

**A SEA CHANGE: THE EXCLUSIVE ECONOMIC ZONE AND
GOVERNANCE INSTITUTIONS FOR LIVING MARINE RESOURCES**

A Sea Change: The Exclusive Economic Zone and Governance Institutions for Living Marine Resources

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Change of the National Academy of Sciences in the United States and is now chair of the Scientific Steering Committee of IDGEC. In addition, he served for six years as vice-president of the International Arctic Science Committee and is currently a leader in the development of a decentralized University of the Arctic. Dr. Young's scientific work encompasses both basic research focusing on collective choice and social institutions and applied research dealing with issues pertaining to international environmental governance and to the Arctic as an international region. Among his recent books are: *The Institutional Dimensions of Environmental Change*; *Governance in World Affairs*; *Creating Regimes: Arctic Accords and International Governance*; *International Governance: Protecting the Environment in a Stateless Society*, and *International Cooperation: Building Regimes for Natural Resources and the Environment*.

Preface

A Sea Change in a Changing Sea

The oceans, seas and coastal areas encompass over 70% of the earth's surface. They are a critical driver of the earth's hydrologic cycle and climate system, important for commerce, transport, and tourism, a source of economically important living marine resources, minerals such as hydrocarbons, as well as new pharmaceutical compounds. The marine environment provides essential habitats for thousands of marine living resources, which in turn contribute significantly to global food security,¹ employment,² and trade.³ Overall, the sea's contribution to human welfare, in terms of market and non-market resources and environmental services, has been estimated at US\$21 trillion/year (Costanza, 2000). However, despite the importance of the ocean realm to humans, there is a growing sense that human impacts are destabilizing this system. Some experts believe that current fishing levels are approaching or exceeding the total productivity of the ocean ecosystem (National Research Council, 1999).⁴

The oceans present the archetypal commons problem,⁵ where the tragedy of the commons has been played out numerous times in the open access fishing arenas on the high seas, beyond national jurisdictions. However, as the last several decades of literature focused on common property issues has amply demonstrated, humans have been able to devise arrangements in which they have overcome these constraints with varying degrees of success. Humans have the capacity to act collectively to avoid or redress these types of problems. In the case of the oceans, one of the most pivotal changes in this regard has been the enclosure of the oceans through the extension of property rights in the form of exclusive economic zones (EEZs). EEZs brought over 20% of the oceans, a substantial proportion of its primary productivity and 90-95% of the world's fisheries under the national jurisdiction of coastal states. This volume focuses on the results of this enclosure. How has the EEZ regime performed? What have been its outcomes in terms of generating governance structures to remedy these common pool problems?

We now have over 25 years of experience with the EEZ regime. Over 100 coastal states have established EEZs, providing a wonderful opportunity for a retrospective analysis in which we evaluate the EEZs' impact and performance in different nation-states and in a variety of oceanic regions. The aim of this book is to provide such an analysis. Most of the contributions to this edited volume came out of a series of

¹ Fish supply the primary source of protein for over 950 million people (FAO, 2002).

² Approximately 35 million people are employed in fishing activities worldwide, 95% in developing countries, primarily Asia ((Dommen, 1999; FAO, 2002).

³ International trade in fish products has increased to an all-time high of US\$ 55.2 billion.

⁴ The FAO estimates that as of 2002 only 25% of marine fish stocks are considered under or moderately exploited while the remainder are fully (47%) or over (18%) exploited or depleted (10%) (FAO, 2002).

⁵ The oceans and their resources exhibit certain characteristics – fluidity, mobility and extensiveness – that make them more difficult to manage than other types of systems and resources. These characteristics generate a set of constraints that include subtractibility, where each user has the capability of decreasing the resource stock; and excludability, which recognizes the difficulty and expense of controlling potential users or total effort, due, in part, to a lack of clearly defined boundaries (Oakerson, 1986; Feeny, et al., 1990).

workshops⁶ that were held under the auspices of the project on the Institutional Dimensions of Global Environmental Change (IDGEC).

IDGEC is a core project of the International Human Dimensions Programme on Global Environmental Change (IHDP). The project focuses on the role of social institutions in determining the nature of human-environment interactions and the outcomes arising from these interactions. The Performance of Exclusive Economic Zones (PEEZ) is one of three IDGEC flagship activities. PEEZ examines the performance of social institutions in the marine realm. The main research thrust of the PEEZ flagship activity is to assess how this enclosure of the oceans has affected the conservation and use of marine resources. The large number of coastal states that have implemented this change creates a rich opportunity for comparative analysis. The PEEZ research framework focuses on the performance of the EEZs with respect to biophysical, socio-economic, governance and knowledge criteria. PEEZ research seeks to answer the following questions:

- *How has the creation of EEZs changed traditional notions of sovereignty?*
- *How have EEZs affected the way in which knowledge about management and conservation is produced?*
- *How can we account for variation in the performance of EEZ regimes?*
- *How have EEZs affected the conservation, distribution and efficient use of marine resources?*

This volume is timely for a number of reasons, one of which is the growing interest and concern with the ocean realm and along with this has come an upsurge in international and national policymaking aimed at protecting this environment. This volume provides an initial effort to reflect on the outcomes associated with the third Law of the Sea Conference and to begin to assess how the reforms and changes brought on by this conference have performed. We believe that this volume will be interesting and relevant, providing useful information and analyses to policy-makers, practitioners and scholars in the fields of international relations, marine resource management, global environmental governance, and more generally, institutions and organizations.

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Our deep appreciation goes to the contributors to this volume, who diligently completed their chapters and helped bring this project to fruition. We also thank all the participants in the two workshops that were held on the Performance of the Exclusive Economic Zones in Tromsø, Norway in March 2001 and Bali, Indonesia in June 2002,

⁶ These include the Workshop on the Performance of the Exclusive Economic Zones: Management, Trade and Knowledge, held at the University of Tromsø, Norway on March 30-April 1, 2001, and the Symposium on Sustainable Use of National Exclusive Economic Zones in the Seas of the Asia Pacific Region, held in Bali, Indonesia on June 4-6, 2002.

and who contributed much to our thinking on these subjects, even if they did not all contribute a chapter to this volume.

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References

- Costanza, R., 2000, The Ecological, Economic, and Social Importance of the Oceans, in: *Seas at the Millennium: An Environmental Evaluation*, C. R. C. Sheppard, ed., Elsevier Science, Amsterdam, pp. 393-403.
- Dommen, C., 1999, Fish for Thought: Fisheries, International Trade and Sustainable Development, ICTSD and IUCN, Place Published.
- FAO, 2002, The State of the World's Fisheries and Aquaculture 2002, Food and Agriculture Organization, Rome.
- Feeny, D., F. Berkes, B. McCay, and J. Acheson, 1990, The Tragedy of the Commons: Twenty-Two Years Later, *Human Ecology Review*, **18**(1): 1-19.
- National Research Council, 1999, *Sustaining Marine Fisheries*, National Academy Press, Washington D.C.
- Oakerson, R., 1986, A Model for the Analysis of Common Property Problems, in: *Proceedings on the Conference on Common Property Resource Management*, National Academy Press, Washington, pp. 13-29.

Section I

Overview