GUIDE TO ENVIRONMENTAL ECONOMICS TEXTBOOKS

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This brief guide is designed to help students at European universities choose material from what is now a significant number of textbooks on environmental economics. In general, they are good and each one has something to offer. But coverage varies widely and in a few cases the treatment is inadequate, either because it is misleading or, more probably, because it is outdated. A few texts are not recommended, and for B48 students it is important to be aware that quite a few of the American texts are (a) geared towards US institutions and legislation, and (b) are designed for non-economists. They tend therefore to be below the level required for B48.

This guide offers you a professional, but nonetheless personal, judgement on the material available.

Note that some of the texts have gone to several editions, so be sure you have the latest one.

Author's name in bold indicates the reference in the discussion of content. The number in square brackets at the end of the reference indicates a judgemental score on the value of the text: 1 is poor, 5 is very good.

UNDERGRADUATE TEXTS: 1990 onwards

J **Asafu-Adjaye**. 2000. *Environmental Economics for Non-Economists*. Singapore: World Scientific.[2] (not recommended).

J **Bowers**. 1997. *Sustainability and Environmental Economics: an Alternative Text*. 1st edition only. NJ: Prentice Hall. [1] (Not recommended).

S **Callan** and J **Thomas**. 2000. *Environmental Economics and Management: Theory, Policy and Applications*. 2nd edition. Fort Worth: Dryden Press. [3.5] (Some good sections not dealt with in other texts. Very American.)

G.**Carlson**., D **Zilberman** and J **Miranowski.** 1993. *Agricultural and Environmental Resource Economics*. 1st edition only. Oxford: Oxford University Press. (Included here because, although each chapter is an invited contribution from a separate author, the chapters are written as teaching material). [2.5]

D **Chapman**, 2000. *Environmental Economics - Theory, Application, and Policy*. 1st edition only. Reading: Mass: Addison Wesley [3] (Tends to be below the level needed for B48 at UCL).

E **Goodstein**. 1999. *Economics and the Environment*. 2nd edition. NJ: Prentice Hall [3.5] (Tends to be below the level needed for B48 at UCL).

B **Field** and M **Field**. 1997. *Environmental Economics: an Introduction*. 3rd edition. New York: McGraw Hill (previous editions by Barry Field alone). [4] (Tends to be below the level needed for B48 at UCL).

B.**Field**.2001. *Natural Resource Economics: an Introduction*. 1st edition only. McGraw Hill.[4] (Tends to be below the level needed for B48 at UCL).

N **Hanley**., J.**Shogren** and B.**White.** 1997. *Environmental Economics in Theory and Practice*. 1st edition only. Basingstoke: Macmillan [3] (Wide coverage, some of it very good, some of it unnecessarily complicated).

N **Hanley**., J.**Shogren** and B.**White**. 2001. *Introduction to Environmental Economics*. 1st edition only. Oxford: Oxford University Press. [4] (Really intended for non-economists but still useful).

J **Hartwick** and N **Olewiler**. 1998. *The Economics of Natural Resource Use*. 2nd edition. Reading: Mass: Addison Wesley [4] (Authors are specialist in natural resource issues so that environmental issues tend to be neglected. Can be too detailed but still one of the best on natural resource issues).

J R **Kahn**, 1998. *The Economic Approach to Environmental and Natural Resources*. 2nd edition. Fort Worth: Dryden Press [3]

C **Kolstad**. 2000. *Environmental Economics*. Oxford: Oxford University Press. 1st edition only. [4]. (fairly narrow but thorough focus with some chapters on subjects not treated in other texts).

J **Lesser**., D **Dodds** and R **Zerbe**. 1997. *Environmental Economics and Policy*. 1st edition only. Reading: Mass: Addison Wesley [4] (Some good chapters not available elsewhere. Very American).

D W **Pearce and** R K **Turner**, 1990. *Economics of Natural Resources and the Environment*, Hemel Hempstead: Harvester Wheatsheaf. 1st edition only. [3] (Good in its time but now out of date.)

R **Perman**., Y **Ma**., J **McGilvray** and M **Common**. 1999. *Natural Resource and Environmental Economics*. 2nd edition. Harlow: Longman. [5] (Currently by far the best and most comprehensive text. Occasionally goes 'over the top' with technical presentation).

C **Russell**. 2001. *Applying Economics to the Environment*. 1st edition only. Oxford: Oxford University Press. [4] (Includes refreshing critique of market based instruments).

H **Siebert**. 2001(?). *Economics of the Environment: Theory and Policy*. 4th edition. Berlin: Springer [2.5]. (Popular in Germany where focus tends to be exclusively on technical material with little application. The technical treatment is excellent if dull.).

T **Tietenberg.** 2000. *Environmental and Natural Resource Economics. 5th edition.* Reading: Mass: Addison Wesley. [4] (The biggest selling environmental economics text in the world.

Very American and attempts to ‘globalise’ it have not really worked very well. Quite a few chapters are below the level of B48. Nonetheless, worth having and dipping into.)

T **Tietenberg** , 1998. *Environmental Economics and Policy*. 2nd edition. Reading: Mass: Addison Wesley. [2] (An ‘applied’ adaptation of the above. Useful for case material.)

R K **Turner**., D W **Pearce** and I **Bateman**. 1993. *Environmental Economics: an Elementary Introduction.* 1st edition only. Baltimore: Johns Hopkins UP. [3] (Designed for non-economists).

I **Wills**. 1997. *Economics and the Environment: a Signalling and Incentives Approach*. St Leonards NSW: Allen and Unwin. [2] (An odd text that is generally not recommended).

UNDERGRADUATE TEXTS: PRE 1990

While generally outdated, some of these texts contain useful material. Their main interest lies in their use as indicators of how environmental economics has evolved. They are not considered further beyond this listing.

W Baumol and W Oates. 1988. *The Theory of Environmental Policy*. 2nd edition. Cambridge: Cambridge University Press. [While pre-1990 this remains one of the classic expositions of some of the basic theorems in pollution economics, e.g. non-convexity, taxes as cost minimising instruments etc].

M Common. 1988. *Environmental and Resource Economics: an Introduction*. Harlow: Longman

P Dasgupta. 1982. *The Control of Resources*. Oxford: Blackwell. [By one of the leading theorists, this text still has useful introductory material on different types of natural resource problems].

A C Fisher. 1981. *Resource and Environmental Economics*. Cambridge: Cambridge University Press. [An outgrowth of two review articles from the *Journal of Economic Literature* in the 1970s].

A M Freeman, R Haveman and A Kneese. 1973. *The Economics of Environmental Policy*. New York: Wiley

A Kneese. 1977. *Economics and the Environment*. Harmondsworth: Penguin. [An early text by the 'father' of environmental economics].

O Herfindahl and A Kneese. 1974. *Economic Theory of Natural Resources*. Columbus: Merrill. [Early detailed diagrammatic treatment of theory of natural resource use and depletion, widely borrowed by others].

D W Pearce. 1976. *Environmental Economics*. Harlow: Longman. [The very first text in environmental economics!].

GRADUATE TEXTS

There are no graduate texts that cover environmental and resource economics comprehensively. Those listed below are widely used and will generally go well beyond the level of an undergraduate course. They are included here for anyone who wishes to see how the subject develops at the advanced level.

C Clark. 1990. *Mathematical Bioeconomics*: *The Optimal Management of Renewable Resources*. 2nd edition. New York: Wiley. [One of the classics of natural resource economics, the early chapters can be understood even at undergraduate level. But it then becomes quickly oriented towards advanced problems in fisheries management].

J Conrad. 1999. *Resource Economics*. 1st edition only. Cambridge: Cambridge University Press. [Based on solving non-linear programming problems with Excel spreadsheets, this is a highly 'interactive' text that may suit some courses].

J Conrad and C Clark. 1987. *Natural Resource Economics: Notes and Problems*. 1st edition only. Cambridge: Cambridge University Press. [Very mathematical, problem-solving approach].

P Neher. 1990. *Natural Resource Economics: Conservation and Exploitation*. 1st edition only. Cambridge: Cambridge University Press. [Probably still the best postgraduate text for clarity and coverage. Neher is writing a sequel.]

TEXTS IN 'ECOLOGICAL ECONOMICS'

Ecological economics has developed as an allegedly separate discipline to environmental economics. How far this is actually the case is discussed in D W Pearce, 'Economic valuation and ecological economics', in D W Pearce, 1999. *Economics and the Environment: Essays in Ecological Economics and Sustainable Development*, Cheltenham: Edward Elgar. In so far as its principles are embodied in texts, rather than collected papers, the following texts exist. Ecological economics could be thought of as an evolving subject so that textbooks at this stage are understandably somewhat incoherent.

R Costanza, J Cumberland, H Daly, R Goodland and R Norgaard. 1997. *An Introduction to Ecological Economics*. Boca Raton, Florida: St Lucie Press. [Written by the 'gurus' of ecological economics, this is more an excursion into some of the anti-growth precepts of ecological economics. Despite this perspective, it is hard to distinguish the policy prescriptions from those found in environmental economics].

G Edwards-Jones, B Davies and S Hussain. 2000. *Ecological Economics: an Introduction*. Oxford: Blackwell. [This is the most honest attempt to provide a text that tries to differentiate itself from environmental economics. It is intended for non-economists who may therefore become confused about a subject that is described and then criticised, unfortunately sometimes wrongly.]

P Söderbaum 2000. *Ecological Economics: a Political Economics Approach to Environment and Development*. London: Earthscan. [This actually contains very few economics principles that could be described as defining a separate discipline].

J Martinez-Alier, 1987. *Ecological Economics*. Oxford: Blackwell. [This is an interesting volume dealing with 'energetics' as the basis for decision-making. This has some overlap with how some ecological economists see their subject, but is generally devoid of what everyone else would call economics. It should not therefore be confused with other attempts at texts in ecological economics].

FEATURES OF ENVIRONMENTAL ECONOMICS TEXTBOOKS

For the teacher of environmental economics it is important to know the coverage of each text. As this could take us into immense detail the issue is addressed here by seeing if the text covers some of the broad subjects that an environmental and natural resource economics course would be expected to address. Table 1 compares the texts according to whether they are written by Europeans or Americans/Canadians and according to their level. The geographical bias does not matter much as far as theory is concerned, but most texts illustrate the theory with case studies and examples and students should be aware that the illustrations in the North American texts are almost universally based on US legislation and experience.

Table 1 Geographic sources and level

Text	Geographic source	Level
Asafu-Adjaye	Australia	Below UG
Bowers	UK	Below UG
Callan and Thomas	USA	UG
Carlson et al	USA	UG →PG
Chapman	USA	UG
Goodstein	USA	UG
Field and Field	USA	UG
Field	USA	UG
Hanley et al. 97	UK	UG→PG
Hanley et al. 01	UK	UG
Hartwick and Olewiler	Canada	UG
Kahn	USA	UG
Kolstad	USA	UG
Lesser et al.	USA	UG
Pearce and Turner	UK	UG
Pearman et al	UK	UG
Russell	USA	UG
Siebert	Germany	→ PG
Tietenberg	USA	UG
Turner et al	UK	Below UG
Wills	Australia	←UG

Key: UG = undergraduate level; PG = postgraduate; → towards; ← tending to be below; Below UG = below undergraduate level or aimed at non-economists.

What goes in an environmental economics course at undergraduate level is, to some extent, optional. But it would be surprising if it did not include the following basic topics:

Some discussion of ethical issues (ETH)

Notions of optimality and welfare economics (WEL)
Property rights (PRO)
Economic valuation (VAL)
Comparison of policy instruments (INS)
Cost benefit analysis and discounting (CBA)
Optimal natural resource use (NAT)
Risk and uncertainty (RU)
Sustainable development and/or growth vs the environment (SD)

A good modern text will now include chapters on:

International trade and environment; Global pollution problems ; Developing country problems Game theory and the environment; 'Green' national income ; Incentive compatibility ; Environmental justice ; Recent innovations in policy, e.g. voluntary agreements, liability, provision of information.

Table 2 sets out the texts classified in Table 1 according to their coverage of the 'core' topics.

Table 2 Coverage of topics

Text	ETH	WEL	PRO	VAL	INS	CBA	NAT	RU	SD
Callan	?	√	√	√	√	√	X	√	√
Carlson	X	√	X	X	X	X	√	X	X
Chapman	√	√	X	√	X	√	√	X	√
Goodstein	√	X	√	√	√	√	X	X	√
Field/Field	X	X	√	√	√	√	X	X	X
Field	X	√	√	√	X	√	√	√	X
Hanley 97	X	X	√	√	√	√	√	X	√
Hanley 01	X	X	X	√	√	√	√	√	√
Hartwick	X	√	√	√	√	√	√	X	√
Kahn	X	X	√	√	√	√	√	X	X
Kolstad	X	√	√	√	√	√	X	√	X
Lesser	X	√	√	√	√	√	√	X	X
Pearce	√	X	X	√	√	X	√	X	√
Pearman	√	√	√	√	√	√	√	√	√
Russell	X	√	X	√	√	√	X	√	X
Siebert	X	√	√	X	√	X	X	√	√
Tietenberg	X	X	√	X	√	√	√	√	√

Table 2 is helpful in establishing that some authors regard 'environmental' economics as including natural resource depletion while others exclude it. Second, even though a topic is

addressed in a given text, the amount of attention paid to it may be very brief. Third, the only text that has a fairly detailed treatment of all the core subjects is the one by Pearman et al.

In terms of the 'modern' topics:

International trade and environment is addressed explicitly in the texts by Siebert, Hanley et al 2001, very briefly in Pearman, Kolstad, and Field, and not at all in other texts.

Global pollution problems are addressed directly in Goodstein, Hanley et al 2001, Lesser, Chapman, Field, Callan, Pearman, Siebert, Tietenberg and Kahn.

Developing country problems are addressed in Pearce, Kahn, Tietenberg, Russell, Field and Field, Field, and Goodstein

Game theory and the environment receives explicit treatment in Hanley et al 19997, Hanley et al. 2001, Pearman, and a brief mention in Chapman.

'Green' national income is addressed in Pearman, Hartwick, Hanley et al. 1997, Hanley et al 2001, Field, and briefly in Chapman

Incentive compatibility is addressed in Goodstein and briefly in Russell

Environmental justice gets explicit treatment in Tietenberg, Lesser, and briefly in Chapman

Recent innovations in policy are addressed in Russell.

Any overall judgement depends in part of the individual style of the author - some are easier to understand than others. As a general judgement, however, the text by Pearman et al. has the greatest coverage and deals in more depth with the topics it covers. US texts are often difficult to 'transfer' to European teaching because of the extensive use of US case material, with chapters often being written round issues such as US water or air pollution control policy. The new text by Russell is attractive for being up to date on the issues it does address, but its coverage is not comprehensive and it would have to be supplemented with a text dealing with natural resources. Similarly, the text by Kolstad has a number of attractions, being again up to date. But it also is confined to 'environmental' issues and excludes natural resource economics.

Finally, a text that is not on environmental economics but which covers cost-benefit analysis and the valuation issues in considerable detail is

A Boardman, D Greenberg, A Vining and D Weimer. 2001. *Cost-Benefit Analysis: Concepts and Practice*, 2nd edition. NJ: Prentice Hall. This is by far the best text on cost-benefit analysis available.