

Introduction

Environment and Development Economics (EDE) was established 15 years ago to provide a publication outlet for theoretical and applied scientific papers dealing with issues at the intersection of environmental, resource and development economics, as well as to actively support capacity building in the developing world. In the years since its inception, *EDE* has published a large number of articles on topics ranging from sustainable development, the environmental Kuznets curve, and green accounting, to trade and environment, poverty and natural resource use, and the economics of ecosystems.

In this special issue, published on the occasion of the 15th anniversary of the journal, some of the distinguished researchers in the field who have been instrumental in the development of *EDE* analyze the evolution and the future prospects of selected issues of growing interest in environmental and development economics.

Ed Barbier discusses the relationship between poverty and natural resource degradation in developing countries, which is an issue central to the environment-development discussion. Barbier discusses the poverty-environment trap in a context that characterizes long-term structural poverty as the lack of nutritional status and the capacity for work by the poor or their lack of access to key economic assets. In developing this poverty-environment model, he studies crucial linkages underlying the poverty-environment trap and discusses relevant policy issues. Barbier's paper provides a fresh perspective on the poverty-resource degradation issue, by showing that the rural poor are less likely to be responsible for as much of the environmental degradation in the developing world as previously believed, and suggesting novel policies targeted specifically at reducing labor, market and asset constraints, which contribute to environmental poverty traps.

Rashid Hassan addresses a crucial applied issue by studying the links between climate change, and economic growth and social development in sub-Saharan Africa. Hassan's paper directly applies lessons learned from studying environment and development to a very vital real-world situation. He lays out a path for attaining the necessary acceleration in the growth and social development needed to increase the capacity of sub-Saharan Africa to deal with the detrimental effects of climate change. He goes on to stress the urgent need to invest in increasing our knowledge regarding the impacts of climate change, and to identify the cost and benefits of actions to adapt to climate change as well as the policy reforms required to maintain the sensitivity to climate as an integral part of the development process.

Ramón López addresses an important ongoing issue in environment and development, the coexistence of resource-dependent and

resource-impacting industries, and their impact on sustainable development. López studies the interactions between harvesters that depend on the renewable resource as a vital factor of production and industries that can have significant impacts on the renewable resource, but whose production does not depend on it. He derives the surprising and novel finding that under certain conditions, the existence and expansion of a resource-impacting sector may make sustainable development more, not less, likely. However, when these conditions are not met, the growth of the resource-impacting sector leads to further resource depletion and may even threaten the feasibility of sustainable development.

Karl-Göran Mäler and Chuan-Zhong Li tackle the issue of resilience pricing. The concept of resilience is central to the analysis of the stability of ecological and economic systems. However, the proper pricing of resilience, which would make it possible to introduce the concept of resilience into economic analysis in a meaningful way, has long been an open question. Mäler and Li answer this question by developing a multisector growth model under uncertainty that includes resilience as a stock, and which allows for the derivation of shadow prices for resilience. These shadow prices are used to extend the concept of changes in comprehensive wealth and sustainability measures so that resilience, a key factor in attaining sustainability, is taken into account.

Charles Perrings analyzes the economics of biodiversity, a topic that has acquired increasing importance over the life of the journal. Perrings identifies the major novel trends in the economics of biodiversity, namely the analysis of biodiversity through the impacts on ecosystem services, the factors leading to biodiversity decline, global drivers of biodiversity and climate changes, and globalization. Perrings' paper, apart from providing a concise view of the economics of biodiversity and the role of biodiversity in the production of goods and services, presents instruments for preserving biodiversity and links them to payments for ecosystem services, an issue that is receiving growing attention from both theoreticians and policy makers.

Anastasios Xepapadeas brings the spatial dimension to the analysis of problems of environment and resource management. Xepapadeas shows how resource movement in spatial domains modeled by classic diffusion can be incorporated into optimal control models of resource management and presents conditions under which the interaction of optimizing behavior and resource movements could generate spatial patterns and optimal agglomerations. This approach, which presents the complex technical issue of optimal control of partial differential equations in a format that is usable by economists familiar with the maximum principle of optimal control, could become a useful tool in the analysis of spatial concentration of economic activity and in the design of regulation with explicit spatial characteristics.

The papers in this special issue, which vary widely in focus, reflect the broad range of issues that fall within the scope of the field of environment and development economics. These papers not only review the progress and development of certain key issues in the field, but also highlight some potential areas of meaningful future research.