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Estimating the environmental performance of agri-environment schemes



Key external stakeholders:

Policymakers, participants in agri-environment schemes, farmers, environmental NGOs

Practical implications for stakeholders:

- Increased allocation of Common Agricultural Policy (CAP) payments to environmental objectives will be matched by increasingly demanding requirements to demonstrate their environmental effectiveness.
- Due to a lack of available environmental data, we devised a methodology (based on experts' judgements) to estimate the environmental performance of agri-environment schemes, and we implemented this in several EU case study areas.
- This methodology can help support efforts to learn how to improve decision-making about the appropriate design and implementation of agri-environment schemes.

Main results:

- Lack of assessment of the environmental effects of agri-environment schemes is a key obstacle to improving their implementation, and ensuring their value-for-money.
- In the absence of relevant environmental data, we developed a methodology based on a harmonised framework for characterising environmental objectives and the use of experts' judgement to help assess environmental performance of agri-environmental measures.
- This study demonstrates the potential practical application of this methodology as a tool to assist the design and evaluation of agri-environment schemes.

Opportunity / Benefit:

The structured use of experts' assessments can help identify and understand specific causes of deficiencies in the design and implementation of agri-environment schemes. Such understanding can enhance evaluation and judgements about priorities for corrective action in the future design of a scheme. Although the methodology is used to conduct an *ex post* assessment here, it could also be used to conduct an *ex ante* assessment and thereby improve technology transfer from environmental sciences at the design phase of policy formulation.

Collaborating Institutions:

See page two of the full Technology Update or <https://w3.rennes.inra.fr/internet/ITAES/website.html>

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<https://w3.rennes.inra.fr/internet/ITAES/website.html>

1. Project background:

This work was conducted as part of the EU FP6 ITAES project 'Integrated Tools to design and implement Agri Environment Schemes'. The main aims of the project were: 1) the construction of an integrated tool to analyse the interaction between the institutional process and the environmental outcome, and; 2) the construction of an integrated tool to analyse and simulate farmers' environmental practices depending on a range of alternative types of policy implementation. (<https://w3.rennes.inra.fr/internet/ITAES/website.html>)

Agri-environment schemes in the EU are now one of the most important policy mechanisms for the protection of environmental quality (public goods), and offer payments to farmers in return for undertaking management practices (measures) that are intended to maintain, enhance or restore the rural environment. EU Member States are obliged to monitor and evaluate the environmental, agricultural and socio-economic impacts of their agri-environment programmes (Article 16, EC Regulation No. 746/96). Most of the recent evaluations of agri-environment schemes have strongly criticised the over-reliance on data on levels of uptake and expenditure as measures of scheme performance (Court of Auditors 2000) as opposed to their environmental impact. Thus, the environmental performance of many schemes is not clearly known.

A number of challenges arise when attempting to evaluate the performance of agri-environment schemes. Most significantly, there is a lack of environmental monitoring data to objectively assess scheme performance. In addition, agri-environment schemes tend to have complex inter-linkages among measures and objectives. Schemes are usually comprised of multiple measures and are expected to deliver multiple objectives. Single measures may contribute to more than one environmental objective, and objectives may be achieved *via* multiple measures. The EU-wide application of schemes also poses a challenge for any methodology to be sufficiently generic to permit widespread application, but be sufficiently detailed to distinguish performance along relevant environmental objectives. Here, we report on one of the outcomes of the ITAES project that aimed to develop a policy tool that could be sufficiently harmonised to be applicable in different European regions, but capable of being customised to reflect local priorities and actions within a given European region.

2. Questions addressed by the project:

Could a methodology be devised that,

- identified a harmonised framework for characterising environmental objectives;
- rationalised the complexity of agri-environment schemes to assessable elements;
- defined criteria to reflect design and implementation characteristics of agri-environment schemes that would be expected to be the main drivers of environmental effectiveness, and;
- used these criteria to rate the performance of the scheme elements to be assessed?

3. The experimental studies:

We developed a methodology to estimate the environmental performance of agri-environment schemes, and applied it in nine EU case study areas that were participants in the project: Czech Republic, Finland, Ireland, Belgium, France, England, Italy (Veneto), Italy (Emilia Romagna) and Germany. The methodology combined: a harmonised framework for characterising environmental objectives; a reduction of the complexity of scheme structure into assessable elements; experts' judgement of the performance of agri-environment measures, and; multi-criteria analysis (MCA) techniques, aimed at producing an aggregated judgement about single objectives or measures. Expert panels assessed the link between environmental measures and the environmental objectives by scoring a set of specific criteria that reflect important factors for the delivery of environmental effectiveness. This study was based on agri-environment schemes implemented during the period 2000–2003.

An environmental assessment of multiple EU Member States with different environmental conditions and priorities required a common and extensive set of descriptors of environmental objectives. To this end, we

used the hierarchical set of environmental objectives as described in the EU Common Evaluation Questionnaire. We also defined a set of criteria which assessed the contribution of environmental measures (farm-level management prescriptions) to specific environmental objectives (measure-objective pairs), and used these to estimate environmental performance of a specified measure toward a specified environmental objective. The criteria used were: strength of cause-and-effect relationship, quality of implementation by institutions, degree of farmer compliance, extent of participation and degree of targeting.

In each of nine European case-study regions, five to eight local agri-environmental experts were selected (see Finn *et al.* 2009 for details). For each agri-environmental measure in the case study area, the experts agreed on which environmental objectives were directly addressed by the measures. Using a scoring scale for each of the five assessment criteria, the experts assessed the measure-objective pairs. Within each case study area, a group meeting of the experts (of about one day) allowed sharing of knowledge that helped achieve consensus, as well as elaborating on the justification for their decisions.

4. Main results:

The methodology was successfully implemented, and proved to be a useful (based on feedback from the experts and project partners) support tool for quickly estimating the environmental performance of agri-environment schemes, and learning how to improve their design and delivery for achieving environmental objectives. The main results from this work have been published elsewhere (see Viaggi *et al.* in press, Finn *et al.* 2008, 2009 below).

There were considerable differences in overall environmental performance across different case study areas, and the experts' scores identified scope for improvement in one or more criteria in most measures. Higher priority environmental objectives (as assessed by stakeholders) did not necessarily demonstrate highest environmental performance.

Across the different European case study areas, environmental objectives were generally addressed by multiple measures that can vary widely in their performance. The ranking of environmental priorities across case study regions was quite different, highlighting a different strategic approach in each area that complicates direct comparison across case study areas.

This study clearly highlighted a number of information deficits about important elements of agri-environment schemes. Environmental assessment could be greatly improved by clearer statements in scheme descriptions about: the environmental objectives and their relative priority; the relative priority of different measures that contribute to a single objective; and the expenditure associated with individual measures.

This methodology could help prioritise resources for monitoring and evaluation by identifying where there is most to be learned about how to improve the environmental performance of a scheme – in this way, most benefit may be gained by focussing the costs of environmental monitoring and evaluation where they are most needed. For example, where experts' judgements indicate a very effective measure, then sufficient monitoring could be conducted to simply confirm effectiveness on this factor. Where experts indicate doubt about the environmental effectiveness of a measure, then monitoring can best support evaluation to identify strengths and weaknesses. For measures that experts clearly identify as failing (e.g. due to a deficient cause-and-effect relationship), then it may be best not to invest in monitoring until the design is changed.

In the Irish case study, the experts considered that compliance by farmers appeared to least affect the environmental performance of the Rural Environment Protection Scheme (REPS 2) i.e. the experts believed that the measures are implemented wholly or almost wholly in accordance with the management prescriptions in their farm plans (contracts). Overall, the experts agreed that REPS has strongly contributed to an improvement in nutrient management and water quality, and they cited the reductions in stocking density on many commonages as a general success. Overall, their views were more mixed about the role of REPS in protecting or enhancing farmland biodiversity. The REPS 2 measure contributing to genetic diversity of animal breeds received the highest score; however, the experts also commented on how the objective should be widened to protect the genetic diversity of rare arable plant and crop varieties. (See Finn *et al.* 2007, 2009 for details.)

5. Opportunity/Benefit:

Demonstration of the environmental impacts of agri-environment schemes (REPS and AEOS in Ireland) is important for the long-term justification of expenditure on such schemes. Importantly, the positive

environmental effects of schemes can be identified and communicated to farmers, and to the public that pays for these schemes. Monitoring can identify whether agri-environment schemes are environmentally effective or not, but the methodology presented here can also complement environmental monitoring to help identify and rectify any weaknesses. The structured use of experts' assessments can help identify and understand specific causes of deficiencies in the design and implementation of agri-environment schemes. Such understanding can enhance evaluation and judgements about priorities for corrective action in the future design of a scheme. Although the methodology is used to conduct an *ex post* assessment here, it could also be used to conduct an *ex ante* assessment.

There will be an increased need for improved tools to verify environmental benefits, and learn how to improve the delivery of public goods. It appears likely that environmental requirements and greening measures will become more prevalent in the post-2013 CAP reform. If so, they will also require validation of their environmental effects, to justify the allocation of CAP budgets toward environmental objectives. A recent European Court of Auditors assessment of the design and management of EU agri-environment schemes strongly emphasised the future need for increased targeting of measures, clearer distinctions between 'deep and narrow' (targeted and more demanding) and 'broad and shallow' generally applied and less demanding measures, and verification of environmental impacts. It is likely that these recent recommendations will appear in the implementation of agri-environment schemes in the post-2013 CAP.

6. Dissemination:

This work has been presented at a number of national and international workshops and conferences, e.g. Brussels workshop attended by DG Agriculture, DG Environment, and DG evaluation (Sept 13th, 2005); end-of-project conference in Venice (Dec 14th 2006); REPS Conference 2007; invited briefing session with DAFF 2007; AgForum, 2009. There have also been four journal articles, several conference papers and abstracts, two book chapters, and multiple popular articles.

Main publications:

Finn, J.A., Bartolini, F., Kurz, I., Bourke, D. and Viaggi D. (2009) 'Ex post environmental evaluation of agri-environmental schemes using experts' judgements and multicriteria analysis' *Journal of Environmental Planning and Management* 52: 717 - 737.

Finn, J.A., Kurz, I. and Bourke, D. (2008) 'Multiple factors control the environmental effectiveness of agri-environmental schemes: implications for design and evaluation' *Teammann: Irish Journal of Agri-Environmental Research* 6: 45 - 56.

Finn, J. A., Bourke, D., Kurz, I. & Dunne, L. (2007) 'Estimating the environmental performance of agri-environmental schemes via use of expert consultations' Final report of the ITAES project.
<https://w3.rennes.inra.fr/internet/ITAES/website/Publicdeliverables.html>

Popular publications:

Finn, J.A., Dunne, L. and Ó hUallacháin, D. (2009) 'Agri-environment schemes for the delivery of public goods: a European perspective' *TResearch* 4: 28 - 29.

Bourke, D., Kurz, I., Dunne, L. and Finn, J.A. (2009) 'Experts' estimates of the environmental effectiveness of the Rural Environmental Protection Scheme' Agricultural Research Forum, Tullamore, 12th March, p. 74.

Finn, J.A., Bourke, D., Kurz, I. and Dunne, L. (2007) 'Estimating the performance of agri-environmental schemes' Teagasc IE 59-60. ISSN 18 4170 4776 In: *Ireland's Rural Environment: research highlights from Johnstown Castle*. Teagasc 85 pp. ISSN 18 4170 4776.

7. Compiled by: John Finn