

Preface

Humans are generally conscious of the value of the world ocean: no ocean, no life; a thriving ocean, a thriving humankind. Yet, when it comes to acting in a sustainable manner in our relationship with the ocean, we are often at a loss; it appears that the scale and pace of human action do not match the pace and scale of ocean processes well enough for the two to counterbalance and act synergistically. It appears that, from a lack of consciousness about what is right and what should be done, we prefer not to act. And it also appears that because of shortsightedness in terms of the human print on the ocean environment and life therein – and really ‘shortsightedness’ is the word, because the ocean is often out of sight – we comfortably (or less comfortably) hide behind our incapacity to see fully and to understand how increasingly modified and degraded the world ocean is, and we hope that it will recover by itself.

The world’s oceans cover approximately 71% of the planet’s surface, with an estimated volume of 1,335 billion cubic kilometres (Eakins and Sharman, 2010).¹ It is difficult to grasp the meaning of such immense figures. Intuitively, however, we all realize that such a large surface and volume must contribute substantially to the Earth’s climatic balance. We also now know that life in the oceans is present all the way from the surface to its deepest areas. Evolutionary biology has demonstrated that the oceans have played a major role in the origin and shaping of life on Earth. Over historical time, humans have always depended greatly on the oceans for food, health, transportation, trade, and recreation – among other uses (Independent World Commission on the Oceans, 1998;² cf. also Chapter 2 of this book). In turn, a healthy ocean cannot be without proper management in light of the fact that over seven billion humans live on the planet today. In today’s globalized economy and in an era characterized by global climate change and a global biodiversity crisis, the interdependence of humans’ survival and ocean health is stronger than ever.

What are the key processes in the ocean that we cannot afford to alter without altering our own chances of a sustainable future for humankind? In which direction is human dynamics evolving and what are its consequences for the world ocean? And how can we match, as best we can, our knowledge (as well as our ignorance) with the tools – scientific, observational, management, policy, normative, educational – which we have developed in our long-standing relation with the ocean? These are the main questions which this book attempts to tackle. And by addressing itself to a mixed constituency of decision and policy makers, specializing students, and expert practitioners from multiple sectors, this book attempts to provide solutions to these questions in an integrated manner.

Building on the active efforts of the scientific and policy communities over the past 20 years aimed at solving issues related to the implementation of the law of the sea regime since the enactment of the Convention on the Law of the Sea, in 1994, this book describes the main known, emerging, and unresolved issues related to the oceans and the marine environment in general with which we are faced today and are likely to be faced with in the near future.

This book also attempts to provide options, supported by a thorough rationale, for a better science-based management of the oceans, for taking into account other relevant knowledge than scientific knowledge, and for enhancing the relevance and effectiveness of the legal and policy regimes governing the oceans. In fact, while the oceans are facing multiple problems, we already have available to us now a number of relevant scientific, policy, and participatory tools to implement solutions and, thus, we can render the oceans sustainable in this century.

The book targets graduate and postgraduate university students, policy makers, private sector operators, and other non-governmental stakeholders active in the area of ocean affairs. The intention of this book is to provide them with a comprehensive overview of ocean-related issues today and to point them towards approaches and tools needed to tackle these issues. The choice of targeting multiple audiences is justified by the assumption that the problems faced by the oceans today are complex because they are multifold and interconnected in nature. A comprehensive book in this area must speak to all constituencies concerned with ocean-related issues. The book also aims at building bridges between such diverse stakeholders.

In fact, the sustainable development of the oceans can only be achieved through the collective and coordinated action of multiple stakeholders, based on a common understanding of the problems and of the possible solutions available to us. Some of these solutions also point to possible opportunities, both in terms of the sustainability of the world's oceans as part of the life-support system on Earth, and of new areas for research and development, green growth, and proper governance.

Throughout the book, a major effort has been made to provide a variety of perspectives in disciplines and to connect, whenever appropriate and possible, these disciplines. It is also the intention of this book to present a balanced perspective between theory and practice, and the reader will be able to refer to the many practical examples and case studies around the world that are bridging multiple scales (global, regional, national, and sub-national) in relation to the questions raised in the book.

Overall, the book endeavours to provide a reference work and, therefore, major effort has been concentrated on synthesizing information available in the already published peer-reviewed literature and providing the reader with a comprehensive bibliography for her or his perusal. The book also attempts to bring added value to existing literature in the area of the oceans by bringing new evidence, while relying on a more narrative style, and using the opportunity to articulate at length complex notions, as opposed to the more technically complex prose style that characterizes scientific journals. Whereas, in this context, it is unavoidable that some chapters may use more technical language than others, an overall effort has been made to keep the language relatively accessible, and highly technical remarks have been presented in the chapter endnotes whenever possible.

Each chapter in the book addresses a set of specific issues and can therefore be read as a stand-alone contribution for those interested in those issues; for example, the impacts of human-induced climate change on the oceans; the various dimensions of the marine genetic resources debate; or, the adequacy of the current legal and policy regime for the oceans. Depending on the reader's interest and background, these parts can be read in isolation, in that they represent coherent separate units (albeit interlinked) within the book.

The chapters in the book present the following elements for study and reflection: an introduction to the main issues and opportunities facing the oceans today; the main human uses of the oceans and consideration of the current governance framework; perspectives on changes in the oceans and implications of such change, seen from a physical, and from a biological and ecological perspective; a specific case in point of the implications of these changes as exemplified by the emergence of a new ocean in the current generation's life span: the Arctic; implementing the ecosystem approach in the oceans; an introduction to the use of integrated economic valuation for marine ecosystems; institutions and governance for the oceans from the perspective of the role of international scientific cooperation; the main dimensions of the issue of deep-sea genetic resources – scientific and legal – as an example of a no longer emerging and yet major unresolved issue at the policy level; a reflection on whether the current regime on the law of the sea should be seen as the legal framework for all activities in the sea; possible analogies between problems and solutions of the law of the sea regime and the legal regime of outer

space; and conclusions on possible ways forward so as to attain a more sustainable relationship of peoples with ocean areas and resources.

The editor's hope is that, ultimately, the contents of this book will assist in a concrete manner the process of decision-making related to ocean affairs at the international as well as multiple levels, with a view to agreeing on a bold agenda in relation to the contribution of the oceans to sustainable development.

Notes

- 1 Eakins, B.W. and Sharman, G.F. (2010). *Volumes of the World's Oceans from ETOPO1*. Boulder: NOAA National Geophysical Data Center.
- 2 Independent World Commission on the Oceans (1998). *The Ocean: Our Future*. Cambridge University Press, 248 pp.