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# Book reviews

*The Economics of Landscape and Wildlife Conservation*, edited by Stephen Dabbert, Alex Dubgaard, Louis Slangen and Martin Whitby. Published by CAB International, Wallingford, 1998, pp. xii + 286, ISBN 0 85199 222 6, hardback, £49.95 ($US90.00).

This well-edited compilation of 18 chapters is drawn from papers presented at a workshop sponsored by the European Union (EU), held in September 1996. Contributors include economists, sociologists, political and natural scientists. Although the volume is primarily concerned with agri-environmental policy in EU countries, several of the chapters are general enough to be of wider interest. The editors offer the chapters 'as a contribution to future debates in this vital and dynamic policy field'. Australian readers will also find that some of the case studies provide useful comparisons with local rural environmental issues.

Two of the chapters address important theoretical issues. In perhaps the best contribution in the volume, Robert Weaver develops a theoretical framework for analysing the private provision of public environmental goods such as wildlife habitat. He then uses this framework to review the need for public policies to address optimal provision of these goods, as well as the design of such policies. Comparisons are made between investment grants, direct payments for delivering environmental standards, and management agreements. He demonstrates, for example, that individual management agreements allow agencies to select an optimal prescription based on available resources, thereby offering the potential for substantial efficiency gains compared with other instruments. Julie Whittaker provides a useful discussion on the relative merits of the neoclassical and ecological economic frameworks in analysing environmental agricultural issues. She argues that the frameworks are complementary, with ecological economics best suited to system-wide analyses and goal setting, and neoclassical approaches suited to analysing specific issues and assessing the best method for achieving goals.

Fredrik Holstein considers different notions of value, and relates these to the capabilities of the Contingent Valuation Method (CVM). This chapter is now somewhat dated and incomplete, particularly with respect to the discussions of citizen motivations and lexicographic preferences. Three solid but unremarkable CVM case studies are included in the volume. They assess the recreation economic benefits from Danish forests, landscape restoration in France, and the economic value of preserving agricultural landscape

elements such as ponds, stone walls and field islets in Sweden. With a large number of CVM applications now in the literature, such case studies are of limited value, since they neither provide a basis for benefit transfer, nor address some of the outstanding theoretical and methodological issues that still plague the technique. The Swedish study is the most noteworthy of the three, since it establishes the temporal reliability of the willingness to pay estimates through identical repeat surveys undertaken in 1989, 1991 and 1994.

Whitby *et al.* estimate the costs of stewardship policies aimed at encouraging production of public environmental goods through incentives. They focus on an often neglected cost component — the transaction costs that accrue to both public agencies and farmers. These costs are associated with acquiring information about policies, analysing their implications, negotiating contracts, collecting compensatory payments, and policing compliance with environmental conditions. They provide a useful discussion of the issues associated with estimating such transaction costs, and illustrate the problems using the example of Environmentally Sensitive Areas in the United Kingdom.

Three chapters offer cost-benefit case studies. The analyses assess landscape restoration in France, connecting and increasing the size of wildlife habitat areas in the Netherlands, and optimal allocation of wildlife conservation areas within agricultural landscapes, also in the Netherlands.

Defrancesco and Merlo develop an enterprise-level accounting framework capable of including landscape and environmental values. The framework is illustrated for the Cansiglio Regional Park in the Italian Alps — a region that includes a multi-purpose public forest and dairy farms that are used for, among other things, timber production, agri-tourism and recreation. The system allows consideration of full cost and benefit flows among different activities, including externalities and non-market benefits.

Several chapters address institutional structures and design of policy instruments. The opening chapter reviews the contribution the Common Agricultural Policy (CAP) and related instruments have made to sustainable agricultural development in Europe. The focus is on the performance of the 1992 agri-environmental reforms. These reforms included compulsory set-asides linked with direct payments, and provision of incentives for environmentally appropriate agricultural production methods and afforestation. The results up to 1996 were mixed, with positive outcomes such as decreases in fertiliser and pesticide use, but poor responses to incentives for adopting, for example, environmentally acceptable livestock densities. In part, the poor take-up of incentives is due to competing CAP programs that give premiums to conventional farming practices. As noted in this chapter, the assessment was limited by lack of sufficient data, slow responses to measures, and long

pay-off times. The value of the analysis is also hampered by its age — it is now three years old.

Giorgio Osti, in a case study of wetland conservation in the River Po delta, Italy, begins with a discussion of different models of farmer-society relationships in rural Italy and uses this to examine the social processes arising from establishment of a new national park. The absence of an effective dialogue between the park managers and local landholders is familiar territory. Latacz-Lohmann analyses three incentive mechanisms for the provision of environmental goods and services — fixed rate payments, auctions and management agreements. The three approaches are compared in terms of their cost effectiveness. The author concludes that choice of the best instrument is crucially dependent on the quality of information available to the administering agency. Poor information availability and/or severe information asymmetry favours the use of auctions, while high quality information supports the use of individual management agreements. Piorr *et al.* use farm models to analyse the impacts of EU reform policy on landscape change and wildlife conservation in north-east Germany. The analysis shows that significant landscape changes can be expected with completion of EU reforms. Sumpsi *et al.* assess the impacts CAP instruments have had on the Spanish cereal sector, and suggest a new policy that is a combination incentive-penalty scheme. Together, these chapters provide useful perspectives on European agri-environmental policy-making. Those interested in environmental management in rural Australia will also find them of value in relation to issues such as the design of incentive policies for remnant native vegetation conservation.

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*Agri-environmental Law and Policy*, by Neil Hawke and Nadia Kovaleva. Published by Cavendish Publishing Limited, London, 1998, pp. xxxix + 315, ISBN 1 85941 319 6, $144.00.

Agriculture in Europe has a somewhat ambiguous relationship with the environment. Over long periods of time agricultural land uses have created valued landscapes and co-evolved with human cultures and wildlife habitats. Agriculture can thus be seen as the source of high quality rural environments and agricultural support as having a central role in their conservation. But at the same time, intensification and technological change have increasingly brought agriculture and environment into opposition, particularly through

the use of chemicals and pesticides and the destruction of habitat. This leads to calls for the reform of agricultural policy and the regulation of agricultural practices. The nature and development of agri-environmental policy illustrate these conflicting perspectives. It embraces those elements of agricultural policy that aim to support particular agricultural systems that are seen as maintaining valued rural environment, as well as those elements of the law that regulate agricultural practices to prevent pollution and resource degradation.

The term agri-environmental policy was first coined following the 1992 reforms of the Common Agricultural Policy (CAP). The main significance of these reforms was a shift from the support of market prices towards direct payments to farmers, the latter being introduced as compensation for the former. These changes were accompanied by a package of 'accompanying' measures covering agri-environment schemes, early retirement and afforestation. The agri-environment measure (Regulation 2078/92) was significant in imposing a legal obligation on all Member States to introduce a scheme within defined zones reflecting environmental conditions, agricultural structures and principal types of farming. The scheme provides for farmers to be paid to maintain the countryside and to provide environmental goods, partially financed from the guarantee section of the European Agricultural Guidance and Guarantee Fund. The approach introduced in 1992 is also of significance in decentralising decision-making from an EU to a national level. National governments have discretion with regard to the form that the national schemes shall take. These changes are extended through the more recent Agenda 2000 reforms, agreed in early 1999, which will further the shift towards direct payments and incorporate the agri-environmental measures into a broader Rural Development Regulation. There will be increased discretion available to Member States in policy implementation but the funding for agri-environment remains a relatively small proportion of total agricultural policy expenditure and there is no new funding provided for the Rural Development Regulation.

However, Hawke and Kovalova's definition of what constitutes agri-environmental law and policy takes us wider than the provision of payments for positive environmental management. They cover elements of agricultural policy that have environmental implications, even though the environment is not their main rationale. Thus attention is given to set-aside, production quotas and compensatory allowances. But the authors do not become engaged in a comprehensive assessment of the environmental impacts of the CAP. Thus for instance there is no discussion of the impacts of price supports or policy-induced technical change on the rural environment.

Beyond this, the text extends to a description of the environmental law that regulates agricultural practices. Much of this now also arises from the

European Union. As originally adopted in 1957, the Treaty of Rome made no provision for a European environmental policy but such a policy has developed, initially deriving from arguments based on the promotion of a single market and on the principle of subsidiarity. This has led to several areas of particular significance for the rural environment, covering the protection of wild birds, the control of nitrates in water and nature conservation. Subsequently provisions have been adopted, most recently in the Treaty of Amsterdam in 1997, requiring that environmental considerations should be integrated into the definition and implementation of all European Union policies, including agriculture. It is now the case that most new environmental law has its origins in the European Union.

Hawke and Kovaleva explain in detail the controls on agriculture relating to water pollution, effluent and atmospheric pollution, soil protection and the use of pesticides. The discussion also covers the development of codes of good agricultural practice, which remain voluntary, and the statutory land use planning system, which has been notable for its strict controls over urban development in rural areas but much less restrictive controls over agricultural change.

The law in this area is complex and dynamic. It arises from many sources; through developments in the CAP and its national implementation; through EU environmental legislation; through domestic legislation. Some areas are determined at all levels. Nature conservation law in particular is still dominated by UK legislation dating back to 1949 and subsequently amended in a variety of ways. But it is increasingly influenced by European legislation (especially the Habitats Directive) and to a lesser extent by commitments under international conventions (especially the Convention on Biodiversity). This has implications not only for understanding the law itself but also for understanding the ways in which it is influenced and the possible directions that it may take in the future.

Hawke and Kovaleva thus perform a valuable function in drawing this diverse range of material into a single source, not available elsewhere. Beyond this, they provide an introduction to the background to the law: the development of EU environmental law, the main features of the CAP and its development through time, and the implementation of law and policy in the United Kingdom. They also include a chapter providing an introduction to the positions in Denmark and the United States by way of comparison.

But perhaps inevitably the end result remains somewhat unsatisfactory. Beyond some commentary on the law, there is relatively little substantive policy analysis or assessment of outcomes. Little use is made of economic analysis in this respect. More problematic for a work of this sort is the shifting nature of the topic. The authors note on frequent occasions that the law is under review and subject to modification at the time of writing. Thus for instance,

uncertainty surrounded possible modifications to the Agenda 2000 proposals (consultations are currently underway on the ways in which these changes are to be implemented), the implementation of the European Habitats Directive and a current review of legislation for Sites of Special Scientific Interest, a current interest in the taxation of pesticides, details of pollution control regulations, revisions to codes of good agricultural practice, and so on.

Certainly the law relating to both agriculture and the environment is under pressure to change and amendments are being debated across the board. But it is not obvious whether this state of flux is to be expected and a permanent state of affairs or whether this particular degree of uncertainty is a shorter-term phenomenon associated with current CAP reforms and a change of government in the United Kingdom in 1997. Assuming that change is to be expected, as seems likely, it raises the question of what should be the objectives of a book of this sort. Its main role must be to provide background and context to assist understanding of the area rather than to attempt an up-to-date statement of the details of the legislation. For the latter we would need regular issues in a loose-leaf format, or perhaps a comprehensive web site interpreting and providing links to current legislation, consultation papers and other sources. Perhaps the authors might be persuaded to take this on as a further stage of their work. However, for those who want an introduction to and comprehensive treatment across this wide range of topics, Hawke and Kovaleva provide a valuable guide.

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*Environmental Indicators and Agricultural Policy*, edited by F. Brouwer and J.R. Crabtree. Published by CABI Publishing, Wallingford, 1999, pp. xiv + 305, ISBN 0 85199 289 7, hardback, £49.95 ($US90.00).

Indicators deliver information on various states of nature, within contexts meaningful to decisions and action. Environmental indicators have emerged out of administrators' and policy-makers' information needs as they monitor the performance of various public expenditure programs designed to manage environmental conflicts of natural resource use. As the preface states, *Environmental Indicators and Agricultural Policy* presents edited and revised versions of papers presented at a workshop 'Towards operationalization of the effects of CAP on environment, landscape and nature: Exploration of indicator needs', held in Wageningen in April 1997.

Controlling the environmental impact of agriculture in the European Union (EU) has been a central theme of recent policy intervention in the

EU, through reform of the Common Agricultural Policy (CAP). Successive CAP legislation has increasingly required evaluation of the impact of measures on the environment. In particular, following the Brundtland Report and Agenda 21 on managing global sustainability, there has been a growing interest in frameworks and methodologies for 'indicators of sustainable development'.

This book reviews, from a European perspective, the theoretical development and integration in policy analysis of indicators in the areas of biodiversity and agri-environmental pollution. The 18 chapters address the key issues of relevance, design needs and implementation difficulties associated with environmental indicators in agriculture. Theoretical, empirical and descriptive material is provided to illustrate conceptual, analytical and institutional perspectives of environmental indicators. The analysis and reviews cover international, national and regional developments in the evolution and use of environmental indicators in state-of-the-environment reporting, using examples and case studies from the EU.

The joint editors of the book, Floor Brouwer of the Agricultural Economics Research Institute, The Hague, and Bob Crabtree of Macaulay Land Use Research Institute, Aberdeen, have extensive knowledge of and experience in the subject. They have contributed two chapters individually, a well-written introduction and an informative conclusion jointly. Selection of issues at individual farm, farming system, landscape, regional and national levels within the broader EU perspective successfully captures the multi-level and transboundary nature of interactions that are characteristic of agri-environmental interface.

The introductory chapter addresses the theme of the book by identifying the link between economic policy, environment and agriculture and the emerging role of environmental indicators as a monitoring tool for agriculture and environmental policy in the EU. Reference is made to the driving-force-state-response model (DFSR) as an agreed framework to develop environmental indicators within the EU. However, the evolution of the DFSR from the earlier pressure-state-response model (PSR) of the OECD following Agenda 21 work of UN is not made clear. This may cause some confusion to the reader unfamiliar with such developments, when other contributors in later chapters independently refer to the two systems.

Chapter 2 provides a discussion of theoretical considerations in the development of environmental indicators. The trade-offs between indicator quality and the cost of information are discussed and insights for selecting indicators under various situations are given. Emphasis has been on state-dependent physical indicators, and no mention is made of bio-indicators and social parameters that can signal alternative states of nature.

Chapter 3 provides an overview of agricultural and environmental policies in the OECD countries where agricultural support policies 'provide targeted assistance to agriculture', and 'there is a need for better understanding of the environmental effects of agricultural support'. The DFSR framework is presented in detail and a range of agri-environmental issues relating to primary production are discussed. The focus on physical measures and the absence of social indicators points to a need to explore policy relevance within a broader social cost-benefit framework.

Chapter 4 takes a further look at the same issues, focusing on the EU using the PSR framework. Following an application involving an 'expert user survey' to develop a set of 'decision oriented indicators' for pesticide use, the chapter concludes that 'producing decision-relevant indicators is a difficult and costly exercise'.

Chapter 5 examines the important question of policy requirements and data availability for agri-environmental indicators in the EU. Authors call for a more integrative approach to environmental impact assessment 'to assess the relationship between environmental problems and the causative factors in society'. The need is clearly to identify the 'driving forces' and ways of moderating the impacts of such forces on the environment.

The next set of chapters considers the issues related to environmental indicators in the fields of biodiversity and landscape. Chapter 6 takes a broader look at the issues that shape the EU landscapes. A spatial assessment framework for landscape indicators for the EU is presented using the concept of 'generic landscape profiles'. Chapter 7 focuses on the measurement of the impacts of agricultural inputs on biodiversity. Problems in adopting the PSR framework in biodiversity assessment are noted and the need to link performance monitoring to quantitative biodiversity conservation targets is emphasised. This need is addressed in Chapter 8, which discusses 'nature quality indicators' and develops a 'yardstick for biodiversity', a quantitative indicator of the state of biodiversity on farms. Opportunities to use the 'yardstick' in economic incentive schemes are discussed.

The focus of Chapter 9 is on 'high nature value farming systems' in Europe, a mechanism to promote social and environmental benefits of low intensity farming. Chapter 10 continues on the same issue relating to 'extensive land-use systems' in the Iberian Peninsula. This chapter uses the PSR framework for the identification and development of indicators suited for extensive areas and concludes that the focus needs to be on a lower level reflecting the spatial continuity of agro-ecosystems that determine the use patterns. Problems in dealing with large spatial units with heterogeneous attributes are highlighted and the potential to employ Geographic Information Systems (GIS) for identifying spatially coherent units is identified.

The set of papers presented in Chapters 11 to 13 analyses the policy issues relating to pesticide impacts, site-specific water quality, and nutrient balance approach. A weighted-additive indicator for pesticide monitoring is developed in Chapter 11, following a quantitative framework based on principal components analysis. The method can 'reduce a basket of indicators' to a set of readily useable indicators to apply in monitoring pesticide-related pollution effects. The dynamic nature of environmental impacts of pesticides renders simple indicators non-viable. The development and application of SINDA, a farm level economic-ecological model, are discussed in Chapter 12, where the model is used to evaluate impacts of current farming practices and alternative management options on farm profits and water quality in Germany. The authors highlight the need to be vigilant of the costs of information and monitoring if farm-level targets are used in policy instruments. The nutrient balance study presented in Chapter 13 uses nitrogen balance information from Finland. The study concludes that though nitrogen balance calculations can be used as a way of examining farm pollution from non-point sources, there are significant issues affecting the quality of estimates produced. Weather variations in particular are major limiting factors.

Chapter 14 focuses on the policy relevance of sustainability indicators following the example of multiple land use in the mountainous areas of the UK. Despite difficulties in defining sustainability, indicators that set sustainable development targets can 'inform policy-makers and other stakeholders about the state of the economy and the environment'. Essentially following this position and given the difficulty in defining performance indicators reflecting different states of nature under varying conditions, 'selection and use of indicators involve a political dimension'. In this situation, economists may best contribute by defining 'concepts such as criticality and economy-environmental trade-offs' so that the different interests can effectively evaluate their implications.

Discussion in Chapter 15 is on a 'policy information system' as a tool for implementing environmental indicators in a regional policy context, while Chapter 16 presents an application of indicators in the forestry sector.

Chapter 17 presents an interesting discussion on the social aspects of indicator development and stresses the importance of 'education and effort to change values and institutional structures' as important elements in any 'effective regulatory strategy to promote more sustainable agriculture'. In this respect, 'the real challenge is to establish sustainable systems . . . with a capacity for *self-monitoring*'; and 'the current preoccupation with physical environmental indicators is . . . somewhat misplaced'.

The concluding chapter provides an appropriate summary of the papers presented and comments are made within four contexts that emerge throughout the book. These are the environmental context, the institutional

context, the selection mechanism and the types of indicators. It is shown why each of these contexts is important and some problems associated with different types of indicators are noted and opportunities for further research identified. It is concluded that indicators, designed to be simple, reliable and attuned to stakeholder needs, often deliver imperfect information and users need to be aware of this deficiency when interpreting indicators.

*Environmental Indicators and Agricultural Policy* can best be summarised as a comprehensive case study of the state-of-the-environment reporting framework, the pressure-state-response model developed by the OECD and later modified by the UN as the driving-force-state-response model. Both versions of the model are applied in the book in various chapters with varying degree of success. The book shows that we can learn many things from environmental indicators to design good policy. With governments paying increasing attention to environmental problems of agriculture, there is a 'need for systematic information to enable officials, politicians and the public to monitor progress' (Chapter 17). The indicators discussed in the book successfully meet this need. What matters most, however, is whether these monitoring efforts will eventually lead to lasting behavioural changes in actors associated with the agri-environment, who are driven by the pressures that confront them.

The chapters in this book are written by a series of authors with very diverse backgrounds, yet the book is easy to read and the amount of repetition has been kept at a level that permits independent reading of individual chapters to be possible without losing clarity. In conclusion, this book will be a useful source for agricultural and resource economists and agriculturists who are interested in environmental management. Most chapters are accessible to those without good training in economics but familiar with basic concepts. In this respect, it would also be suitable for scientists, policy-makers and administrators dealing with natural resource management both within and outside the EU.

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