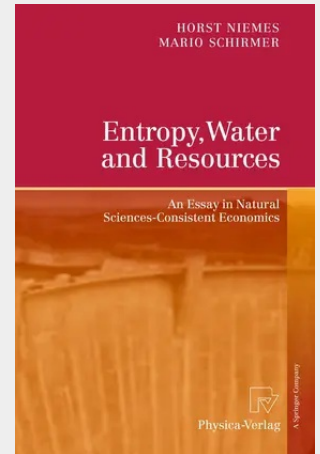


Entropy, Water and Resources

An Essay in Natural Sciences-Consistent Economics

This book lies at the intersection of natural sciences, economics, and water engineering and is in line with the long tradition of environmental economics at the University of Heidelberg. In the 1970s, the Neo-Austrian Capital Theory was developed using the fundamental laws of thermodynamics as a common language between the natural and social sciences. Niemes (1981) integrated the dynamic and irreversibility characteristics of the natural environment into the Neo-Austrian capital theory. Faber et al. (1983, 1987, 1995) then extended this interdisciplinary approach further to create a comprehensive, dynamic, environmental resource model. Over the last 3 decades, the theoretical foundations of environmental economics have been modified and there have been an impressive variety of applications. This book aims to reduce the gaps between economic theory, natural sciences, and engineering practice. One of the reasons these gaps exist is because economic assumptions are used to construct dynamic environmental and resource models, which are not consistent with the fundamental laws of the natural sciences. Another reason for the gap might be the distance between academic theory and real world situations. Based on an extended thermodynamic approach, the authors explain which economic assumptions are acceptable for constructing a dynamic model that is consistent with the natural sciences. In particular, the special role of water in the production and reproduction activities will be considered as an integral component.

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