

Contents

1	Introduction	1
1.1	Ecology and Economy: Unequal Partners?	1
1.1.1	Environmental Economics	3
1.1.2	Why is Theory Needed for Environmental Policy?	4
1.2	Survey of the Book	5
	References	9

Part I The Environmental Movement

2	Differing Views on the Environment	13
2.1	The Europeans and the Environment	13
2.1.1	Environmental Awareness in Europe	14
2.1.2	Conclusions for Environmental Economics	15
2.2	The Environmental Movement in the US	17
2.3	The Developing World and the Environment	20
2.3.1	China and the Environment	20
2.3.2	India and the Environment	22
2.4	Attitudes Towards the Environment: A Summary	23
	References	24
3	The International Dimension of the Environment	27
3.1	International Environmental Issues	27
3.1.1	Global Environmental Commodities	27
3.1.2	Consequences of Globalization	29
3.1.3	The Environment and International Trade	30
3.2	International Conferences and Environmental Agreements	31
3.2.1	The United Nations Conference on Environment and Development (UNCED)	31
3.2.2	The United Nations Framework Convention on Climate Change (UNFCCC)	36
3.2.3	The Kyoto Protocol	37

3.2.4 Copenhagen, Cancun, Durban and Rio?	39
References	41

Part II Theoretical Environmental Economics

4 Basics of Environmental Economics	45
4.1 Fundamental Concepts	45
4.1.1 Environmental Awareness and Perceived Scarcity	45
4.1.2 Environmental Commodities and Allocation Problems	47
4.2 Efficiency as a Normative Criterion for Environmental Economics ..	48
4.2.1 Economic Efficiency and the Environment: Theory	49
4.2.2 Economic Efficiency and the Environment: Applications ...	50
References	52
5 Allocation Problems in a Market Economy	53
5.1 Efficient Equilibrium Allocations	53
5.1.1 The Model Economy	53
5.1.2 Market Equilibrium	56
5.2 Environmental Effects in a Market Economy	59
5.2.1 The Concept of an External Effect	59
5.2.2 Analysis of an Externality	61
5.2.3 Market Equilibrium with External Effects	63
5.3 Public Commodities in Environmental Economics	66
5.3.1 The Prisoners' Dilemma in an Environmental Context	67
5.3.2 The Prisoners' Dilemma and the Kyoto Protocol	70
5.3.3 The Tragedy of the Commons	74
References	75
6 The Internalization of External Effects	77
6.1 External Effects and Missing Markets	77
6.1.1 Supplementing the Market System	79
6.2 The Pigou Tax	83
6.3 Firm-Specific Prices for an Environmental Commodity	87
6.4 Tradeable Emission Certificates	89
6.5 Pollution Rights	91
6.6 The Coase Theorem	98
References	101
7 Public Goods in Environmental Economics	103
7.1 The Lindahl Mechanism	103
7.1.1 The Concept of a Lindahl Equilibrium	103
7.1.2 Lindahl Equilibrium and Incentive Compatibility	106
7.2 Core Equivalence in a Public Goods Economy	108
7.2.1 The Core of an Economy with a Public Good	108
7.2.2 The Cost-Share Equilibrium	111
7.2.3 Core Equivalence and Cost-Share Equilibria	114

7.3 Implications for the Kyoto Protocol	117
References	122

Part III Environmental Policy

8 From Theory to Policy: Information Deficits	127
8.1 Informational Requirements Regarding the Structure of the Markets	127
8.1.1 The Competition-Price Mechanism	129
8.2 Information Deficits in International Environmental Policy	131
8.3 Information Deficits Regarding Hazardous Materials and Processes	132
8.4 Consequences for Environmental Policy	134
References	136
9 Command-and-Control Policy	139
9.1 Environmental Standards and Framework Conditions	139
9.1.1 Standards in Economic Systems	140
9.1.2 Ecological Efficiency of Standards: Examples	141
9.1.3 Framework Conditions, Standards and the Private Finance Initiative	142
9.2 The Refillables Quota Issue	143
9.2.1 Facts and Developments Regarding Refillable Packaging ...	144
9.2.2 The Refillables Quota Issue and the German Packaging Ordinance	147
9.3 Economic Feasibility of an Environmental Policy	149
9.3.1 The Concept of Economic Feasibility	149
9.3.2 Economic Feasibility: A Formal Analysis	150
9.3.3 Economic Feasibility in a Practical Context	156
References	157
10 Integrated Approaches to Environmental Policy	159
10.1 Extended Producer Responsibility (EPR)	159
10.1.1 General Aspects of Waste Electrical and Electronic Equipment (WEEE)	160
10.1.2 EPR Approach to WEEE in Germany	163
10.1.3 EPR Approach to WEEE in Japan	165
10.2 Integrated Waste Management (IWM)	167
10.2.1 The Concept of IWM in Environmental Economics	168
10.2.2 The Implementation of IWM	169
10.2.3 IWM in Germany	173
10.3 Renewable Energy Sources	175
10.3.1 The German Renewable Energy Sources Act (EEG)	176
10.3.2 The EEG in Practice	177
10.4 Integrated Approaches: A Summary	179
References	180

11	The Price-Standard Approach to Environmental Policy	183
11.1	Market-Oriented Environmental Policies	183
11.2	Pollution Tax	185
11.2.1	Relevant Features of the Pollution Tax	185
11.2.2	Cost Efficiency of the Pollution Tax	187
11.2.3	Cost Efficiency with Spatial Differentiation	189
11.3	Ecotaxes	191
11.3.1	Aspects of an Ecotax	191
11.3.2	Theoretical Considerations Regarding an Ecotax	192
11.3.3	The Ecological Tax Reform in Germany	193
11.4	Tradeable Emission Certificates	195
11.4.1	Relevant Features of Markets for Tradeable Certificates	195
11.4.2	Emission-Oriented and Immission-Oriented Trading Schemes	196
11.5	Experiences with Markets for Tradeable Certificates	199
11.5.1	The EU Emission Trading System (EU ETS)	199
11.5.2	A Critical Assessment of the EU ETS	202
11.5.3	The US Cap and Trade Policy	203
11.5.4	Cap and Trade Policies in Other Parts of the World	207
	References	208
12	The Allocation of International Environmental Commodities	211
12.1	International Environmental Agreements	211
12.2	The Principal-Agent Problem in Environmental Policy	213
12.2.1	Stability and Efficient Mitigation Strategies	214
12.2.2	The Role of Adaptation Strategies	219
	References	225
Part IV The Environment in the Globalized World		
13	Trade and the Environment: The Legal Context	229
13.1	The Framework Conditions for International Trade	229
13.2	Environmental Aspects of the GATT and the WTO	231
13.3	Regional Trade Agreements	235
13.3.1	The Environmental Policy of the EU	235
13.3.2	The North American Free Trade Agreement (NAFTA)	237
13.4	Consequences for the Integration of Trade and the Environment	240
	References	242
14	Overfishing	245
14.1	The State of Fishery Resources	245
14.2	Short-Run Supply of the Fisheries	247
14.2.1	Interdependence of Fisheries	248
14.2.2	Short-Run Supply and Fixed-Stock Equilibrium	250
14.3	Integration of Economical and Biological Aspects	254
14.3.1	A Biological Growth Process	254

- 14.3.2 The Bioeconomic Equilibrium 255
- 14.4 The Market Equilibrium 259
- 14.5 Conclusions from the Formal Analysis 262
 - 14.5.1 An Analysis of Externalities in the Fishing Industry 263
 - 14.5.2 Attempts to Internalize Externalities in Fisheries 264
 - 14.5.3 Quota Management Systems 265
- 14.6 Fisheries Policies 268
 - 14.6.1 Subsidies and Overcapacity in the Fishing Industry 268
 - 14.6.2 Evaluating the Common Fisheries Policy of the EU 271
 - 14.6.3 A Glance at the US Fisheries Policy 274
- 14.7 Overfishing: A Summary 277
- References 278

- 15 Integration of Trade and the Environment 281**
 - 15.1 Bhagwati’s “Genuine Problems” 281
 - 15.2 Trade and the Environment: A Formal Approach 283
 - 15.2.1 The Model 283
 - 15.2.2 Autarky Equilibrium 287
 - 15.2.3 Free Trade Equilibrium 289
 - 15.3 Trade and the Environment: The Formal Integration 292
 - 15.3.1 From Autarky to Free Trade 292
 - 15.3.2 Harmonizing Environmental Standards 293
 - 15.4 Regulation 295
 - 15.5 Stackelberg Equilibrium 297
 - 15.6 Integrating Trade and the Environment: A Summary 300
 - References 300

- Index 303**