stocking rates and habitat condition), off-farm sampling and scientific analysis (river samples tested for nitrates and prohibited pesticides, aerial photographs). The proportion of farmers checked by different methods will vary, and is generally higher at the start of a scheme (for example, in pilot schemes 100% of participants are likely to have on-farm compliance checks). Subsequently the sample selected may be much smaller and based partly or wholly on risk. This can be measured in different ways, for example in relation to non-compliance or of the environmental consequences.

Penalties may vary from written warnings and advice, to partial or complete withdrawal of payments and cessation of payment contracts. In the case of breaches of regulations and tax requirements financial penalties may be on a fixed scale, applied by judicial action and include the costs of financial or land restitution (for example of protected habitats which have been drained or ploughed up). Publicity within the farming media of cases of failure of compliance and the penalties applied often is used as a means of encouraging other farmers to improve their own compliance. This will only be effective if the farmers perceive the risk of detection and consequential penalties exceed the costs of compliance.

Feasibility of providing guidelines on the delivery process

Guidelines could be provided on the stages and processes of delivering agri-environmental payment schemes, which would be useful for most situations in the OECD, irrespective of agricultural and environmental systems. It would seem less likely to be feasible to provide similar guidance on the delivery of regulatory and taxation instruments, because this would have to address the specific context in each country.
POLICY EVALUATION

Key points about guidance on policy evaluation

- a management tool used throughout the life of the policy
- monitoring provides information on progress of implementation over time
- evaluation provides in-depth analysis of impacts against quantified performance objectives
- indicators are a useful evaluation tool, but only if directly related to clearly defined objectives:
  - input, output, result and impact indicators
  - importance of baseline indicators
  - time series data or control sample?
- monitoring and evaluation must be devised as part of the process of designing the policy and its implementation – afterwards is too late

The main purpose of a monitoring and evaluation programme is to obtain information on the success or failure of a given policy in achieving its principal objectives (IEEP, 2002). This section of the report considers only the monitoring and evaluation of agri-environmental incentive policies because they are rather distinctive whereas the evaluation of regulatory measures in this sector raises fewer specific questions.

Monitoring and evaluation lies at the heart of agri-environmental policy, as shown in Figure 3.

Figure 3 The cycle of agri-environment policy making

![Diagram](image)

Source: Redman and Hemmami, 2008

The monitoring component provides information on progress over time in programme implementation using for example, indicators of financial inputs (payments committed), outputs (farms with agri-environmental contracts), results (at a minimum the area of land under specific types of environmental management) and impacts (changes in farmland bird populations, area of land subject to soil erosion).

The evaluation component provides in-depth analysis of the impact of measures against quantified performance objectives, using data from the monitoring process and other relevant sources of information (IEEP, 2001). Environmental impact evaluation needs to take account of:

- the time lag between changes in management and the measurable changes in environmental condition (often several years); and
- varying baseline conditions at farm-level, for example in water quality, or state of semi-natural habitats and landscape features;
extraneous influences on the chosen indicators (for example fluctuations in plant or animal populations caused by weather or disease)

Indicators are a useful evaluation tool for measuring progress, but only if they relate directly to clearly defined objectives. The Common Monitoring and Evaluation Framework of the European Union EAFRD\(^2\) includes five main types of indicator:

- input indicators are commonly used to monitor progress in terms of the payment of the funds to farmers;
- output indicators monitor the uptake of specific measures (for example, number of new agri-environment contracts with farmers, number of hectares supported etc.);
- result indicators relate to the direct and immediate effects of the measure on the management of the farm (for example, area of land receiving pesticides, area of land with a particular crop, number of newly planted trees, length of soil erosion barrier etc.);
- impact indicators look beyond the immediate ‘results’ at the long-term effects on the environment (for example, improvements in water quality);
- base-line indicators are an important reference point for the evaluation of impacts of single measures and programmes as a whole.

**Figure 4** Position of monitoring and evaluation in development of agri-environment schemes

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\(^2\) European Agricultural Fund for Rural Development
Monitoring and evaluation programmes must be devised as part of the policy design exercise (not afterwards), as shown in Figure 4, and should be implemented throughout the delivery process. A key element, easily overlooked, is the need to design data systems that meet both delivery and monitoring requirements, and to collect baseline data when farms enter the scheme. Baseline data is required because the voluntary nature of payment schemes means that it is useful to collect time series evaluation data for farms within the scheme, and also, where possible, to compare two sample populations of farms one of which is implementing the policy, and one which is not.

Monitoring and evaluation programmes should provide ex ante and ex post assessments of current and future policy mechanisms, and also guide policy adjustment in response to needs that become apparent during implementation (for example problems of uptake). Rational appraisal of agri-environmental policy requires a comparison of costs and benefits (Pearce, 2005), as well as a broad range of other criteria to assess the true value of the policy (Jones, 2005). These are likely to include socio-economic, agricultural and environmental aspects, and cover the relevance of objectives, effectiveness in contributing to the achievement of objectives, and efficiency in terms of the cost effectiveness of resource transmission into results and impacts. The monitoring methodologies and data systems should themselves be reviewed from time to time, as needs change and techniques improve.

INSTITUTIONAL CAPACITY AND BUDGETING

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<th>Key points about guidance on institutional capacity and budgeting</th>
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<tbody>
<tr>
<td>- a range of mainly public sector institutions is likely to be involved in delivering agri-environmental policies</td>
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<td>- policies on, for example, water quality, taxation, environment and agriculture are growing in sophistication and will require coordination</td>
</tr>
<tr>
<td>- delivering agri-environmental policies may require increases in capacity (staff, IT systems) and resources for staff training, monitoring and evaluation</td>
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<tr>
<td>- introducing agri-environment incentive payments for the first time can involve:</td>
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<tr>
<td>- institutional separation of scheme management and payment functions</td>
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<td>- coping with seasonal peaks of work which require specialist expertise and advice</td>
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<td>- on-going communication with farmers and stakeholders</td>
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<td>- pre-delivery training of staff, advisors and trainers</td>
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<td>- significant peaks of demand on staff resources when delivery commences</td>
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<td>- regionally defined schemes and targeted payments with local capacity building</td>
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<td>- multi-annual budgets are required for farmer payments, training, monitoring and evaluation</td>
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Agri-environmental regulations and taxation are likely to be administered by the relevant authorities, for example the central (in some cases federal) or regional (state) government departments responsible for ensuring water quality, habitat protection and tax collection. Agri-environmental payment schemes are normally (but not necessarily) administered by government agricultural authorities, centrally or regionally. Environmental agencies may be equally or more suited to the task, depending on circumstances.

The introduction of new regulations or taxes is likely involve increasing institutional capacity (staff, IT systems, sampling and laboratory services) and will certainly require staff training. In addition to these costs, resources will be required for making farmers aware of the requirements of the intervention and possibly for training farmers and farm workers for specialist tasks, for example in techniques for handling and disposing of agricultural pesticides. Resources will also be allocated to compliance monitoring and policy evaluation.
Similar increases in institutional capacity will be needed to deliver an agri-environmental payment schemes, as well as a significant budget to fund annual payments to farmers over many years (typically there will be a new intake of farmers every year and individual contracts will last from 3-10 years). In the EU the two main administrative bodies required are a Managing Authority and Paying Agency. They have two very distinct functions, and are usually established separately, sometimes by adding to the role of an existing agency (the Paying Agency, for example, may already be responsible for other types of payments to farmers). It is important to ensure that the lead organisation for implementing an agri-environment scheme has credibility with farmers, and that delivery is efficient and timely when schemes are first introduced, since any delays and problems with implementation - especially payment - tends to diminish the goodwill of the farmers, with potentially serious consequences for future uptake. Both Managing Agency and Paying Agency will have to cope with seasonal peaks in work, because some essential field inspections can only be done during summer, and because the annual application ‘window’ for agri-environmental contracts is usually short, and farmers need a decision before they plant the next season’s crops.

**Responsibilities of the Managing Authority in EU-funded agri-environmental payment schemes**

1. The Managing Authority shall be responsible for managing and implementing the programme in an efficient, effective and correct way and in particular for:
   
   (a) ensuring that operations are selected for funding in accordance with the criteria applicable to the rural development programme;
   
   (b) ensuring that there is a system to record and maintain statistical information on implementation in computerised form adequate for the purposes of monitoring and evaluation;
   
   (c) ensuring that beneficiaries and other bodies involved in the implementation of operations:
      
      (i) are informed of their obligations resulting from the aid granted, and maintain either a separate accounting system or an adequate accounting code for all transactions relating to the operation,
      
      (ii) are aware of the requirements concerning the provision of data to the Managing Authority and the recording of outputs and results.
   
   (d) ensuring that programme evaluations are conducted within the time limits laid down in this Regulation and conform to the common monitoring and evaluation framework and for submitting evaluations undertaken to the relevant national authorities and the Commission;
   
   (e) leading the Monitoring Committee and sending it the documents needed to monitor implementation of the programme in the light of its specific objectives;
   
   (f) ensuring compliance with the obligations concerning publicity;
   
   (g) drawing up the annual progress report and, after approval by the Monitoring Committee, submitting it to the Commission;
   
   (h) ensuring that the paying agency receives all necessary information, in particular on the procedures operated and any controls carried out in relation to operations selected for funding, before payments are authorised.

2. When a part of its tasks is delegated to another body, the Managing Authority shall retain full responsibility for the efficiency and correctness of management and implementation of those tasks.

Source: Article 75 of Council Regulation (EC) No 1698/2005
The Managing Authority is the lead organisation for developing and implementing the overall agri-environment programme, and requires sufficient administrative capacity, a well-developed regional/local network, and easy access to specialised expertise in other government agencies, technical and research institutions, and NGOs. The responsibilities of the Managing Authority in EU-funded payment schemes are defined in regulations (see box).

The Paying Agency is specifically responsible for the administration and control of the agri-environment payments to farmers, including monitoring compliance, applying penalties and tracking and reporting on expenditure. Agri-environment payments will be a completely new function for most agencies, and existing administrative systems rarely have the spare capacity or skills needed. The Paying Agency will have to cope with the detail of agri-environment contracts, such as identifying small parcels of land or measuring vegetation and other features during compliance checks. Capacity building is likely to require new staff, equipment and skills to set up and use agri-environment recording systems (GIS and databases), process applications, set up contracts with farmers, carry out seasonal compliance visits, make payments and record information for monitoring.

Excellent co-ordination or liaison procedures are important for successful and coherent implementation of agri-environment schemes. Many different people and organisations are involved and it is vital that all understand not just ‘what’ needs to be done but also ‘why’ ‘how’ ‘when’ and ‘where’. Failure of communication not only slows progress down, but may allow other, unwanted messages to reach farmers. There will be frequent communications between the Managing Agency and the Paying Agency, especially in the early stages but it is important to communicate more widely too. Effective co-operation between the Ministries of Agriculture and Environment is desirable for all agri-environment schemes. The value of multi-stakeholder support for the development of agri-environment payment schemes has already been referred to under policy coherence, and this should continue during implementation. Feedback on the progress and acceptance of measures, as well as on possible administrative problems, is vitally important and can be gained through regular meetings of an Agri-environment Working Group or consultative committees.

If they have no previous experience with agri-environment schemes, advisory and administrative staff have many of the same needs and problems as farmers in understanding the agri-environment concept and putting it into practice. They must, however, be fully trained, confident, committed before the scheme is launched. It is particularly important that all front-line staff have credibility with farmers and can discuss whole farm management, not just agri-environment. It is very easy to underestimate the time and resources needed for initial and ongoing training of the staff involved, (and the importance of training the trainers, in a large scheme). Training programmes need to be developed well ahead of scheme implementation. Since considerable parts of the scheme may be region-specific, the capacity of staff and project officers at a regional/local level often needs strengthening most.

CONCLUSIONS ON THE FEASIBILITY OF PROVIDING GUIDANCE
This analysis of the key stages in designing and delivering different types of agri-environmental interventions has shown that it is likely to be feasible to provide guidance of potential value on many aspects of the process of relevance to most OECD countries. However, the scope and level of detail of this guidance would not be the same for all interventions or all stages of policy design and implementation. European examples have predominated in this paper.

The processes of designing a policy framework, setting objectives, ensuring policy coherence and determining the reference level are expected to be common to many interventions in all OECD countries, and it should be possible to elaborate guidance on the underlying principles and processes involved for regulatory, taxation and payment schemes.
Similarly it should be feasible to provide guidance on the principles and processes of *targeting, delivering* and *evaluating agri-environmental payment schemes* which would be useful in most situations in OECD countries, irrespective of the current structure of agricultural support payments (if any) and the priority environmental objectives adopted. Less specific, but nevertheless useful, guidance could also be given on the issues to be considered in building up *institutional capacity to deliver payment schemes*. Similar guidance on regulatory and taxation interventions may also be feasible but has not been assessed in this paper.

Given the breadth of circumstances and experience of agri-environmental policies in OECD countries and the many different audiences that might use a guidance document, it would be helpful to provide specific examples, illustrating how the principles are applied and illuminating the details of the design and delivery process.
REFERENCES


