

Preface

With the increasing scarcity of environmental services and natural resources, it has become ever more critical to manage the environment more efficiently. Resource managers and environmental regulators must combine natural science and economics into more effective policies. The natural sciences are critical for understanding the link between actions and consequences in nature. Economics is critical for understanding what markets will do and how to design public programs to maximize net social benefits.

As most observers instinctively know, the economy is the greatest threat to nature. It is economic activities that are at the heart of most pollution, most solid and municipal waste, and most of the destruction of natural systems. In society's active pursuit of material wealth, the environment can sometimes suffer. One reason to study economics is to better understand the economy and understand why the economy uses natural resources, pollutes the air and water, and compromises pristine ecosystems.

There are many reasons why markets may not make efficient environmental and natural resource decisions. Sometimes market decision makers simply overlook their impact on the environment. Sometimes there are multiple owners of resources and responsibility is diluted. Sometimes there are no owners of a resource and people rush to use it before anyone else can. All of the above market failures suggest that the economy sometimes fails to manage environmental and natural resources carefully.

When market failures occur, the government must play an active role, regulating the market and encouraging investments into natural resources that would improve social outcomes. Economics plays a critical role here identifying where governments need to get involved and where markets serve effectively by themselves. Economics also helps identify how governments can best encourage markets to become efficient, how taxes can be more effectively used to control pollution, when private property rights are helpful, how trade should be managed to protect the environment, and when the government should directly manage resources.

An important second role for economics is in providing a framework to help analyze and design more effective social programs and regulations. This framework, cost-benefit analysis, encourages governments to design programs efficiently. Environmental and natural resource programs should maximize net social benefits, the amount that benefit exceed costs. This requires governments to carefully examine and

measure all the benefits of taking different actions and to make sure that these benefits are large. The government must also consider all costs and try to keep these costs well below benefits. Helping design better environmental and natural resource policies is an important role for economics.

Introducing economics into natural science and management programs and introducing natural science to economics programs has been a challenge for many traditional educational programs. Each discipline has its own language and terms. Although these terms are helpful in developing a careful discourse in each field, they also serve as barriers for interdisciplinary efforts. This technical dictionary serves an important need in many interdisciplinary programs. By providing definitions of many key economic terms, the dictionary can help students and practising professionals with diverse backgrounds master the language of economics and environmental sciences more easily. The dictionary will serve a very useful role, helping people interested in environmental and natural resource topics understand each other.

The book serves another important role as well. By providing a basic primer on economics, international environmental problems and ecological modeling, it provides a wonderful introduction to environmental-economic models and thinking. The first primer can give the reader a quick grasp of the most critical insights that economics has to offer environmental management without being waylaid by an entire text. The second primer reviews the major conflicts arising in the international environmental arena. The third primer covers a set of ecosystem models from basic nutrient flow diagrams to fish populations. These primers serve as excellent introductions to each field.

The final contribution of the book is an excellent set of appendices that are basic reference materials in this field. The appendices cover the Greek alphabet (used often in modeling), Roman numerals, international scientific units, international prefixes, abbreviations, geological time, and international environmental treaties. This is a highly useful reference section for economics, international law and environmental science.

This book is a valuable reference source for professionals in natural resource and environmental management and for non-specialists. I recommend that practitioners get a copy for their own reference and that courses in this area adopt the book as a supplemental text.

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