Contents

Tab	oles and Figures	xvii
Pret	face	xix
Ack	cnowledgments	xxi
	Part I. Theory and Fundamentals	1
1	Introduction to Environmental	
1.	and Natural Descurees Feenomies	2
	Introduction	3
	Fundamental Concepts	4
	Some Reasons for Optimism and Some Reasons for Concern	8
	Reasons for Optimism	8
	Reasons for Concern	12
	Overview	13
	Summary	14
	Review Questions and Problems	15
	References and Further Reading	16
2.	Value Systems and Economic Systems	17
	Introduction	17
	Fundamentals of Ethical Systems	18
	Deontological Ethics	19
	Teleological Ethics	20
	A Closer Look at Utilitarianism	21
	Private Property, Self-Interest, and the Common Good	24
	Locke and the Liberal Society	24
	Rousseau and the Civil Society	25

	On Positive and Normative Economics	27
	Economic Questions That All Societies Must Answer	29
	Summary	29
	Review Questions and Problems	30
	References and Further Reading	30
	Contente	
3	The Economics of Market Allocation	32
	Introduction	32
	Market Capitalism: Overview and Definition	32
	Overview	32
	Definition	33
	The Efficiency of Competitive Markets	33
	Efficiency	36
· d. ush >	Market Failure	37
handber	Monopoly Cartels and Market Power	37
	Externalities	37
	Collectively Produced and/or Consumed Goods	38
	Imperfect Information	39
	Fairness, Equity, and Distributive Justice	39
	Perspectives on Market Failures and Government	
	Intervention	39
	Summary	40
	Review Questions and Problems	41
	References and Further Reading	41
mpl. 112 4	8. Externalities: Why Markets Fail to Protect Environmental	
in han .	Quality	42
	Introduction	42
	Externalities	42
	Example 1	42
	Example 2	43
	Definition of Externalities	43
	Property Rights and Externalities	44
	Externalities and Market Failure	46
	Private Costs and the Supply Curve in Competitive Markets	46
	Deriving a Profit-Maximizing Firm's Supply Curve from	
	Its Marginal Cost Curve	48
	Adding Up Individual Firms' Supply Curves to Get	
	the Market Supply Curve	50
	Social Cost	50
	Allowing Firms to Pollute Is Equivalent to a Subsidy on	
	Production	51

	Will Market Forces Cause Firms to Internalize Their	
	Externalities?	51
	Pigouvian Taxes	51
	Using Pigouvian Taxes to Internalize Externalities Will Cause	
	Market Price to Reflect the True Social Costs of Production	52
	Competitive Markets Are Inefficient When There Are	
	Externalities: The Concept of Deadweight Social Loss	54
	Summary	55
	Review Questions and Problems	56
	References and Further Reading	57
	Appendix: A Calculus-Based Derivation of Supply Curves	58
	Oversion Constant	
5	The Economics of Natural Resource Systems	60
	Introduction and Overview	60
	Allocating Nonrenewable Resources	61
	The Industrial Organization of Energy Delivery in	
	the United States	62
	The Theory of Dynamically Efficient Nonrenewable	
	Resource Pricing	62
	Dynamic Efficiency	63
	Allocating Recyclable Resources	66
	Allocating Renewable Resources	68
	Renewable Resources Case Study: Fisheries Economics	69
	Marine Fisheries Management	72
	A Market-Based Approach to Fisheries Management: ITQs	74
	Aquaculture	76
	Allocating Common-Pool Resources	77
	Resources for the Future: Factors Affecting Future	
	Resource Scarcity	82
	Summary	85
	Review Questions and Problems	87
	References and Further Reading	87
	Appendix: The Theory behind the Tragedy of the Commons	89
	anoidori dos Questation. Feotosici instruction for	
	Part II. Policy	93
	An Hittstonion of the Cost Services Promitic (Mananogana) is notice	
b.	Pricing the Environment: Measurement and Analysis of Penefits and Costs	05
	Introduction: Deposit/Cost Apolysic	95
	Electronic Benefit/Cost Analysis	93
	Ejjiciency	90

Maximizing Net Present Discounted Value (PDV):	
Dynamic Efficiency Revisited	98
An Illustrative Example of Benefit/Cost Analysis	99
The Coase Theorem and the Net Monetary Benefit	Language -
Efficiency Criterion	101
Establishing Property Rights	103
Transactions to Realize Efficiency	103
Limitations of Coasian Contracting: Transaction Costs	
and Free Riding	104
Operationalizing Benefit/Cost Analysis in	
U.S. Environmental Policy	105
Measuring Benefits	106
Overview	106
Measuring the Health and Safety Benefits of Regulation:	
Quantitative Risk Assessment (QRA)	107
Categories of Nonmarketed Environmental Benefits:	Allocation h
Use, Option, and Existence Values	109
Use Value	109
Option Value	109
Existence and Bequest Value	110
Measuring Nonmarketed Environmental Benefits:	Dynami
The Contingent Valuation Method (CVM)	110
Examples of CVM Studies	Allocating in
What's Helpful about the CVM?	113
Critique and Defense of the CVM	113
Measuring Nonmarketed Environmental Benefits:	ASKON K
The Travel Cost Method (TCM)	114
Measuring Nonmarketed Environmental Benefits:	116
Hedonic Regression Method (HRM)	110
Measuring Costs	11/
Direct Compliance Cost Estimates for the United States	118
Indirect Cost: Adverse Effects of Environmental Regulation	ins 110
on Market Structure	119
Summary	121
Review Questions and Problems	123
References and Further Reading	124
7. The Political Economy of Environmental Regulation and	1
Resource Management	126
Introduction: What Is Political Economy?	126
Economic Models of Political Economy and	
the Regulatory Process	127

	The Political Economy of Environmental Regulation	130
	of Common-Pool Resources	132
	The Political Economy of International Environmental Accords:	102
	The Case of the Montreal Protocol	135
	Theoretical Foundation	135
	Case Study: The International Political Economy of CEC Control	136
	Cuse Shudy. The International I official Economy of CI C Control	140
	Pavian Questions and Problems	140
	Review Questions and Floorenis	141
	References and Further Reading	142
8.	Motivating Regulatory Compliance:	
	Monitoring, Enforcement, and Sanctions	145
	Introduction	145
	The Economics of Crime	145
	Alternative Ways of Creating Deterrence	149
	Criminal Penalties and Incarceration versus	
	Fines and Monetary Damages	149
	Market-Based Reputational Enforcement	
	and Voluntary Overcompliance	150
	Private Auditing and Other Voluntary Pilot Programs	154
	Incentive Enforcement Systems	155
	EPA Enforcement	156
	EPA Enforcement Trends	157
	Selected EPA and Department of Justice	
	Enforcement Actions	158
	California Enforcement	160
	Compliance	161
	Citizen Suits	161
	Summary	162
	Review Questions and Problems	163
	References and Further Reading	163
9	Incentive Regulation: Economic Instruments for	
	Environmental Protection and Resource Management	165
	Introduction	165
	Marketable Pollution Allowances	168
	An Illustration of the Cost-Savings Potential from	100
	Marketable Pollution Allowances	169
	Case 1: Traditional Direct Controls and No Marketable	105
	Allowances	169
	Case 2: Fully Marketable Allowances	169
		/

	Case 3: Limited Allowances Trading	172
	Advantages of Marketable Allowances Systems	174
	Disadvantages of Marketable Allowances Systems	175
	Marketable Pollution Allowances and the Clean Air Act (CAA)	
	Amendments of 1990: The Acid Rain Program	175
	Emissions Trading	178
	Regional Clean Air Incentive Market	179
	Other Experiments with Marketable Pollution Allowances	180
	Environmental Taxes	180
	Examples of Environmental Taxes in the United States	181
	Simulation Research on the Effects of Taxing	
	Carbon Dioxide Emissions	182
	Summary	182
	Review Questions and Problems	184
	References and Further Reading	185
	Use, Ouron and Exception Editor in part No. and R. samarash	
/ 10.	Global Warming: Uncertainty, Irreversibility, and	
RAI	Long-Term Policy Making	186
	Introduction	186
	The Basic Science Linking Greenhouse Gas Emissions	100
	to Global Warming	187
	Predictions Regarding Carbon Dioxide Emissions	
	and Global Warming	188
	Predictions Regarding Carbon Dioxide Emissions	188
	Predictions Regarding Global Warming	189
	The Evidence Regarding Global Warming	191
	International Action on Global Warming	193
	The Earth Summit	193
	Policy Studies: The Optimal Control of Greenhouse	
	Gas Emissions	195
	Case Study: Global Warming and China's Economic	
	Development Strategy	199
	Summary	201
	Review Questions and Problems	202
	References and Further Reading	202
	Part III Issues in the Franchics of the Sustainable Society	205
	and the issues in the Beonomics of the Sustainable Society	205
11	Introduction to the Sustainability Develoption for the Sustainability	
11.	Introduction	207
	Summore	207
	Summary	211

implight handbooth

	Review Questions and Problems	212
	References and Further Reading	212
	Sub-Saharan (friday) kada ali katan jari kata ku ("katak asara - 5 New Sah	
12	Passagnizing Interdependencies and Thinking Long Term	214
14.	Introduction	214
	Recognizing Interdependencies	214
	The Industrial Provolution and the Agranian Transition	214
	Income Powerty and Economic Growth	215
	Education Empowerment and Justice	210
	Education, Empowerment, and Sustice	220
	The Average for International Trade	225
	The Argument against International Trade	225
	The Argument against International Trade	220
	Population and Population Growin	230
	Causes and Predicted Implications of Rapid Population Growin	231
	Taxes and Incentives	233
	Thinking Long Term: Discounting and Policy Making	231
	The Effect of Discount Rates on Environmentally Friendly	227
	Investments and Sustainability: An Illustrative Example	231
	The Opportunity Cost of Capital and the Social Rate	000
	of Time Preference	238
	The Opportunity Cost of Capital	238
	The Social Rate of Time Preference	240
	Are the Discount Rates Associated with Competitive Financial	2.12
	Markets Consistent with Those Required for Sustainability?	242
	Summary	243
	Review Questions and Problems	244
	References and Further Reading	246
13.	Sustainable Economic Development	249
	Introduction	249
	Conventional Economic Development Strategies	249
	Conventional Economic Development Assistance Programs	250
	Envisioning Sustainable Development: Brundtland Commission	15. 149
	Report and the Earth Summit	254
	Competing Theories of Sustainable Development	255
	Weak-Form Sustainability	255
	Strong-Form Sustainability	256
	Practical Policy Implications	258
	Methods for Measuring Sustainable Development	258
	Indicators of Weak-Form Sustainability	260
	Indicators of Strong-Form Sustainability	262
	Case Studies in Measuring Sustainable Economic Development	263
	Case Studies in Medsuring Sustainable Leononine Development	205

	Sociland	
	Scotlana United States	263
	Sub Sahaway Africa I di da di ana ana	264
	Sub-Saharan Ajrica, Latin America, and the Caribbean	265
	Beview Questions and Dull	265
	References and Eurther Des ding	266
	References and Further Reading	267
14	I. Issues in Sustainable Production and Consumption	270
	Introduction	270
	Issues in Sustainable Production and Consumption Technology	272
	Solar Energy	272
	Industrial Ecology	273
	Environmentally Friendly Technologies Ready to Be Deployed	274
	Case Studies in Sustainable Technologies	275
	Low-Emission Vehicles	275
	Solar Cookers	276
	Extended Brockson P	277
	Extended Producer Responsibility (EPR) Ecolabels	277
	Factors Relating to the Success of Early LD	278
	Taxes Subsidies and Ecological Tax Defamine	278
	Case Study: The California Experience in Subai divine	279
	Alternative Energy	270
	Government Research and Development Funding	279
	ISO 14000 International Environmental Certification	280
	Case Study: The Global Race for Environmentally Friendly	280
	Technology	281
	Summary	282
	Review Questions and Problems	283
	References and Further Reading	283
15.	Issues in the Economics of Sustainable Level Constant	D 199
	Introduction	285
	Sustainable Local Self-Governance of Localized CDD Sector	285
	Examples of Sustainable Local Communities and the Systems	285
	They Use for Governing CPRs	007
	Törbel, Switzerland	287
	Japanese Village Commons	28/
	Spanish Irrigation Commons	288
	Localized Self-Governance of Fisheries	200
	Fodder and Fuelwood Use in Panchavat Community Forests	289
		201

Ostrom's Design Principles Associated with Sustainable Local	
Self-Governance of Common-Pool Resources	290
Summary	291
The Economics of Sustainable Community Development	293
Export Base versus Import Substitution	293
The Export-Base Theory of Local Economic Development	293
The Import-Substitution Theory of Local Economic Development	297
Case Studies: Attempts at Moving toward Sustainable Local	
Community Development	298
Willapa Bay	298
Arcata	298
The Cogtong Bay Mangrove Management Project	300
Sustainable Local Economic Development in South Africa	301
Moving toward Sustainable Urban Planning in Curitiba, Brazil	302
Summary	303
Review Questions and Problems	304
References and Further Reading	304
Glossary	307
Index	323
About the Author	329