

Book reviews

Environmental Economics in Theory and Practice, by Nick Hanley, Jason F. Shogren and Ben White. Published by Macmillan Press Ltd, London, 1997, pp. xv + 464, ISBN 0-333-58235-7 (hdbk), 0-333-58236-5 (pbk).

Environmental Economics in Theory and Practice is unashamedly aimed at final year undergraduates and above, in environmental and resource economics. In the preface it is stated that the book provides a ‘guide’ (p. xiii) through some of the more recent developments in the technical literature. The content of the book, as the authors acknowledge, reflects their research and teaching strengths across a broad swathe of material. This book is strong on technical detail and derivations but places less emphasis on big themes such as the distinction between competing economic paradigms or biodiversity.

The book can be split into four parts. Chapters 1 and 2 introduce the book and discuss market failure. Chapters 3 to 6 address the economics of pollution. Chapters 7 to 11 discuss the economics of resource use, and the concluding Chapters 12 to 14 consider valuation and sustainability.

Throughout the text the authors do not shirk the technical rigour that has come to be considered the cutting edge in environmental and resource economics research. In this way the text aims to bridge the gap between many introductory textbooks in this area and recent technical developments in the literature. To balance the technical emphasis, the authors include inset boxes detailing case studies and applied research that help to balance the overall exposition nicely.

In Chapters 1 and 3, use is made of technical appendices to give the reader help in understanding some of the more technical material (e.g. game theory, Kuhn-Tucker conditions). However, later in the book, especially in Chapter 7, *An Introduction to the Economics of Natural Resource Exploitation*, the technical material constitutes the body of the text. In addition, given the mathematical emphasis adopted in the book and the textbook-like derivation of many key resource use principles (e.g. Hartwick/Solow Sustainability Rule), there is a case for technical exercises at the end of chapters for students to further their understanding of the material. Although this would require further work by the authors, I think that this would improve the overall attractiveness of the book as a core course text.

An important feature of this book is the coverage of applications of game theory and mechanism design. Given the prominence of information in many intermediate and advanced micro textbooks, and the increasing number of

research papers that address problems of policy implementation in less than full information settings, this book is a useful addition to the literature. The reason for this is nicely summarised by the authors as follows:

The divergence between the theory and reality of the use of economic incentives for environmental protection is driven by several factors, one of the most important being the lack of information required to implement successfully an incentive to achieve some social optimum. (p. 60)

However, there are obvious omissions in this area, such as the use of auctions in both mechanism design and resource allocation. For example, the design and application of auction mechanisms to allocate contracts efficiently under the US Conservation Reserve Program would have provided a useful case study, as would the use of auctions in allocating transferable discharge permits for sulphur dioxide. There could also have been more on policy implementation and evaluation, such as monitoring and compliance issues. These observations are not to be viewed as criticisms of the book, however, but rather a reflection of this rapidly growing body of literature and the need for a specific text. That said, more material of this type would be highly desirable if the authors produce a second edition.

Given the strong emphasis placed upon information in policy design and implementation in Chapter 3, the coverage in Chapters 4 (Pollution Taxes) and 5 (Permits) is conventional. Chapter 6 (Transboundary Pollution) does employ a game theoretic emphasis. The focus here is on outcomes, although it is the process of negotiation that yields cooperation which is of more interest. Chapters 7 through to 11 deal with natural resource use in a dynamic setting. The technical emphasis here is upon the use of control theory and its application to derive optimal necessary and sufficient conditions of resource use.

The final three chapters in the book deal with non-market valuation theory, empirical techniques and the economics of sustainability. Chapters 12 and 13 cover the underlying theory and empirical methods commonly used in applied work. Chapter 14 (Sustainable Development) is included in the same section by the reviewer, as many of the applied studies in this literature have made use of various non-market valuation studies. Chapter 14 provides a blend of the theoretical and applied literature in this area. The theoretical material draws heavily on Hartwick (1990), a seminal contribution to the literature. However, there have been more recent advances in the literature such as Hamilton (1994) and Asheim (1997). The general exposition would be improved by drawing on some of these more recent contributions. With respect to the applied literature, readers would benefit from a discussion of how theory is put into practice in areas such as natural resource accounting.

On the whole, I think that this book is a useful addition to the literature as it attempts to fill a gap that is frequently encountered in teaching. If the authors decide to revise and produce another edition of the book, I think that it could be improved if some of the comments and suggestions offered are acted upon.

Finally, there are a number of typos in the book that may cause confusion. An up-to-date list of errata is provided by Ben White at the following web site, <http://www.ncl.ac.uk/~nbw/hsw.html>

References

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Economics and Environment: Essays on Ecological Economics and Sustainable Development, by David Pearce. Published by Edward Elgar, Cheltenham, UK, 1998, pp. xii + 263, ISBN 1-85278-772-4.

The development of environmental economics in the United Kingdom is undoubtedly closely linked to the career of David Pearce, and this volume — a collection of 19 essays largely based on previous work¹ in the form of published papers, conference papers, reports and addresses to various national and international agencies — provides ample evidence of the fact. The book is divided into four Parts and contains a variety of papers covering the period from 1976 through to the 1990s, some of which examine quite specific issues in a relatively detailed and technical fashion. Others, however, are more discursive and reflective pieces, focusing upon the moral and ethical dilemmas to be found within the domain of environmental economics, such as the question of intergenerational equity.

Part 1 addresses the question of valuation of the environment, and the differences between ecological economics and environmental economics; many of the themes introduced and examined in this section recur throughout

¹ Some papers are jointly authored. Other contributors include Giles Atkinson, Kirk Hamilton, Tom Crowards, Kerry Turner and David Ulph.

the rest of the book. The first chapter, based on a public lecture in 1996, defends the economic approach to environmental valuation, discusses the differing perspectives on environmental issues and outlines the fundamental causes of global environmental problems, such as biodiversity loss, in terms of the 'sheer unfairness of the competition between nature and economic development'. There is sharp criticism of environmental philosophy debates; these are regarded as contributing little or nothing of practical value in the pursuit of conservation and other environmental objectives. The remaining three chapters of Part 1 serve to reinforce these messages. For instance, in Chapter 3, which is also concerned with economic valuation and ecological economics, Pearce writes of the 'reality test', that is, the extent to which *practical* policy solutions emerge from the philosophical debates of ecological economics.

Part 1, to some extent, represents a personal crusade, the purpose of which is to defend traditional economic analysis against its critics. Pearce refers, for example, to the 'age-old confusion between economics as commerce and economics the science', and passionately advocates the crucial role that economic analysis can play in understanding the causes of environmental problems and in promoting effective policy development. The final chapter (based on an article first printed in *Kyklos* 1976) rightly concludes on a more cautious note, however, by addressing the limitations of traditional cost benefit analysis in the presence of stock pollutants and dynamic externalities.

Part 2 moves on to the specific issue of sustainable development. Four chapters are devoted to the issue, the first of which is unique to this volume and outlines relevant underlying concepts and theory. The remaining three chapters are based on previous work, and are concerned with definitions of sustainability and, more importantly from Pearce's perspective, the development of practical indicators of sustainability. Thus, it is argued, discussion as to whether the sustainability criterion should be 'weakly' defined (non-diminishing capital over time) or strongly defined (non-diminishing *natural* capital) is of little significance when the evidence provided by these practical indicators shows that many countries are following a path which fails even the weak sustainability test. Monetisation is advocated once again in Chapter 6 as an effective means of ensuring that environmental issues are fully accounted for in the process of economic growth and development. The final paper in this section looks more generally at the question of economic growth and sustainable development, presenting powerful arguments to show that it is not economic growth *per se* but the quality of that growth which is important, and that the real focus of attention should not be levels of growth but the causes of environmental degradation which exist irrespective of whether or not positive growth is present. Overall, Part 2 represents an

effective plea for greater clarity and purpose in the pursuit of sustainable development, and greater recognition of the opportunity costs of different courses of action.

Part 3 is devoted to applied environmental economics and hence provides examples of how economic analysis translates into a practical real-world context. Thus we find studies on the health costs of air pollution in the United Kingdom, the social rate of return to forestry in temperate zones, and taxation as a solution to the problem of packaging waste. Two chapters on tropical forest deforestation and African wildlife protection are particularly successful in linking well with themes developed in the previous sections, notably economic valuation and sustainable development. In both cases, a powerful message for the protection of global resources is promoted, summarised by Pearce as 'demonstration and capture'. Demonstration refers to the need to show the true global economic value of resources and how the economic distortions in current systems are key drivers in the processes leading to their destruction. Effective protection thus requires the development of policies and institutional arrangements to ensure that global values of resources are capable of appropriation, or 'capture', by host nations.

The remaining three chapters of Part 3 appear to deviate somewhat from the previous examples, but are no less important in their own right. Chapter 14 is concerned with the distribution of costs and benefits of environmental degradation and improvement, based on a paper first written in 1980. As Pearce himself notes, the issue has returned 'with a vengeance in the 1990s' and for this reason, an update on some of these issues would perhaps have been a welcome addition to the book. Chapter 15 addresses the question of what is an appropriate public sector discount rate for the United Kingdom, and provides an answer which is some way below official rates. The final chapter deals with the issue of environmental policy appraisal, or lack of it, in EU environmental policy development.

The three papers in Part 4 are all concerned with global environmental change; the final chapter, for example, is adapted from a paper in the *Economic Journal* of 1991, which examines the role of carbon taxes as an approach to global warming. Chapter 17 returns to the themes of Part 1 by discussing the competing paradigms of environmental and ecological economics in relation to acid rain and global warming. Pearce's belief in the need for problem-solving action rather than arid paradigm debates is thus reiterated. The penultimate chapter turns to the costs and benefits of policies designed to address the problem of climate change, and there is a return to the debate over monetisation. In particular, there is much discussion of the IPCC Working Group III Report, and the subsequent controversy this produced over the 'value of statistical life' assumed for different countries.

Part 4 of the book — on global environmental change — is something of

an anti-climax. While it is fair to say that the resolution of global environmental problems presents the greatest challenge to policy-makers at the present time, this view is already much in evidence throughout the book, and the final part does not add much. A concluding chapter, drawing together important issues and indicating future directions for environmental economists, would perhaps have been preferable.

Notwithstanding this minor deficiency and the fact that there is some repetition of material (perhaps inevitable in a collection of this kind), this publication does represent a valuable resource and will be attractive to a wide audience. It is an interesting combination of personal belief blended with the familiar analytical tools of the economist, where the latter are not, on the whole, beyond the grasp of anyone with a basic understanding of economic principles. The enthusiasm and commitment evident in the work are to be welcomed in a world where debate is increasingly arid.

It is also interesting to see, through the vehicle of these various papers, how the position of an environmental economist such as David Pearce has changed within a relatively short space of time. In the 1970s, economists who recognised the interactions between the economy and environment, were regarded as 'non-mainstream' and were critical of the traditional and narrow focus upon consumption and production. Attitudes have moved on, and environmental economics is itself frequently the subject of much criticism from outside the discipline for its anthropocentric perspective, and its attempts to place monetary values on environmental assets or to highlight the costs of environmental policies in relation to the benefits. This book represents a strong defence of environmental economics and, more importantly, of the practical contribution that economic analysis can make to the resolution of environmental problems.

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National Parks: Private Sector's Role, edited by Tony Charters, Michael Gabriel and Scott Prasser. Published by USQ Press, Toowoomba, 1996, pp. iv + 169, ISBN 0-949414-56-5.

This book examines the scope for a private sector role in the management of Australia's national parks, state forests, protected areas and reserves. The question is posed in various ways. Should public areas be privatised? Should the private sector offer services competing with the public sector? What role should there be for the ecotourism industry and for indigenous communities? This book provides a mix of views on such issues. Not much economic

theory is used to support the book's arguments and this leads to questionable interpretations. However, there is interest in some contributions.

The provision of an amenity (flora, fauna, scenic attraction) is never treated in economics as a straightforward private good. Often such services are non-rival and non-excludable, making them prime examples of pure public goods — the conservation of migratory wildlife is a clear example. If excludability obtains, for example, a scenic attraction that can be fenced, the amenity may be operated as a private good or as a club good. Even with rivalry and excludability there often remain externalities associated with the continued existence of amenities. The management of such externalities is often complex to contract (it is hard to define biodiversity let alone contract its pursuit) so public management can be advanced as a sensible option even in the absence of public good issues. Finally, there are strong merit good notions underlying the treatment of many natural resource assets — the destructive commercialisation of many natural areas and the devastation of Australia's mammal fauna make citizens nervous of allowing private involvement. There are also traditions in the national culture of free access to beaches and bush land that politicians ignore at their peril. For further discussion of the general issues see Clarke (1997).

An argument running through many contributions in this volume (e.g. Bill Carter) is that private involvement in managing national parks can be justified on the basis of deficient public spending in park management (preventing degradation by visitors, feral control). This is additional to private provision of tour and accommodation services. Robert Beeton and Louise Horneman see an even greater role for the private sector due to an anticipated expansion of demands for use of the environment. Tony Charters sees a role for a *regulated* private ecotourism sector in improving conservation outcomes. The response of Tor Hundloe is that public management of natural areas is necessary because ecological sustainability is a social concern. He also denies that current public park management is inadequate and can be improved by implementing 'user pays' policies. Thus the private sector should retain its traditional ecotourism roles.

Arising from this mix of views is an interesting set of conservation questions. The issue of public sector budget constraints seems irrelevant — particularly if user pays can be introduced. However, even if it were inefficient to set 'user pays' charges, perhaps because the resource was a public good, funding is a matter for social cost benefit analysis not for determination by the size of fiscal deficits. What, then, should the private sector's role be? Given substantial possible external costs, private firms cannot be unregulated even if they are only providing ecotourism services to publicly owned parks. The important question is to determine a contract that limits external costs while allowing the private sector to service ecotourism consumers.

Alan Clements and Bruce Rose discuss the role of aborigines in protected area management. This is an interesting version of the 'privatisation' argument since the view advocated is that aborigines should be given absolute property rights to lands (including minerals on them) because aborigines have a distinct relation to the lands they live on and because aboriginal land use practices are consistent with sustainability. The discussion here seemed muddled to me. While the authors do point out that aborigines would need to be educated on conservation practices, the same is true for any group of private managers. What evidence is there that aborigines operating in a profoundly altered environment with western technologies and contemporary ecotourism demands would be better conservation managers than other groups? None is presented in this chapter.

Former Minister for Arts, Heritage and the Environment, Barry Cohen, provides a pessimistic view of the way the political process operates with respect to environmental issues. He argues politicians normally have strong pro-environment attitudes but that their concern and focus on other issues make it difficult to achieve good outcomes. Cohen emphasises that overly burdensome environmental regulation can constrain the private sector's role in conservation — a point emphasised also by John Wamsley. Interesting comments are also made by Robert Beeton and Louise Horneman on the political economy of environmentalism as a disaster-driven process.

Seven ecotourism case studies close this volume, including one by John Wamsley who developed Earth Sanctuaries. All are of interest though none is pitched at an analytical level. The main interest for resource economists is the glimpse gained of the perspectives of commercial operators involved in the conservation and ecotourism business. Issues of competitive neutrality with public conservation providers and of red tape problems are major concerns.

Overall, this book is not a deep study or one that offers particularly new perspectives. It is, however, of interest to resource economists interested in protected area management and of the relation between conservation efforts and ecotourism.

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Climate Change Policy: Facts, Issues, and Analyses, by Catrinus J. Jepma and Mohan Munasinghe. Published by Cambridge University Press, Cambridge, 1998, pp. xv + 331, ISBN 0-521-59314-X (hdbk), 0-521-59688-2 (pbk).

Why would two writers want to attempt the seemingly impossible — to summarise and augment the more than 2000 pages of the Second Assessment Report (SAR) of the Intergovernmental Panel on Climate Change (IPCC), itself a summary of countless pages of technical and policy-related writings? The reader of *Climate Change Policy* soon becomes aware of the personal and long-term commitment of Jepma and Munasinghe to the need to ‘make, and implement, rational decisions concerning this unprecedented problem’ of global climate change. Their own involvement in the SAR, as co-ordinating lead authors of the IPCC Working Group III report (*Economic and Social Dimensions of Climate Change*), places them in an excellent position to digest the information and disseminate it to a wider readership. They have done justice to the need, and to the challenge.

Their rather different, but highly complementary and relevant backgrounds (Jepma trained in law and economics in The Netherlands; Munasinghe is a Sri Lankan who trained in engineering and subsequently in economics in North America), have clearly enabled them to comprehend the diverse complexities of the climate change issue, and of possible responses, and communicate their comprehensive findings with noteworthy clarity.

But how does one summarise such a large volume of material? The fact that Jepma’s and Munasinghe’s thought processes and resultant writings are structured, logical and lucid clearly helps. They continually reinforce their arguments and conclusions through a well-integrated, iterative approach. The broad conclusions are summarised at the outset, and subsequently elaborated and strengthened as the case unfolds. The risk of becoming repetitive is avoided through the creative portrayal of methods and facts, and use of language.

The book is organised around ‘a circular causal chain that begins with net emissions and atmospheric concentrations of greenhouse gases, continues on to biogeophysical effects, as well as social, economic and environmental damage, and then arrives at possible response strategies, which in turn will influence net greenhouse gas emissions’. But this synopsis is somewhat misleading. To be fair, it is reasonable to assume that the authors never intended the preceding statement to define the scope and content of their book. Appropriately, the book’s title gives a clue to which parts of the SAR are dealt with in a more expeditious manner. The sections of the book dealing with causes, future changes and impacts on ecological and social systems are in themselves masterful summaries of summaries of . . . On the

other hand, inclusion of such terms as 'economic valuation', 'market and non-market policy instruments' and 'allocation' in a diagram purporting to illustrate the causal links that characterise global climate change phenomenon is also a good indication of the focus of the book. Biophysical processes and consequences are limited to one box in the same diagram.

Clearly, somewhat pragmatic decisions on the scope and emphasis of the book have had to be made. The decisions in no way detract from the value of the book. Rather, they lead to a contribution that stands apart from, and above, many of the volumes on climate change impacts and responses. This says much for the authors' ability to prioritise and to deliver quality information for those themes on which they have chosen to focus.

The authors take as given 'the serious risks posed by climate change'. They focus on the main policy issues and remedial options. It is acknowledged that uncertainties preclude an overly prescriptive approach; a flexible climate change response strategy that includes a 'portfolio of mitigation, adaptation and other options based on a coordinated application of a variety of market-based, regulatory and other instruments' is advocated. The authors are not captured by a particular doctrine — they identify and critically assess the spectrum of response policies and mechanisms, with objectivity and clarity of insight. Their discussions of equity are equally comprehensive, and devoid of bias.

The volume strikes a welcome balance between theory and practical application. This is no more apparent than in Chapter 2, where the authors grapple with the difficult issues of harmonising climate change and sustainable development policies. The discussion takes place in the technical context of uncertainty and equity. It lays an excellent foundation for the subsequent analysis of North–South (and West–East) cooperation that comes later in the book. In this context, the frequent use of case studies from Sri Lanka adds considerable clarity, and hence value.

The authors support their treatment of policy issues with brief, but generally informative, descriptions of a range of appropriate analytical tools. The one notable exception is the discussion of a key tool — integrated assessment (IA). Here the reader is presented with little more than three bullet points describing important questions examined by IA models, six bullet points on conclusions reached via IA modelling studies and nine bullet points on weakness in IA models, especially in their treatment of developing countries. Perhaps the terse treatment of IA is noticeable due to the more insightful and better documented treatment of the other analytical tools.

The multiple authorship, and the lengthy and intrusive peer and political review procedures of the SAR, brought with them a number of impediments to unequivocal and coherent communication. These shortcomings have been largely overcome and those that remain are relatively minor. Some boxes

run over six pages; lapses in technical editing mean that even short boxes often bridge two pages. Though published in June 1998, the book is very light on developments post mid-1996. Thus the landmark initiatives captured by the Kyoto Protocol are not elaborated. As with the SAR, the treatment of adaptation is overly simplistic and cursory, in relation to that of mitigation. The index is very limited — but better than nothing, as was the case for the SAR.

When dedicating the book to their children, the authors note that they, and their progeny, may face more serious challenges in the world they inherit. Such a pessimistic view is in stark contrast to the authoritative description of a suite of policy options and tools that can be used to address climate change issues. The difference emphasises the key point made in the concluding pages of the book — while our understanding of the required policy responses has increased substantially over the last decade or so, ‘an effective response strategy will require not only a portfolio of innovative technology and policy options, but also firm political leadership as well as fundamental changes in human attitudes and behaviour’.

One can only hope that the pessimism of the dedication proves unfounded. Perhaps inspired in part by this excellent book, political leaders, and people at large, will respond appropriately to the authors’ plea that ‘climate change analysis should be an important part of an integrated approach aimed at addressing a broad range of sustainable development issues’.

Given the success of their efforts in relation to the SAR, a second, and more immediate, hope must surely be that Jepma and Munasinghe will write a book based on the new policy findings in the IPCC Third Assessment Report, due to be released in late 2000.

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