

CHAPTER 1. EVALUATING AGRI-ENVIRONMENTAL POLICY IN THE OECD

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Abstract

The increasing number and complexity of agri-environmental policies is an important reason for the OECD interest in evaluating such measures. The two principal criteria used are environmental effectiveness and economic efficiency, with the later including elements such as administration and compliance costs, dynamic and innovative effects, and changes in farmer attitudes. The OECD has only undertaken a limited number of specific evaluations, including the Permanent Cover Program (Canada), Landcare (Australia), the nutrient quota scheme (the Netherlands) and manure management regulations (various). These evaluations have focused on environmental effectiveness, relied largely on quantitative assessments, and generally use a simple “before and after” approach to establish the impact. Future work will focus on developing models and statistical methods to evaluate the cause and effect relationship between policies and environmental outcomes.

Introduction

The purpose of this paper is to place the Workshop within the OECD context. The first section discusses the *motive* by exploring the growing interest in evaluating agri-environmental policies.² Section 2 reviews the *perspective* adopted by the OECD on how to understand and define the concept of policy evaluation, both in general and specifically in relation to agri-environmental policies. The third section considers the OECD *experience* of evaluating agri-environmental policies, outlining the criteria and methodologies that have been used. Finally, the Workshop is placed in the context of the *future* work programme of the OECD.

Motive – why the OECD interest in evaluating agri-environmental policies?

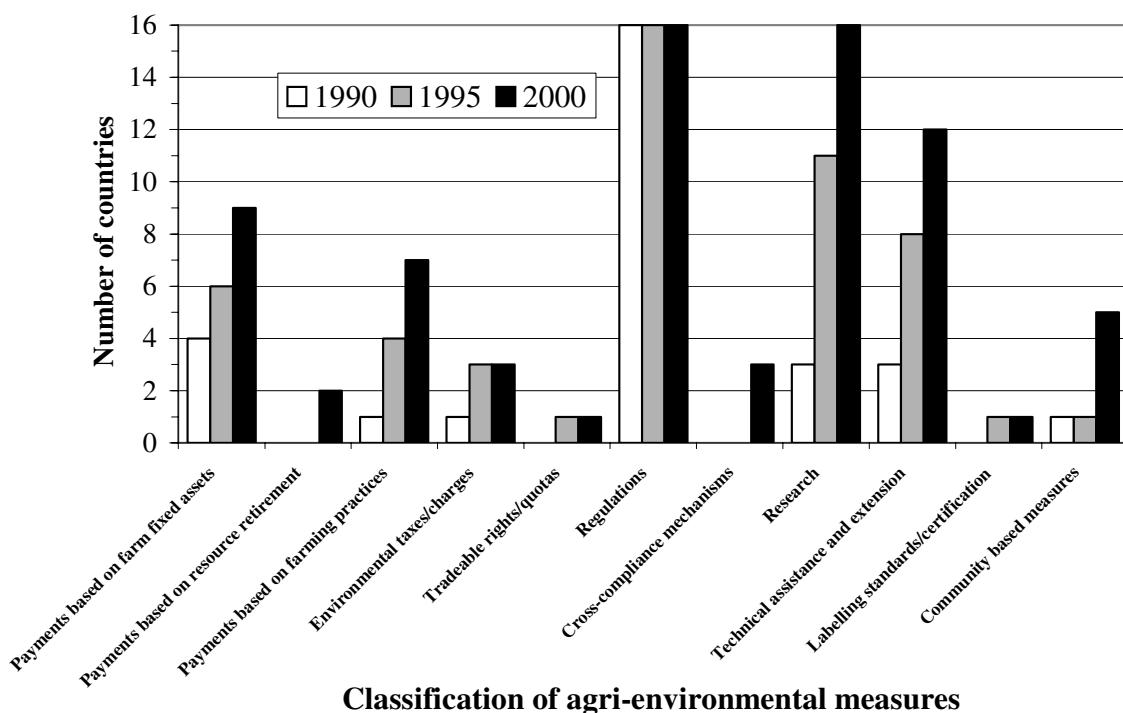
There is a wide range of agri-environmental policy measures including: budgetary payments to provide environmental services or to reduce damage; cross-compliance mechanisms attached to support payments; taxes and charges on polluting activities; regulations to limit point source pollution (*e.g.* prohibit direct discharge into water ways) and reduce non-point source pollution (*e.g.* controlling the quantity of manure produced, the quantity spread and how the manure is spread); financing research, development and education; providing seed money for voluntary groups; facilitating tradable

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1. Policies and Environment Division, OECD Directorate for Food, Agriculture and Fisheries. The views expressed in this paper do not necessarily reflect those of the OECD or its member countries. Any errors in the paper are the responsibility of the author.
 2. The term “agri-environmental policy” is used in this paper to indicate any policy impacting on farmers for the purposes of achieving an environmental objective, whether originating from the agricultural or the environmental ministry/authority.

permit schemes; and designating zones for specific forms of agricultural practice (OECD, 2002). Over the past decade, the number and variety of these measures used by OECD members has grown, as illustrated by the frequency of such measures impacting on pig producers (Figure 1). In addition to their number, increases are also observed in the amount of payments, the rate of taxation, and the severity and complexity of regulations.

Reflecting the growing role of agri-environmental policy in the rural scene, there is a greater effort being made by governments to evaluate the policy measures being used. In part, it shows a desire on behalf of governments to improve the management and implementation of policy measures. It is also a response to the growing scrutiny, both domestically and internationally, of the benefits they are intended to deliver relative to their associated costs. Governments are being held accountable for the public expenditure incurred and the environmental outcomes achieved. Agri-environmental policies have developed during a period when a “focus on results is a central element in recent public sector reforms in the OECD countries. Evaluation is a tool for providing feedback on the results of organisations and programmes ... There is also a strong emphasis on more systematic, outcome-oriented evaluation with linkages to the budget process.” (OECD, 1999)

Figure 1. Frequency of agri-environmental policies affecting pig producers in selected OECD countries^{1,2}



Notes:

1. The sixteen selected countries are: Australia, Belgium, Canada, Denmark, France, Germany, Ireland, Italy, Japan, Korea, the Netherlands, Norway, Sweden, Switzerland, the United Kingdom and the United States.

2. This figure is based on available information and may not fully represent the situation faced by every pig producer in the sixteen countries. This is especially true when having to incorporate sub-national information for provincial, state or municipal policies. This was done on a limited basis to be representative and does not fully explore the situation for all producers at the local level.

Source: OECD (2003a), *Agriculture, Trade and the Environment: The Pig Sector*, OECD, Paris.

Similar reasons motivate the OECD to evaluate agri-environmental policies in a broadly comparative and consistent way across countries. Questions are being asked about whether environmental objectives are being achieved; concerns are being raised about the cumulative impact of the growing number of policy measures on farmer behaviour; and debate is occurring on the impact they may be having on trade flows. In addition, by undertaking evaluations the OECD may assist member governments as they plan and implement further policy measures for achieving environmental objectives. This is one area where agricultural policy appears to be more fluid and open to refinement and consideration of new options. There is, for example, a growing interest in the use of economic instruments to achieve environmental objectives, such as carbon or water trading. But how have these worked in practice and how can they be improved or successfully implemented?

Consequently, the overall purpose of the Workshop is to consider the work being done in OECD countries to evaluate agri-environmental policy measures – to inform other OECD countries and to assist the OECD deepen its analysis.

These motives are also evident in other OECD work. For example, the OECD Public Management Committee (PUMA) and its Working Party on Regulatory Management and Reform hosted an Expert meeting on “Regulatory Performance: *Ex Post* Evaluation of Regulatory Policies” in September 2003 (OECD, 2003b). The main focus of this meeting was to consider the methodologies used rather than the actual outcome of the evaluations in terms of what they revealed about regulatory performance. While agri-environmental regulations were not considered at all, the conclusions of this meeting could easily apply to the evaluation of agri-environmental policies in general. For example, the word “regulatory” in the following section taken from the meeting summary could just as easily be replaced by the word “agri-environmental”.

The general motivation behind the project is the observation that there is little tradition and experience with *ex post* policy evaluation. This observation is particularly pertinent in the area of regulatory policies. Regulatory policies integrate many elements from other policy areas and have undergone significant developments in terms of scope and objectives over the last decades. As governments progress in the development of these policies, growing attention is being paid to their evaluation: Do regulatory policies deliver high quality regulation and better regulatory results?

The growing interest in answers to these questions reflects three inter-related developments emerging over the past few years: First, policy-makers involved in regulatory policies are being held *accountable* for the significant economic resources as well as the political capital invested in regulatory management systems now established in most OECD countries. Second, there is a growing interest in exploring how regulatory policies can be more *evidence-based* and supported by empirical findings. More evidence-based approaches to the assessment of regulatory quality allows for a review of the effectiveness of policy tools used in practice, for a review of their performance and for improving the design and implementation of the policy. Third, the move toward *ex post* evaluation is part of the *progressive development* of regulatory policies, complementing the current dominant focus on *ex-ante* evaluation.

(OECD, 2003b)

Perspective – how does the OECD view the task of evaluating agri-environmental policies?

Two OECD publications provide some understanding of what the concept of “evaluating agri-environmental policies” means in terms of objective, definition, timing and criteria. In 1999, PUMA reviewed and endorsed a set of *Best Practice Guidelines for Evaluation* (OECD, 1999). The

Guidelines state that “the main **objectives** of evaluations are to improve decision-making, resource allocation and accountability. This can be achieved through informing the public, informing key decision-making processes and encouraging ongoing organisational learning.”

While the report explained that there is no general agreement on what constitutes an “evaluation”, it **defined** programme evaluation as “a systematic and analytical assessment addressing important aspects of a programme and its value, and seeking reliability and usability of findings.” At its simplest, it includes assessment of a programme’s achievement against its objectives (effectiveness). But even in doing this, it can involve a variety of disciplines (economics, policy and administration studies, statistics, sociology, psychology, etc.), institutions and practitioners.

The report also noted that evaluation can occur at any **time** in a programme’s life-cycle. In this respect, a distinction was made between *ex ante* and *ex post* evaluations. The former type of evaluation is often called policy analysis or appraisal. While policy analysis explores policy options and likely effects, *ex post* evaluation examines actual effects and judges the value of policies. A time distinction can also be made between formative and summative *ex post* evaluations (Box 1). Nevertheless, the report concluded that the concepts of *ex ante* and *ex post* are inter-linked and the assessment processes are interactive.

Box 1. Types of *ex post* evaluations

Formative evaluations are usually undertaken during the implementation of the programme to gain further insight and contribute to a learning process. The purpose is to support and improve the management, implementation and development of the programme. The evaluators as well as clients are typically internal, usually programme managers (self-assessment). The objectivity of findings is often not the main concern: more emphasis is put on the direct applicability of results. Operational questions, monitoring of events and to some extent impacts are expected to be addressed.

Summative evaluations are often carried out when the programme has been in place for some time to study its effectiveness and judge its overall value. These evaluations are typically used to assist in allocating resources or enhancing public accountability. The clients are usually external, such as politicians and other decision makers. The objectivity and overall reliability of findings are considered important, and external evaluators are therefore often commissioned to conduct the evaluation. Questions of outcome and overall relevance of the programme are expected to be addressed.

Source: OECD (1999), *Improving Evaluation Practices: Best Practice Guidelines for Evaluation and Background Paper*, PUMA/PAC(99)1, Unclassified document.

Prior to the endorsement of the *Guidelines*, the Environment Directorate, under the supervision of the Group on Economic and Environmental Policy Integration, carried out a review of the efficiency and effectiveness of economic instruments for achieving environmental objectives. The review observed that “*there is little tradition in policy evaluation*. To put it more exactly, there is little tradition in *ex post* evaluation, if compared to *ex ante* evaluation, or project and policy appraisal, which has been extensively studied since the early days of cost-benefit analysis” (OECD, 1997a, *italics* in the original).

The report went on to identify two principal **criteria** for evaluating economic instruments that can be used for achieving environmental policy objectives.

1. *Environmental effectiveness* – the extent to which the policy meets its intended environmental objective, including threshold levels, targets, etc. Spatial and temporal effects, as well as interactions with other environmental impacts, could also be considered.
2. *Economic efficiency* – the extent to which the policy achieves its stated objectives at minimum cost, in terms of resource allocation, budgetary expenditure, etc.

Five additional elements were also identified. Although some of these are implicitly incorporated within the criterion of *economic efficiency*, they were considered to be of sufficient importance to warrant separate consideration.

3. *Administrative and compliance costs* – these include costs to the public authorities for implementing, monitoring and enforcing the policy measure, and costs incurred by the private sector in complying with the measure such as administrative, farm management and investment cost.
4. *Public finance* – these include impacts on both government expenditure (e.g. how much money has been provided under the scheme to farmers) and revenues (e.g. taxes).
5. *Wider economic effects* – these include effects on competitiveness and trade patterns, income distribution and even macroeconomic variables such as prices, employment, etc.
6. *“Soft” effects* – these include changes in farmer, agri-business and/or bureaucratic attitudes and awareness with respect to the environment.
7. *Dynamic effects and innovation* – these include the extent to which the policy has generated technological innovation, increased diffusion of such innovations and changed in investment patterns.

While these criteria were originally developed for application to economic instruments for achieving environmental objectives in general, they provide a very useful framework for evaluating all measures, both economic (e.g. taxes, payments and tradable permits) and non-economic (e.g. regulatory requirements, information and voluntary agreements) used for achieving environmental objectives in agriculture. Consequently they were used as the basis for developing a set of questions to guide contributions prepared for this Workshop (Annex 1).

These evaluation criteria should not be considered exhaustive. For example, the criteria list designed for the purpose of selecting agri-environmental policy instruments set out in OECD (2001a) could also provide the criteria for undertaking *ex post* evaluations. This list consists of economic efficiency, cost-effectiveness, flexibility, enforceability, transparency/fairness/equity, policy compatibility and political acceptability.

The work on evaluating tradable permits systems provides one of the clearest examples of using the criteria for the evaluation of environmental policies. The latest stage was a *Workshop on the Ex Post Evaluation of Tradable Permits* held in January 2003 (OECD, 2004a). The main purpose of that Workshop was to review a variety of tradable permit systems in light of the evaluation criteria listed above to gain an understanding of how well they were working and what design features contributed to desirable outcomes. A further objective was to use the case studies to shed light on evaluation methodology and on the general issues associated with the link between policy evaluation and the public policy process. The tradable permit systems evaluated at the Workshop included three with a strong agricultural link: the Dutch nutrient quota system, water allocation trading in Australia, and the United States wetland credit sales. Two air emissions trading programmes in the United States, and New Zealand’s experience with transferable fisheries quotas were also considered. Results of the Dutch evaluation are considered in the following section.

Experience – what has the OECD done in evaluating agri-environmental policies?

To date, the OECD has conducted only a limited number of evaluative studies that have specifically focussed on agri-environmental policy. This reflects the traditional focus of OECD agricultural policy analysis on production-linked support measures, such as market price support

through tariffs and export subsidies and deficiency payments, and more recently payments based on area or animal numbers. These support measures have, and in many countries remain, the dominant form of policy measures impacting on farming. Data is available to measure the impact of these policies on their traditional objectives, increasing production, providing farm income, etc. And models have been developed to analyse the linkages between support levels and these objectives. Of particular note in this regard is the use by the OECD of two models, AGLINK and PEM, to consider the production, trade and income effects of different support measures.

In comparison, the shift to and focus on agri-environmental policies is relatively recent, and the data and tools/methods needed are much more complex, requiring a level of detail that is not easily available to the OECD Secretariat. In simplistic terms, analysis of production-linked support policies involves determining the extent to which production and consumption increases or decreases, and measuring the resulting impact on trade and income. Evaluating agri-environmental policies involves the further stage of understanding production practices and how these may change in response to output and input price movements, and in turn the potential impacts on the environment.

Agri-environmental policy measures present significant evaluation challenges. Measures are often brought together in a mix of instruments to address one or more environmental objectives. These generally complement each other, but they can conflict internally within the mix and externally with other agri-environmental policies. In addition, agri-environmental policy measures in many OECD countries are implemented in the context of high levels of production-linked support and/or restrictions on the volume of outputs: disentangling the impact of the various policy driving forces is complex. Further, environmental outcomes result from a multitude of influences, of which the policy measure being evaluated is only one. There are also often high costs of measuring environmental outcomes, some are site-specific, and in many cases there is a lack of immediacy in the manifestation of environmental outcomes. Finally, it is often very difficult to assign monetary values to the impacts of agri-environmental policy measures, which is necessary to fully assess the associated costs and benefits.

OECD Economic Surveys

At one level agri-environmental policy evaluations of a very general nature have been made, relying on “economic theory” as the benchmark on which to form an evaluative judgement. This is very much the situation with respect to the analysis of agri-environmental policies that have occurred in the *OECD Economic Surveys* conducted by the Economics Department in recent years. *Economic Surveys* have traditionally not included agri-environmental measures but since 1999 analysis has been included in various editions as part of the OECD’s programme on Sustainable Development. The focus of the *Surveys*, and therefore of the evaluations contained within them, is on the *economic efficiency* (cost-effectiveness) of policies.

In focusing on cost-effectiveness, environmental policy objectives *per se* are not called into question ... (T)he aim is to evaluate whether countries are achieving their environmental objectives in the least costly way. Minimising the overall costs of achieving a given environmental goal means that all activities that affect the goal should face, as far as possible, the same incentives

The use of *economic* instruments, such as pollution taxes, which by their nature should equalise marginal abatement costs across all sectors of the economy (provided they apply to all relevant polluters) ensures - under ideal conditions - that least-cost solutions are found: by letting individual agents decide upon how much and in which way to reduce pollution, they allow the agents with the lowest abatement costs to contribute the most to the total reduction

in pollution. Such instruments thus have an advantage over the more usual “command and control” type of regulation. There are many instances where command and control measures are necessary, however, frequently where technical or measurement problems make it difficult to continuously monitor the externality attributable to individual agents, or where “corner solutions” (e.g. optimal emissions being zero) seem likely - for instance in the case of hazardous chemicals. In these instances, optimisation requires the use of cost-benefit analysis to find least-cost solutions.

(OECD, 2001b)

This has led to an “evaluation”, for example, that the traditional methods of pursuing non-point water pollution from agriculture through command-and-control measures, voluntary agreements and even taxes on inputs such as fertilisers and pesticides are *not the most cost-effective*. Instead the *Surveys* have consistently argued that an “instrument more likely to be effective would be a tax on the overall nitrogen surplus, measured as the difference between the total quantity of nitrogen inputs entering, and the quantity of nitrogen outputs leaving the soil [embodied in crops and animals] ... The tax could be differentiated according to the local marginal damage” (OECD, 2001b). The Dutch MINAS system and the Danish tax on nutrient surpluses are often given as examples in *Surveys* of these more cost-effective policy measures.

OECD Environmental Performance Reviews

The *OECD Environmental Performance Reviews* focus primarily on the *environmental effectiveness* of policies, including agri-environmental measures. In general, the methodology used by *Reviews* is to: (a) discuss the environmental problem, (b) outline the policy response and then (c) describe how various indicators are developing. A cross-country comparison of indicators is usually included when available. A qualitative assessment is often made of the link between the policy measures and the resulting environmental change. This is sometimes supported by quantitative analysis drawn from either official government sources or other research. The following section from the recent *Review* of Sweden illustrates this evaluation methodology for agriculture’s contribution to water pollution.

Although farm production fell by 10% during the 1990s, agriculture is still the main source by far of anthropogenic nutrients discharged to water. In 2000 the sector was responsible for 71% of Swedish nitrogen discharges to the Baltic and 63% of the phosphorus discharges (Table 3.2). Concentrations of pesticides in streams in intensively farmed parts of southern Sweden are generally low, but levels that could be harmful for aquatic organisms are still recorded in some cases.

Sweden has applied a wide range of agri-environmental policy instruments since the late 1980s. Regulation has been used to control density of pigs and cattle, impose good manure management practices and compel farmers to plant green cover in autumn and winter. Financial incentives under the Swedish implementation programme for EU agri-environmental regulation 1257/99/EC support investment in manure management and compensate for the loss of production caused by the *growing of catch crops*, planting of riparian zones and establishment of wetlands and ponds. Financial disincentives in the form of *taxes on pesticides and the nitrogen and cadmium content of fertiliser* discourage unnecessary use of commercial inputs. Other instruments include voluntary approaches, extension programmes and information campaigns (e.g. Focus on Nutrients), and research and development. Sweden has designated the coastal areas of the Baltic Sea as vulnerable zones under the EU nitrate directive. Largely as a response to European Commission pressure in 2002 and 2003, Sweden designated more inland areas as vulnerable zones. The

zones are all within the catchment areas of four big lakes (Mälaren, Hjälmaren, Vänern and Vättern) or drain directly to the Baltic. Sweden also designated lakes Mälaren and Hjälmaren under the directive. The European Commission has no further such claims on Sweden and the case was closed in December 2003. An action programme for the most recently designated areas comes into force in 2004 and 2005.

Most indicators tracking *agricultural inputs show declining trends*: application of phosphorous fertiliser has decreased by as much as 70% since the mid-1970s; application of nitrogenous fertiliser decreased by 37% in the last ten years (Figure 3.3); cadmium input from phosphorus-based fertilisers declined from 1.4 grams per hectare to 0.07 over 1985-2002. Although pesticide use has not shown the same downward trend since the mid-1990s (partly as a result of the growing use of glyphosate herbicides on green cover planted to reduce nitrogen leaching), the Chemicals Inspectorate states that the *risk to the environment* from the use of plant protection products has fallen by 65% since the mid-1980s.

The reduction in nutrient inputs has led to a *decline of nutrient losses to the environment*, albeit not in the same proportion. Phosphorus losses from farmland to water are thought to have fallen by 19% over 1995-2000. Some model calculations suggest that nitrogen leaching from the root zone of agricultural soil decreased by just over 25% in 1985-99, whereas other figures indicate no clear reduction during 1995-2000. Ammonia emissions from agriculture declined by 17% from 1995-2001. While these results are largely positive, they are not enough to meet the targets of the “Zero Eutrophication” EQO. It remains an open question whether additional measures now being taken (such as the building of new wetlands as nutrient sinks) or still being considered will make up the difference, or whether the EQO can be achieved only through a more fundamental reform of agriculture.

(OECD, 2004b)

More detailed evaluations of agri-environmental policies

Moving on from this general level, there are a limited number of “evaluations” which have been undertaken by the OECD that involve a more systematic and analytical assessment of agri-environmental policies. Table 1 describes four of these by answering the series of questions developed to guide contributors (Annex 1).

The policy evaluations summarised in Table 1 reveal a number of important points about the OECD experience of evaluating agri-environmental policies. They:

- cover policy measures with objectives of reducing the environmental impact of agriculture and not those seeking to maintain or increase its beneficial impact;
- focus on environmental effectiveness rather more than on economic efficiency; rely largely on qualitative assessments, drawing on outside sources or consultants for quantitative/empirical work;
- use a simple “before and after” approach for establishing the impact;
- recognise the impact of other policies, particularly production-linked support measures, but do little to disentangle the effects; and
- draw broad policy conclusions rather than make specific policy recommendations.

Table 1. Selected OECD agri-environmental policy evaluations: responses to guidance questions

Which policy measure(s) were evaluated?			
Permanent Cover Program (Canada) ¹	Landcare Program (Australia) ²	Nutrient quota scheme (the Netherlands) ³	Manure management regulations (Canada [Ontario], Denmark, Japan, the Netherlands, New Zealand [Waikato] and Switzerland) ⁴
Who did the evaluation?			
AGR Directorate	AGR Directorate	Consultant – Ada Wossink – for the ENV Directorate	Consultant – Mikael Skou Andersen – for the AGR Directorate
How soon after the implementation?			
Eight years – the PCC began in 1989	Five years after the national programme commenced in 1992.	Almost ten years – nutrient quotas were established in 1987, and became tradable on 1 January 1994	Various – the regulations evaluated have been in place for over ten years in some cases, but only since 2004 in some others
What are the specific objectives of the policy?			
Reducing soil deterioration on high-risk land and improving wildlife habitat	Assist community landcare groups to identify and solve the soil, water and vegetation management and nature conservation problems which concern them	To place a limit on the overall quantity of manure phosphate and to promote a more environmentally beneficial distribution of its production	Principally to reduce water pollution and some forms of air pollution, <i>e.g.</i> odour and ammonia
What criteria were used to evaluate?			
Mainly environmental effectiveness with some comment on aspects of economic efficiency	Environmental effectiveness, although funding information was provided	Environmental effectiveness and economic efficiency, including administrative costs, dynamic and soft effects, etc.	Wider economic effects – specifically impact on competitiveness
Which tools and methods were used?			
Qualitative assessment drawing on the results of other studies. Since qualitative indicators were not available, other sources of information including farm surveys, occasional scientific studies etc. were used	Summary of studies done by other researchers	Summary of <i>ex post</i> evaluations, including previous work by the consultant	Comparative policy analysis
What baselines/scenarios were used?			
The situation before the introduction of the programme – <i>i.e.</i> estimate the reduction in highly erodible land	The situation before the introduction of the programme	The situation before the introduction of the programme	The manure management regulations for each country were imposed on to three model Danish dairy farms to determine cost differences that arise from regulations and not from other factors such as land, labour or capital

(Table 1 continued)

What methods were employed to disentangle the impact of policy measures?

None – although the study noted that support programmes may have contributed to the problem of soil degradation by bringing marginal lands into crop production	None – although a description was provided of how Landcare was integrated into rural adjustment and river basin planning	None – although reference was made to the impact of support policies and their reform, and how the quota policy was affected by other instruments used to deal with the manure problem	None – although the study noted that farmers in some countries receive financial assistance to meet the regulatory requirements
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What were the results?

Concluded that there has been a reduction in soil erosion, an increase in soil productivity, improvements in water quality and preservation and creation of wildlife habitat – achieved at a reasonable budget cost. But that the area covered was limited	Indications of environmental improvement were not available. Farmer involvement in Landcare groups and changes in perception were seen as potentially positive	While the quota limited the level of phosphate output, there is little evidence that tradability was environmental effective. Reason for this may include the high transaction costs of trading and the uncertainty created by policy makers.	Manure management costs in Denmark and the Netherlands were 10% higher than in Ontario, and 40% higher than in the other three. Cost differences were also found between the three farm sizes
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What recommendations were made?

May be possible to improve effectiveness and efficiency through a more selective land acceptance process and differential compensation payments, e.g. by using a bidding process rather than a fixed per-acre payment	None specifically for Landcare. The overall study suggested that in developing co-operative approaches governments should consider: reforming support policies to eliminate conflicting signals, funding groups rather than individuals, encouraging partnerships with scientists, creating an enabling environment for the devolution of responsibility	The study drew a number of lessons for the implementation of similar tradable right schemes including: the importance of getting the original quota level correct, regulatory certainty and a strong political commitment	Concluded that differences in environmental regulations appear to reflect differences in the environmental risk and are not large enough to impact on the trade competitiveness of producers. The different cost impact on farm sizes suggested that a one-size-fits-all regulation may not be effective nor efficient
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Notes:

1. Land diversion schemes in the European Union, Japan, Switzerland and the United States were also considered in OECD (1997b). Although all these schemes have environmental impacts, not all of them were established for the purpose of achieving certain environmental objectives.
2. Co-operative approaches in Canada, the Netherlands and New Zealand were also reviewed in OECD (1998) but the analysis of the Australian Landcare Program contained the most significant evaluation.
3. Other tradable permit schemes included in OECD (2004a) that potentially impact on agriculture are the allocation of water rights in Australia and the wetlands credit scheme in the United States.
4. A similar analysis was carried out for the pig sector in OECD (2003) and is not included here to avoid repetition.

Sources: OECD (1997b), *The Environmental Effects of Agricultural Land Diversions Schemes*, OECD, Paris; OECD (1998), *Co-operative Approaches to Sustainable Agriculture*, OECD, Paris; OECD (2004a), *Tradable Permits: Policy Evaluation, Design and Reform*, OECD, Paris; and OECD (2004c), *Agriculture, Trade and the Environment: The Dairy Sector*, OECD, Paris.

In a similar, but deeper, theoretical vein to the *Economic Surveys, the Agriculture, Trade and the Environment: The Arable Crop Sector* study “evaluated” both the *economic efficiency* and *environmental effectiveness* of five stylised programmes in which payments are made by governments to farmers and an environmental objective is involved, with a particular focus on cross-compliance conditions. One of the conclusions drawn from this work is:

... that when the cost effectiveness of an environmental cross-compliance provision grafted onto a direct income support programme is measured *relative to the incremental cost of the cross-compliance only*, the cross-compliance provision will score very highly. Undoubtedly,

this feature makes the introduction of such a programme look very attractive. By piggy-backing on an existing policy measure, environmental improvements are secured at low additional cost.

However, even with this programme, the income support and environmental objectives are in conflict. If the income support payments are high enough and the cross-compliance conditions are sufficiently modest, all producers will find that the programme improves their income. However, in this case, by definition, the cost in income support payments will be very high, or the environmental benefits will be small, or both. On the other hand, if the cross-compliance conditions were set so as to aim for a significant impact on environmental targets, some producers would either suffer an income loss (when remaining in the scheme was compulsory), or leave the programme (when participation was voluntary). Gross environmental benefits will be lower, and net environmental benefit could well be lower too.

(OECD, 2005)

Future – what is the OECD planning to do?

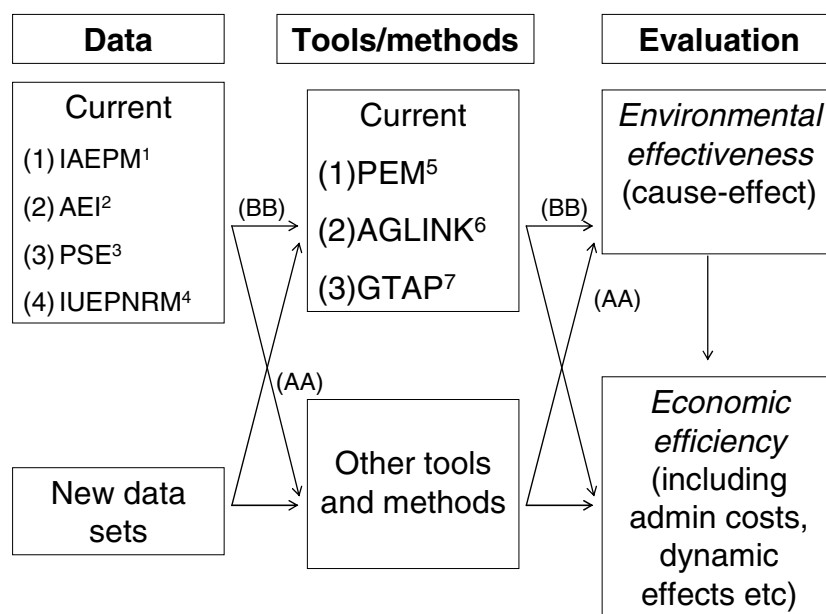
The Workshop on Evaluating Agri-environmental Policies comes at a very opportune time in the Programme of Work under the auspices of the Joint Working Party on Agriculture and the Environment (JWP AE). Progress has been made in monitoring the development of policy measures and environmental outcomes, through the inventory of agri-environmental policy measures (IAEPM) and the agri-environmental indicators (AEI) work respectively (www.oecd.org/agr/env). The next stage in the work will focus on bringing these two data sets together, with any additional data and tools that may be required, for the purpose of evaluating agri-environmental policies.

In this sense, the Workshop provides an important bridge into the 2005-06 Programme of Work and Budget recently agreed to by the JWP parent committees: the Committee on Agriculture (COAG) and the Environment Policy Committee (EPOC). Specifically, it is expected to provide valuable insight into the following four output areas of the 2005-06 Programme of Work and Budget of the COAG:

- AA. Developing analytical tools and methods to evaluate the impact of environmental policies;
- BB. Using PEM to analyse land and related linkages between agriculture and the environment;
- CC. Monitoring and evaluating agri-environmental policies;
- DD. Evaluating environmental conditionality and cross-compliance measures.

The OECD's current and future work programme for evaluating agri-environmental policies can be expressed diagrammatically (Figure 2). Two basic elements are required to undertake evaluations: data, and an appropriate tool or method for analysing the data. In addition to the IAEPM and the AEI, the OECD has three other major data sets it can draw on: the databases concerning the Producer Support Estimate (PSE) and instruments used for environmental policy and nature resource management. It also has three major tools/methods that it could potentially use.

Figure 2. Schematic of current and future work on evaluating agri-environmental policy in the OECD



Notes:

1. Inventory of Agri-environmental Policy Measures, <http://www2.oecd.org/agr-envdbo/index.asp>.
2. Agri-environmental Indicators, www.oecd.org/agr/env/aei.
3. Producer Support Estimate database, www.oecd.org/document/58/0,2340,en_2649_33775_32264698_119656_1_1_1,00.html.
4. OECD/EEA database on instruments used for environmental policy and natural resources management, <http://www2.oecd.org/econinst/queries/index.htm>.
5. Policy Evaluation Model – a partial equilibrium model that quantifies the production distortion of different policies, given assumptions about the way in which policies affect producers’ decisions about the use of inputs and the types and amount of output to produce. The purpose of PEM is to provide a closer connection between the measurement of support obtained through the Producer Support Estimate (PSE) calculation and quantitative analysis of the impacts and distribution of such support.
6. AGLINK – an econometrically estimated dynamic supply-demand (partial equilibrium) model of world agriculture. It represents annual supply, demand and prices for the principal 30 agricultural commodities produced, consumed and traded in member countries.
7. GTAP – an extensive database and associated computable general equilibrium model geared towards trade analysis, covering all OECD countries, with 12 agricultural sectors and 18 sectors for industry and services.

Source: OECD Secretariat.

Output AA is seeking to take information from the current data set and consider how other statistical methods can be used to better understand the cause-effect linkage between policies and the environment – following the path of the arrows marked (AA). A technical meeting of experts to provide input into this process of assessing policy causes of environmental outcomes is planned for July 2005. Output BB will also take the existing data set and examine how PEM can be used to estimate the environmental effect of policy changes – following the path of the arrows marked (BB).

Work in Output CC will focus on updating and improving both the IAEPM and the AEI. The inclusion of the detailed evaluative study of environmental conditionality and cross-compliance (Output DD) was a direct result of the theoretical analysis of cross-compliance conditions included in *Agriculture, Trade and the Environment: The Arable Crop Sector*. This new study will look at country experiences with the use of cross-compliance measures in improving environmental quality, and draw conclusions for policy design and implementation. One can see the logical progression from an

“evaluation” based on economic theory (a hypothesis) to an “evaluation” of the empirical evidence to test the theoretical conclusions.

In addition to these four outputs, detailed evaluations of agri-environmental policies are occurring as part of other broader studies. In the Agriculture Directorate, work on assessing non-governmental approaches for the provision of non-commodity outputs and the reduction of negative effects of agriculture includes an assessment of some agri-environmental policies that use economic instruments. For example, the evaluation of the Dutch nutrient quota scheme undertaken for the Workshop on the *Ex Post* Evaluation of Tradable Permits has been extended to include further analysis of its environmental effectiveness and economic efficiency. In the Environment Directorate, as part of a wider study examining instrument mixes used for environment policy, work is considering both the effectiveness and efficiency of instrument mixes used in Denmark, England and the Netherlands to address non-point water pollution from agriculture.

Conclusion

Bringing this altogether, the Workshop is designed around three objectives, which can be linked to the motive, perspective, experience and future work of the OECD. But in addition to assisting the OECD undertake and improve its work on evaluating agri-environmental policies, the Workshop will also provide insight and guidance to member countries which are also considering the same issues relating to the implementation and evaluation of agri-environmental policies.

i. Review and analyse the tools and methods used for the evaluation of agri-environmental policy measures in OECD countries

This will provide input into the approaches used to evaluate agri-environmental policies, such as the cross-compliance study and work taking place in the broader studies. It will assist in the process of improving and refining the OECD AEIs by improving our knowledge of how AEIs are used in evaluations. It may reveal the relevance of the OECD perspective, such as the relative importance of different aspects of the criteria used to evaluate.

It may also provide ideas for additional evaluative work that the OECD could undertake, for example in terms of economic efficiency. Both future Outputs AA and BB have a focus on environmental effectiveness. There is obviously an inter-relationship between the effectiveness and efficiency but perhaps more consideration needs to be given to how the OECD can progress in the efficiency area. For example, can PEM be used to develop a “Policy Transfer Efficiency Index”, measuring the change in the environment to a change in the value of transfers given through alternative support policies? Are there tools and methods apart from models that can be used by the OECD?

ii. Improve the understanding of the linkages between policies, farm practices and environmental outcomes

This will assist the work being undertaken on the cause-effect linkages (Outputs AA and BB).

iii. Provide some insights into the environmental effectiveness and economic efficiency of policies

This will build up our understanding of how policies have performed, what has worked, what has not, and why. This will test the theoretical assumptions that form the basis of many policy evaluations currently being done.

ANNEX 1

QUESTIONS TO GUIDE THE PREPARATION OF PAPERS AND PRESENTATIONS

To assist in the preparation of papers presented to the Workshop on Evaluating Agri-environmental Policies, the Secretariat developed a series of questions to guide authors, as listed below. While some are specifically relevant for *ex post* evaluations, most are applicable to evaluations at whatever stage in the policy cycle.

Addressing these questions would greatly assist the comparability of the papers presented, facilitate better discussion and enable conclusions regarding the Workshop objectives to be more easily drawn. The questions could even be used as section headings. However, there was no requirement for contributors to answer them.

Many of these questions were derived from the OECD publication *Evaluating Economic Instruments for Environmental Policy* (1997a). This publication has also been used as the basis for recent work by the OECD Environment Directorate in discussing and evaluating tradable permits: *Implementing Domestic Tradable Permits: Recent Developments and Future Challenges* (2002) and *Tradable Permits: Policy Evaluation, Design and Reform* (2004). These last two documents are available in electronic form on the Workshop web-site under the heading "Links and Related Information". The earlier document is only available in hard copy form.

1. Which **policy measure(s)** were evaluated, why, by whom and how soon after the implementation of the policy is the assessment taking place?
2. What are the specific **objectives** (both environmental and other) of the policy measure, *e.g.* improve water quality, reduce soil erosion, increase bird populations, etc?
3. What **criteria** were used to evaluate the policy measure?

Previous OECD work has identified two principal criteria for evaluating environmental policies.

- i. *Environmental effectiveness* – the extent to which the policy meets its intended environmental objective, including threshold levels, targets etc. Spatial and temporal effects, as well as interactions with other environmental impacts could also be considered.
- ii. *Economic efficiency* – the extent to which the policy can achieve its stated objectives at minimum cost.

Five additional elements have also been identified. Although some of these are implicitly incorporated within the criterion of economic efficiency, they are considered to be of sufficient importance to warrant separate consideration.

- iii. *Administrative and compliance costs* – these include costs to the public authorities for implementing, monitoring and enforcing the policy measure, and costs incurred by the private sector in complying with the measure such as administrative, farm management and investment cost.
 - iv. *Public finance* – these include impacts on both government expenditure (*e.g.* how much money has been provided under the scheme to farmers) and revenues (*e.g.* taxes).
 - v. *Wider economic effects* – these include effects on competitiveness and trade patterns, income distribution and even macroeconomic variables such as prices, employment etc.
 - vi. “*Soft*” *effects* – these include changes in farmer, agri-business and/or bureaucratic attitudes and awareness with respect to the environment.
 - vii. *Dynamic effects and innovation* – these include the extent to which the policy has generated technological innovation, increased diffusion of such innovations and changed in investment patterns.
4. Which ***tools and methods*** were used to evaluate the policy against the identified criteria, *e.g.* cost-benefit analysis, surveys, simulations, case studies, public consultations etc., and how were they employed, *e.g.* what agri-environmental indicators were used, at which scale (national, regional, local or farm-level) was the analysis undertaken, etc?
 5. What “***baselines***”/***scenarios*** were used to evaluate the policy, *e.g.* was a comparison made with the situation before the introduction of the policy, farms not affected by the policy or an alternative agri-environmental policy environment (including a no policy situation)?
 6. What methods were employed to “***disentangle***” the policy measure under evaluation from the effects of other policy measures, whether other agri-environmental measures, agricultural support policies etc?
 7. What are the ***strengths and limitations*** of the evaluation methodologies used, *e.g.* what indicators proved most useful, what other data was required etc?
 8. What have been the ***results*** of the evaluation in terms of the criteria, and to who are the results of evaluations made available and discussed?
 9. How do the results of the *ex post* evaluation ***compare*** to those done prior (*ex ante*) to the introduction of the policy?
 10. What ***recommendations*** have been made in terms of changes in policy design/implementation, *e.g.* changes in payment levels, tax rates, and regulatory requirements?

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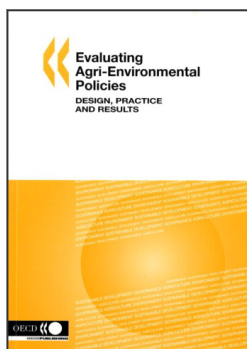
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