Contents

List of Figures xi List of Tables xvi Preface to the Fourth Edition xviii

PART I

Introduction: The Economy and the Environment 1

CHAPTER 1

Changing Perspectives on the Environment 2

- 1.1 Overview of Environmental Issues 3
- 1.2 Economic Approaches to the Environment 5
- 1.3 Principles of Ecological Economics 7
- 1.4 A Look Ahead 13

CHAPTER 2

Resources, Environment, and Economic Development 17

- 2.1 Overview of Economic Growth 18
- 2.2 Economic Growth in Recent Decades 20
- 2.3 Environmental Trends in Recent Decades 22
- 2.4 Optimists and Pessimists 30
- 2.5 Sustainable Development 33

PART II

Economic Analysis of Environmental Issues 41

CHAPTER 3

The Theory of Environmental Externalities 42

- 3.1 The Theory of Externalities 43
- 3.2 Welfare Analysis of Externalities 52

3.3 Property Rights and the Environment 55 Appendix 3.1: Supply, Demand, and Welfare Analysis 68 Appendix 3.2: Externality Analysis: Advanced Material 76
CHAPTER 4
Common Property Resources and Public Goods 87
 4.1 Common Property, Open Access, and Property Rights 88 4.2 The Environment as a Public Good 100 4.3 The Global Commons 103
CHAPTER 5
Resource Allocation Over Time 109
5.1 Allocation of Nonrenewable Resources5.2 Hotelling's Rule and Time Discounting119
CHAPTER 6
Valuing the Environment 125
 6.1 Total Economic Value 126 6.2 Overview of Valuation Techniques 130 6.3 Revealed Preference Methods 133 6.4 Stated Preference Methods 137
CHAPTER 7
Cost-Benefit Analysis 150
 7.1 Overview of Cost-Benefit Analysis 151 7.2 Balancing the Present and Future: The Discount Rate 153 7.3 Valuing Human Life 157 7.4 Other Issues in Cost-Benefit Analysis 159 7.5 Cost-Benefit Analysis Example 163 7.6 Conclusion: The Role of Cost-Benefit Analysis in Environmental Policy Decisions 166 Appendix 7.1: Using Excel to Perform Present
Value Calculations 173 CHAPTER 8
Pollution: Analysis and Policy 176
 8.1 The Economics of Pollution Control 177 8.2 Policies for Pollution Control 179 8.3 The Scale of Pollution Impacts 189 8.4 Assessing Pollution Control Policies 193 8.5 Pollution Control Policies in Practice 198

vii

P	A	R	T	II	T
					1

Ecological Economics and Environmental Accounting 209

			9

Ecological Economics: Basic Concepts 210

- 9.1 An Ecological Perspective 211
- 9.2 Natural Capital 211
- 9.3 Issues of Macroeconomic Scale 214
- 9.4 Long-Term Sustainability 220
- 9.5 Energy and Entropy 223
- 9.6 Ecological Economics and Policy 225

CHAPTER 10

National Income and Environmental Accounting 234

- 10.1 Greening the National Income Accounts 235
- 10.2 Green GDP 237
- 10.3 Adjusted Net Saving 239
- 10.4 The Genuine Progress Indicator 243
 - 10.5 The Human Development Index and the Better Life Index 247
 - 10.6 Environmental Asset Accounts 252
 - 10.7 The Future of Alternative Indicators 255

Appendix 10.1: Basic National Income

Accounting 263

PART IV

Energy, Climate Change, and Greening the Economy 267

CHAPTER 11

Energy: The Great Transition 268

- 11.1 Energy and Economic Systems 269
- 11.2 Evaluation of Energy Sources 270
- 11.3 Energy Trends and Projections 274
- 11.4 Energy Supplies: Fossil Fuels 278
- 11.5 Renewable Energy Sources 283
- 11.6 The Economics of Alternative
- Energy Futures 286
- 11.7 Policies for the Great Energy Transition 293

PART

Global Climate Change: Science and
Economics 306
 12.1 Causes and Consequences of Climate Change 307 12.2 Responses to Global Climate Change 318 12.3 Economic Analysis of Climate Change 319
CHAPTER 13
Global Climate Change:
Policy Responses 335
13.1 Adaptation and Mitigation 33613.2 Climate Change Mitigation: Economic Policy Options 339
13.3 Climate Change: The Technical Challenge 349
13.4 Climate Change Policy in Practice 35313.5 Other Economic Proposals: Environment and
Equity 363
13.6 Conclusion: Dimensions of Climate Change 366
CHAPTER 14
Greening the Economy 374
14.1 The Green Economy: Introduction 37514.2 The Relationship between the Economy and
the Environment 377
14.3 Industrial Ecology 38514.4 Does Protecting the Environment Harm the
Economy? 388
14.5 Creating a Green Economy 394
PART OF Taylord English Chimate Class
Population, Agriculture, and
Resources 407
CHAPTER 15
Population and the Environment 408
15.1 The Dynamics of Population Growth 409
15.2 Predicting Future Population Growth 41315.3 The Theory of Demographic Transition 419
15.4 Population Growth and Economic Growth 424
15.5 Ecological Perspectives on Population Growth 42715.6 Population Policies for the Twenty-First Century 430

Contents

20.5 Water as a Common Property Resource 557

PART **VI**

Environment, Trade, and Development 565

CHAPTER 21

World Trade and the Environment 566

- 21.1 Environmental Impacts of Trade 567
- 21.2 Trade and Environment: Policy and Practice 573
- 21.3 Trade Agreements and the Environment 580
- 21.4 Strategies for Sustainable Trade 584

CHAPTER 22

Institutions and Policies for Sustainable Development 591

- 22.1 The Concept of Sustainable Development 592
- 22.2 The Economics of Sustainable Development 592
- 22.3 Reforming Global Institutions 596
- 22.4 New Goals and New Production Methods 603
- 22.5 Conclusion: Policies for Sustainable Development 608

Glossary 614 Index 631