The Law of the Sea: Priorities and Responsibilities in Implementing the Convention

A Marine Conservation and Development Report

IUCN
The World Conservation Union
The Law of the Sea: Priorities and Responsibilities in Implementing the Convention

Part I.
Lee A. Kimball

Part II.
Conservation and Management of the Marine Environment
Douglas M. Johnston, Phillip M. Saunders and Peter Payayo

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The Law of the Sea: Priorities and Responsibilities in Implementing the Convention

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THE MARINE AND COASTAL AREAS PROGRAMME

IUCN's Marine and Coastal Areas Programme was established in 1985 to promote activities which demonstrate how conservation and development can reinforce each other in marine and coastal environments; conserve marine and coastal species and ecosystems; enhance awareness of marine and coastal conservation issues and management; and mobilise the global conservation community to work for marine and coastal conservation. The Marine Conservation and Development Reports are designed to provide access to a broad range of policy statements, guidelines, and activity reports relating to marine issues of interest to the conservation and development community.

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IUCN's Environmental Law Programme (ELP) is carried out jointly by the Commission on Environmental Law (CEL) and the Environmental Law Centre (ELC). The Programme's objective is to promote the progressive conceptual development of environmental law and to help lay a strong national and international legal foundation supporting conservation. The ELC, and outposted unit of IUCN located in Bonn, Germany, serves as the secretariat for CEL and administers ELP projects. ELC has three activity units: Environmental Law Development; Environmental Law Services; and the Environmental Law Information System (ELIS).

DALHOUSIE LAW SCHOOL-MARINE AND ENVIRONMENTAL LAW PROGRAMME

The Marine and Environmental Law Programme (MELP) is a centre of interest within Dalhousie Law School, Halifax, Nova Scotia, Canada. Established in 1974, MELP provides a range of educational opportunities for students, a forum for exchange of views among scholars, and a focus for cooperative and multidisciplinary research. In addition, MELP works towards the progressive development of national and international legal regimes governing marine and environmental issues, through public interest research and education.

Lee A. Kimball has contributed to the development of international ocean law for the past twenty years. She worked with a coalition of non-governmental organizations throughout the Third U.N. Conference on the Law of the Sea, which organized nearly 100 informal discussions with delegates and outside experts to advance progress during the negotiations and sponsored dozens of public briefings. In 1980 she became the founding director of the Council on Ocean Law in Washington, DC. The Council’s objectives are to contribute to a stable rule of law for the oceans and to promote universal participation in its development and implementation. It has provided analytical inputs to international policy processes, convened expert groups to inform these processes, advised numerous non-governmental bodies on international ocean law issues, and published a regular newsletter since 1983, Oceans Policy News. Since 1992 Ms Kimball has worked independently for international and non-governmental organizations on treaty and institutional developments in environment and development and has published extensively in these areas.
## Table of Contents


<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acknowledgments</td>
<td>5</td>
</tr>
<tr>
<td>Executive Summary</td>
<td>6</td>
</tr>
<tr>
<td>II. The Law of the Sea Convention as a Legal and Institutional Framework for Marine Environmental Protection, and Related Dispute Settlement</td>
<td>25</td>
</tr>
<tr>
<td>III. Preservation and Protection of the Marine Environment: General Principles</td>
<td>35</td>
</tr>
<tr>
<td>IV. Prevention, Reduction, and Control of Marine Pollution: Source Categories</td>
<td>45</td>
</tr>
<tr>
<td>V. Protection, Conservation, and Management of Marine Living Resources Within and Beyond National Jurisdiction, and Related Dispute Settlement</td>
<td>71</td>
</tr>
<tr>
<td>VI. Ecosystem Assessment and Management</td>
<td>83</td>
</tr>
<tr>
<td>VII. Capacity-building</td>
<td>107</td>
</tr>
<tr>
<td>VIII. The Global Framework Revisited: Institutional Arrangements</td>
<td>111</td>
</tr>
<tr>
<td>List of Acronyms</td>
<td>116</td>
</tr>
<tr>
<td>References</td>
<td>117</td>
</tr>
</tbody>
</table>

### Part II. Conservation and Management of the Marine Environment

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foreword</td>
<td>124</td>
</tr>
<tr>
<td>Introductory Note</td>
<td>125</td>
</tr>
<tr>
<td>Table of Abbreviations</td>
<td>127</td>
</tr>
<tr>
<td>Notes on Chart Organization</td>
<td>129</td>
</tr>
<tr>
<td>I. Conservation and Management of Living Resources</td>
<td>131</td>
</tr>
<tr>
<td>II. Pollution Prevention, Reduction and Control — General Measures</td>
<td>138</td>
</tr>
<tr>
<td>III. Transit Management</td>
<td>144</td>
</tr>
<tr>
<td>IV. Environmental Management of Other Activities</td>
<td>150</td>
</tr>
<tr>
<td>V. General Provisions</td>
<td>155</td>
</tr>
</tbody>
</table>
Preface

Just as the conservation of the marine environment and the sustainable use of its resources calls for an interdisciplinary approach involving conservation science, policy, and law, so too has this publication called for the programmes of IUCN relating to Marine and Coastal Areas and Environmental Law to join forces. Our aim has been to produce a publication that examines the 1982 UN Convention on the Law of the Sea from an environmental conservation standpoint and serves as a useful reference for its effective implementation. Now that the Convention has entered into force, issues relating to conservation and implementation seem particularly timely.

This book is divided into two Parts, each designed to complement the other. Part I, written by Lee Kimball, is a detailed analysis of the Convention and its relationship to specific marine conservation issues. It includes a series of recommendations and priorities for future action. Part II is a chart developed by Douglas M. Johnston and Phillip Saunders, with the assistance of Professor Peter Payoyo, which identifies required initiatives arising out of each obligation of the Convention related to environmental conservation. It also lists the actors(s) who could be instrumental in carrying these initiatives out.

Together, these Parts seek to provide conceptual and practical guidance for achieving the objectives of marine conservation. We hope it will prove helpful to all relevant actors, including States, inter-governmental organisations, and non-governmental organisations.

Danny Elder and Françoise Burhenne-Guilmin
Gland and Bonn
March 1995
Part I.
The United Nations Convention on the Law of the Sea:
A Framework for Marine Conservation

Lee A. Kimball
1995
# Table of Contents

Acknowledgments 5  
Executive Summary 6  

   A.  The Third U.N. Conference on the Law of the Sea (UNCLOS III) 13  
   B.  Ocean Zones 14  
   C.  What’s New about the Convention Ocean Law Regime? 16  
   D.  UNCLOS III: The Context 19  

II.  The Law of the Sea Convention as a Legal and Institutional Framework for  
     Marine Environmental Protection, and Related Dispute Settlement 25  
   A.  The Legal Framework: Marine Environmental Protection 25  
   B.  Dispute Settlement 27  
   C.  The Institutional Support Structure 29  

III.  Preservation and Protection of the Marine Environment: General Principles 35  
   A.  The Scientific Basis 35  
   B.  The Definition of Pollution Expands 35  
   C.  Prevention and Precaution 36  
   D.  Response to Marine Pollution Emergencies 38  
   E.  Transboundary Damage and Damage to the Global Commons,  
       including Responsibility and Liability 41  

IV.  Prevention, Reduction, and Control of Marine Pollution: Source Categories 45  
   A.  Vessel-Source Pollution (Ships) 45  
   B.  Dumping and Wastes Management Hazardous Substances  
       and Nuclear Contamination 52  
   C.  Land-Based Sources and Activities 57  
   D.  Offshore Seabed (Continental Shelf) Activities Subject to National Jurisdiction 62  
   E.  Airborne Sources: Vessels, Aircraft, Land-Based Sources and Offshore Facilities 65  
   F.  Seabed Mining Beyond National Jurisdiction 66  
   G.  New and Emerging Activities 69  

V.  Protection, Conservation, and Management of Marine Living Resources Within  
    and Beyond National Jurisdiction, and Related Dispute Settlement 71  
   A.  The LOS Convention Framework 71  
   B.  International Obligations, Species by Species 73

VI. Ecosystem Assessment and Management
   A. Marine Protected Areas and Species: The LOS Convention
   B. Protected Areas and Species Pursuant to Other International Legal and Institutional Frameworks
   C. Integrated River Basin and Coastal and Marine Management
   D. Environmental Assessment: Impacts in Marine and Coastal Areas
   E. Regional Ecosystem Management: Legal and Institutional Developments

VII. Capacity-building
   A. The Marine Environment
   B. Marine Living Resources
   C. Marine Research and the Transfer of Technology
   D. Funding and Coordination

VIII. The Global Framework Revisited: Institutional Arrangements

List of Acronyms
References
Acknowledgments

The analysis and suggestions in this report draw on extensive effort by others. Since 1982, the U.N. Convention on the Law of the Sea has been interpreted and applied as customary international law. It has served not only as the foundation for the progressive development of ocean law in many subsequent international agreements but also as the unifying framework for pre-existing oceans agreements. This web of law establishes, in turn, a backdrop for creative linkages among international legal and program arrangements to support sustainable ocean use.

Many friends and colleagues have influenced and followed these developments in international ocean law and ocean management. Their insights, their experience, and their appreciation of the opportunities afforded by the Convention constitute the inspiration for this report. In particular, Danny L. Elder, Coordinator of the Marine and Coastal Areas Programme of the World Conservation Union has been a constant source of perceptive commentary and advice, able to discern appropriate relationships among analysis (scientific, technical, and socio-economic), legal and policy measures, and institutional arrangements for management at different levels of governance. Among those to whom I am perpetually grateful as catalysts and sounding boards for new ideas are Jim Broadus, Bob Hofman, Barbara Kwiatkowska, Tom Laughlin, Gwenda Matthews, Tucker Scully, and Miranda Wecker.

A particular thanks is due those whose comments and advice on the report, or portions thereof, have substantially improved it, specifically: David Balton, Dan Bodansky, Francoise Burhenne, Jonathan Charney, David Freestone, Stjepan Keckes, Alexandre Kiss, Gwenda Matthews, André Nollkaemper, Dolliver Nelson, Bernard Oxman, and Peter Sand. They should not be held responsible for either the accuracy of the report or its recommendations. Special thanks to Sarah Humphrey and Kay Williamson of IUCN for their support in transforming a rough text into a more polished document.

Lee A. Kimball
Executive Summary

"The United Nations Convention on the Law of the Sea was the most ambitious attempt ever to provide an internationally agreed regime for the management of the oceans. The resulting Convention represents a major step towards an integrated management regime for the oceans. Indeed, the most significant initial action that nations can take in the interest of the oceans' threatened life support system is to ratify the Law of the Sea Convention."

Our Common Future
World Commission on Environment and Development (1987)

"International law, as reflected in the provisions of the U.N. Convention on the Law of the Sea, referred to in this chapter of Agenda 21, sets forth rights and obligations of States and provides the international basis upon which to pursue the protection and sustainable development of the marine and coastal environment and its resources. This requires new approaches to marine and coastal area management and development, at the national, subregional, regional and global levels, approaches that are integrated in content, and are precautionary and anticipatory in ambit...."

Agenda 21, Chapter 17
Protection of oceans, all kinds of seas, including enclosed and semi-enclosed seas, and coastal areas and the protection, rational use and development of their living resources


The Convention establishes a comprehensive framework for use of the ocean and its resources. Its 320 articles, supplemented by nine detailed annexes, specify the rights all nations may exercise in the world oceans and their responsibility to do so with due regard for the rights and interests of other nations. The preservation and protection of the marine environment and the conservation of marine living resources are fundamental obligations.

The reasons for the long delay between adoption and entry into force are explained in Section I. What is important is that this comprehensive ocean law regime become binding on all States, now that the obstacles to its universal ratification have been removed.

an issue-by-issue approach to marine environmental protection and marine species conservation, so that all relevant provisions — wherever located in the text — may be considered as they bear on the subject. This simplifies any discussion of desirable substantive developments and the legal and institutional fora where they may be advanced.

The Purpose and Structure of This Report

This report explores the implications of entry into force of the Law of the Sea (LOS) Convention from the perspective of the World Conservation Union (IUCN). It concentrates first on the comprehensive, framework nature of the Convention as it may be used to advance environmental and conservation goals. For it is essential to understand how the Convention was designed to serve as a unifying framework for numerous, more specific ocean law agreements and as a foundation for the progressive development of
that law at global and regional levels. The basic obligations assumed by each party to the Convention, the principles laid down for national implementation, and the arrangements for compulsory and binding dispute settlement greatly strengthen each nation’s commitment to sustainable ocean development. These may be used to reinforce and extend existing regional agreements for fisheries management or the protection of marine ecosystems. By calling on nations to harmonize their laws, adopt additional global and regional rules, and re-examine this body of law as necessary, the Convention requires that processes be established for the review and updating of ocean law in response to new scientific and technological developments or deteriorating environmental conditions.

For those responsible for managing national and transboundary ocean resources, the LOS Convention must be reviewed together with existing, more detailed international agreements and the implementing regulations and guidelines adopted pursuant to them. Where regional agreements are inadequate or do not exist, managers may turn to other regions for inspiration. To the extent that national laws do not sufficiently reflect the obligations engaged as parties to the LOS Convention and associated agreements, these must be updated. Recourse to model legislation from other countries can expedite the process. And to the extent that national implementation falls short of what would be desirable, national measures and any support provided by international assistance agencies should be reviewed to ensure that they are consistent with each party’s responsibilities.

In many cases, it is likely that more detailed guidelines and criteria will be required to assist managers and users to properly implement this ocean law regime. Some of that guidance may be found in agreements that span marine and terrestrial areas, such as the Convention on Wetlands of International Importance (Ramsar). At the same time, the implementation of more recent conventions, like the Biodiversity Convention, can draw on the regional marine agreements as a starting point for measures to conserve coastal and marine biodiversity — both as they address marine protected areas and species and as they address the threats to them, like coastal and river-borne pollution. The “best practices” for land and water management adopted at the national level or by international agencies may offer additional guidance for national practice or more detailed regional agreements, as may the detailed technical guidance the agencies produce to prevent and reduce environmental damage from particular industrial sectors and the wastes they generate. This guidance should be reviewed and adapted to realize ocean law objectives. As case studies in the management of coastal and marine resources are documented more systematically and made available through numerous governmental and non-governmental networks, these will also improve the basis for sound ocean management.

The first three sections of this report provide background on the 1982 U.N. Convention and describe its general framework and principles. Where needed, they elaborate the political, economic, and environmental influences on these texts. Sections IV and V then tackle marine environmental protection and marine species conservation issue by issue. This permits all relevant provisions, wherever located in the text, to be considered as they bear on the subject. Within each “issue lens”, the report summarizes Convention provisions, indicates how other international legal instruments complement, interpret, and reinforce the framework set forth in the LOS Convention — and vice versa, and identifies gaps and deficiencies where further work is needed. These and other sections include a list of the major related international agreements. The report thus attempts to convey the full range of relevant, on-going initiatives, including important linkages with treaties that do not focus primarily on oceans questions, but a comprehensive survey is beyond its scope. In addition, if recent IUCN General Assembly resolutions have addressed the subject, this is noted in each section.

1. The annual law of the sea report of the U.N. Secretary-General to the General Assembly presents an invaluable overview of these developments. Substantial document collections are found in the Annual Review of Ocean Affairs: Main Documents of the United Nations and the Law of the Sea Documentary Yearbook of the Netherlands Institute for the Law of the Sea. Annual updates of developments pursuant to the agreements discussed in this report are found in the Yearbook of International Environmental Law.
Sections VI, VII, and VIII then weave back together the LOS Convention framework and the issue-by-issue focus. They illustrate how the Convention may be used to promote an integrated approach to managing human activities from the perspective of their impacts on marine and coastal ecosystems and based on appropriate geographic scales. They also discuss how cooperative international partnerships for capacity-building may be realized, supported by strengthened international institutions.

The italicized text in each of sections III to VIII indicates discussion and suggestions regarding initiatives that may hasten implementation of the LOS Convention and its associated agreements. Readers familiar with the Convention and how its provisions have been elaborated through numerous supplementary agreements during the last decade may turn immediately to this text. For those concerned with particular issues, the report is structured to permit a quick review, with cross-references to related sections.

Support for an integrated management perspective was clearly articulated in the 1993 Review and Evaluation of the IUCN Marine and Coastal Areas Programme. The evaluation recognized the need for greater integration between the IUCN Marine, Wetlands, Species, Protected Areas, and Law Programmes, as well as Conservation Services and the Regional Programmes. It recommended that the primary focus of the Marine and Coastal Programme be the integration of coastal area management across all relevant sectors and on regional, if not global, scales. Second, it emphasized sustainable marine resources management within national jurisdiction and, to a lesser extent, on the high seas. The review panel believed that the Coordinator, in developing projects that animate the Programme’s vision and demonstrate its policies, should work with existing legal frameworks and take advantage of existing initiatives. The IUCN General Assembly supported the implementation of these recommendations. It is hoped that this report will help IUCN and its component parts move ahead with their own agenda.

The Opportunities

The LOS Convention governs activities undertaken both in the oceans and on land that impact marine and coastal ecosystems. Its framework of objectives, obligations, and principles is linked to an increasing number of more detailed international agreements for marine environmental protection and the conservation and management of marine species. Taken together, they present a dynamic vehicle for expanding and upgrading each nation’s responsibilities. The references in the LOS Convention that protect rare or fragile ecosystems and the habitat of threatened or endangered species provide a hook for ensuring that activities governed by the Convention respect area and species designations pursuant to other terrestrial and marine agreements. The Convention’s dispute settlement system permits its framework obligations to be interpreted and applied drawing on this wide range of evolving, more specific legal regimes.

This legal foundation establishes the basis for management actions that integrate marine environmental protection with marine living resources conservation. Convention building blocks include unqualified obligations to prevent, reduce, and control marine pollution, the definition of pollution (which includes harm to marine life), and references to the effects of pollution on habitat or through the introduction of new or alien species. Specifically for marine living resources, they include the requirement that conservation and management measures take into account environmental factors, the interdependence of stocks, and effects on associated or dependent species, which would include marine mammals and seabirds. That such measures may address fishing gear and practices permits further regulation to avoid incidental catch and marine debris.

The Convention’s support for management based on natural systems and the geographic scales that reflect them is found in requirements for cooperation regarding marine living resources throughout the range of the stock or species. It is found also in obligations to protect rare or fragile ecosystems. Where
all species of coral reef, seagrasses, and mangrove have been listed for protection under a Caribbean regional agreement, for example, this establishes a legal basis for system-wide protection. In addition, the LOS Convention facilitates the protection of clearly defined, vulnerable marine areas within national jurisdiction; concerted international management of ship-based activities affecting larger sea areas, such as the Baltic Sea or the Antarctic Treaty area; internationally-coordinated research and management in enclosed and semi-enclosed seas; and the harmonization of national laws at the regional level, specifically for land-based and offshore seabed sources of marine pollution.

The Convention’s provisions on land-based sources of marine pollution are particularly important. For if the cumulative effects of contaminants, nutrients, and sediments manifested in coastal/marine areas are to be addressed, this will require assessment, planning, and management processes that encompass the full range of coastal and/or watershed activities. The legal term “land-based sources of marine pollution” expresses the basis for “integrated coastal area planning and management” and “integrated watershed planning and management”. As agreements on land-based sources of marine pollution are elaborated, this will fundamentally affect the application of these management concepts. Several governments have recently indicated their support for utilizing land-based pollution obligations as a means to promote agreements on pollution in shared rivers. This can advance sustainable use of freshwaters, coastal zones, and marine areas. The LOS Convention’s monitoring and assessment requirements, and the duty to communicate the results internationally, will support and update these planning and management processes. Sections III.C, IV.B, VI.C, and VI.D.

Mounting solid wastes and their various pathways to the sea increasingly compel a new look at wastes reduction, management, and disposal strategies, encompassing both marine and terrestrial activities. This includes wastes generated on land that may be dumped at sea, particularly in nearshore waters; wastes carried out to sea by rivers, tides, and currents; wastes deposited in coastal landfills or marshes from which pollutants are leached into the marine environment; and wastes received in port from ships. The interaction between waste disposal at sea and on land is compounded by linkages between offshore operations and coastal facilities. As human activities increase, national and regional strategies must be capable of anticipating and responding to these complex and interactive effects. The LOS Convention furthers an integrated approach to pollution/wastes management strategies at national and regional levels by its requirement that states not transform one type of pollution into another nor transfer damage or hazards from one area to another. Section IV.B.

Without the forcing factor of international legal obligations, it is unlikely that many of these objectives would be tackled, let alone realized, except in the face of major disasters. The LOS Convention’s unqualified obligations become the impetus for national implementing measures where other international agreements are less imperative. And they may exact more specific international agreements, for example in the case of pollution from land-based sources, including that borne to the sea by shared rivers. Special opportunities exist for international agreements to reinforce each other in relation to coral reefs and other vulnerable coastal and marine areas, and in relation to marine and coastal species that are protected by broader international agreements. Collaborative ventures for coral reef research, assessment, and management could be developed under the Framework Convention on Climate Change (FCCC), the Biodiversity Convention, the Law of the Sea Convention, and related oceans agreements, making use of the LOS Convention’s binding obligations. For areas and species protected under other agreements, the oceans agreements may support the application of additional protective measures. A thorough evaluation of the respective values afforded protection under these and other agreements, and of the measures countries may apply to achieve them, may reveal constructive synergies and gaps. The substantial work carried out by IUCN and others in classifying and identifying vulnerable and sensitive areas should be put to use in implementing the ocean law agreements.

For a thorough discussion of coastal area planning and management, see Cross-Sectoral, Integrated Coastal Area Planning: Guidelines and Principles for Coastal Area Development, by John Pernetta and Danny Elder (IUCN 1993).
The Convention’s legal basis for an ecosystem approach argues forcefully for improvements in assessment techniques and management processes, in order to better anticipate and respond to stresses on the marine environment, marine species, and the ecosystems they comprise. It argues also for improvements in international institutional arrangements to support national, regional, and global initiatives for sustainable ocean use. As considered in Section VIII, the enabling functions of international institutions should not be confused with a “top-down” approach. The contributions and concerns of all stakeholders are necessary ingredients for governments to formulate national policies and agree on priorities — including those advocated in international fora. International institutions ideally concentrate on functions that cannot be performed at the national level alone — for example, the synthesis of environmental and socio-economic data to determine conditions and trends, and their causes, at sub-regional, regional, or global levels; or the dissemination of information on new scientific findings, technological innovations, improved methods of assessment, or lessons learned elsewhere. International institutions, be they governmental or non-governmental, are also in a position to identify and mobilize specialized knowledge and skills — wherever located — that may be of service in other countries and regions. Where on-going international programs or legal arrangements interact with the ocean law agreements, and national authorities are not fully aware of them, international bodies can help highlight these interactions and foster coordinated approaches. And international institutions can lend substantive support to balance individual national capabilities so that sustainable development may be realized by all.

In addition to these “service-oriented” functions, international institutions provide the fora within which governments come together to agree on common policies and standards and on common priorities for future international collaboration. Without agreement on comparable criteria and methods of analysis, the impacts and trends of ocean use will remain murky. Without the continuing refinement of common policies and measures to shape individual national actions, these actions are likely to diverge and may eventually come into conflict. And without means to ensure that international legal obligations are mutually consistent and that international support arrangements respect and reinforce them, peaceful and sustainable ocean use will remain elusive. There is no alternative to regional and global fora if different national approaches to ocean use are to be harmonized and global interests reconciled.

The need for international institutional support to help all nations implement their international legal obligations was recognized early on in the law of the sea negotiations. It has become increasingly important as human uses of the marine (and other) environments intensify. Sections I.C, II.C, VII, and VIII. The entry into force of the Convention sets in motion a logical sequence of opportunities to re-examine the institutional support arrangements for international oceans agreements. That re-examination may influence other fora considering related questions.

The 1995 UNEP meeting on land-based activities, to be held in November in Washington DC, will have to address many aspects of institutional follow-up due to the broad scope of the issues.

When the Commission on Sustainable Development (CSD) revisits Agenda 21’s chapter on oceans and coasts in 1996, its recommendations through the U.N. Economic and Social Council to the U.N. General Assembly could elaborate on appropriate institutional arrangements related to the whole of this chapter.

The annual report and review in the U.N. General Assembly of law of the sea matters, which has taken place since the Convention was adopted in 1982, remains appropriate as a forum for considering emerging issues, priorities, and progress in implementing the LOS Convention and related agreements. In accordance with Agenda 21, the review includes environment and development matters. As key concerns surface, the Convention provides that the U.N. Secretary-General may convene a meeting of states parties.
Drawing on the recommendations of the 1995 UNEP meeting and the 1996 CSD, the contracting parties to the LOS Convention and member governments of the United Nations would be in a position to revisit the issue of clearly defined functions and competent institutional support arrangements for the Convention and related agreements, including the role of the Convention secretariat. In preparation for that discussion, the skills and capabilities of existing organizations should be evaluated. Non-governmental organizations may play a considerable role in that process and help ensure that the results are capable of drawing on the most reliable, respected, and representative expertise.

For IUCN, this presents a timely opportunity to consider how its worldwide membership and commission networks may contribute. The 1993 Review and Evaluation of the IUCN Marine and Coastal Areas Programme calls for IUCN to develop and maintain a network of marine specialists as correspondents to serve IUCN as well as the wider conservation and development community.

These opportunities to define well-functioning international institutional arrangements should not be lost.

The Report: Section by Section

Section I summarizes the origins of the LOS Convention and highlights major advances in the rules of international law as they affect marine environmental protection and the conservation of marine species. It notes how the 1994 Agreement to modify the Convention's seabed mining regime came about. This section depicts the zones of coastal state jurisdiction progressively developed and codified in the Convention and indicates what's new about the Convention ocean law regime.

Section II considers the basic legal framework for marine environmental protection, the fundamental obligations undertaken by all states, the nature of each country's obligations to implement international rules and standards, and related dispute settlement. It describes the relationships between the LOS Convention and other international agreements on marine environmental protection, including institutional relationships.

Section III examines the general principles for marine environmental protection articulated in the Convention and the legal developments built upon them. It covers the scientific basis for and the definition of pollution, provisions that encourage prevention and precaution, response to marine pollution emergencies, and transboundary damage to the marine environment and related responsibility and liability.

Section IV explores in more detail Convention provisions governing each of the following sources of marine pollution: ships, at-sea dumping and wastes management, including hazardous wastes and nuclear contamination; land-based sources and activities; offshore seabed (continental shelf) activities subject to national jurisdiction; air-borne sources; deep seabed mining; and other new and emerging activities. It considers the further development of international rules, both global and regional, for each source.

Section V covers Convention provisions on the protection, conservation, and management of marine living resources. It first examines the framework of principles and obligations established, including dispute settlement, and then turns to the species-by-species approach taken in the Convention. Provisions on protected areas and species, particularly at the regional level, are considered in Section VI.
Section VI recapitulates the principles and obligations in the LOS Convention that promote ecosystem assessment and management and examines linkages with other major international agreements. These are divided into linkages with other marine agreements, linkages with protected area and species agreements that are not limited to the marine environment, and, through the vehicle of land-based sources of marine pollution, linkages with river basin agreements. The final two sections touch on the tool of environmental assessment and the possibilities offered by regional agreements as a means for addressing all sources, sectors, and activities that degrade marine and coastal environments and species.

Section VII outlines Convention provisions on international cooperation in technical and financial assistance, highlighting how these have anticipated later developments in international environmental law. See also Section I.C. on these new dimensions of international law as they emerged during the LOS negotiations.

Section VIII visits the question of international institutional arrangements to advance the implementation of the LOS Convention. It outlines five functions that cannot be performed effectively at the national level. Without drawing firm conclusions, it suggests further lines of inquiry to illuminate the capabilities and comparative advantages of existing institutions, both governmental and non-governmental, in carrying out these functions.

This section summarizes the origins of the LOS Convention and highlights major advances in the rules of international law as they affect marine environmental protection and the conservation of marine species. Section A notes how the 1994 Agreement to modify the Convention’s seabed mining regime came about. Section B outlines the zones of coastal state jurisdiction progressively developed and codified in the Convention. Section C indicates what’s new about the Convention ocean law regime, and Section D elaborates on the political, economic, and environmental trends that influenced Convention negotiations.

A. The Third U.N. Conference on the Law of the Sea (UNCLOS III)

The U.N. General Assembly decided in 1970 by consensus to convene an international conference for the purpose of concluding a comprehensive agreement on ocean law. Its purpose was to update and expand the four Geneva Conventions, concluded at the first U.N. Conference on the Law of the Sea in 1958. Preparatory discussions from 1968 to 1973 laid the groundwork for the conference, which lasted for ten years. The agenda included navigation and overflight, fishing and conservation of marine living resources, marine mammals, the development of minerals in offshore and deep seabed areas, marine environmental protection, marine scientific research, maritime boundaries, the laying of submarine cables and pipelines, artificial islands and seabed installations, piracy, illicit drug trafficking, and dispute settlement.

For the many countries that achieved independence after 1960, the LOS Conference was a novel experience in international negotiation. It was the first time that over 150 nations took part in drafting an international agreement, and the most comprehensive agenda ever contemplated by a treaty-making conference. The process served as a diplomatic academy for many of the international environmental negotiations that have followed. On April 30, 1982 the Convention was adopted, and it was opened for signature from December 10, 1982 to December 9, 1984. It received 159 signatures during that period, all subject to ratification.

The 1994 Agreement on Deep Seabed Mining

The delay from adoption to entry into force of the LOS Convention is attributable to one issue: its provisions governing development and management of seabed mineral resources beyond national jurisdiction. Criticisms of this portion of the Convention were advanced most prominently by the United States in the early 1980s, although many of the U.S. concerns came to be shared by other industrialized nations. By the end of the decade, rapidly changing political and economic circumstances worldwide presented an opportunity to modify the deep seabed mining provisions and thus achieve universal support for the Convention. U.N. Secretary-General Perez de Cuellar and his successor Boutros-Ghali convened a series of informal consultations from 1990 to 1994. These took on a more urgent pace when Guyana deposited the 60th instrument of ratification in November 1993, triggering entry into force one


The new Agreement clarifies and replaces many of the Convention’s original deep seabed mining provisions. It is to be interpreted and applied as a single instrument with the Convention, and it prevails in the event of any inconsistency. To avoid a period before entry into force of the Agreement during which different regimes for deep seabed mining would apply — one to countries that ratified the Convention before November 16, 1994 but have not yet ratified the Agreement, and one to countries that ratify the Convention together with the new Agreement — the Agreement will be provisionally applied once the Convention enters into force on November 16, 1994.5 The Agreement remains open for signature for one year from July 29, 1994. By the end of 1994, it had been signed by 70 countries, including virtually all of the western industrialized nations and such developing nations as Argentina, Brazil, China, India, Indonesia, and Kenya. Among the industrialized nations, already Australia and Germany had ratified the Convention together with the Agreement. The Agreement will enter into force once 40 nations have consented to be bound by it. That number must include seven of the states defined as “pioneer investors” in seabed mining, of which at least five must be developed states. 6

B. Ocean Zones

The LOS Convention sets forth the rights and obligations of all States in the following offshore zones (Figure 1):

- internal waters,
- a territorial sea of up to 12 nautical miles (n.m.),
- a contiguous zone of up to 24 n.m.,
- an exclusive economic zone (EEZ) of up to 200 n.m., and
- the continental shelf, which may extend beyond 200 n.m. but not beyond 350, depending on the configuration of the seabed.

The Convention grants coastal states substantial control over activities in these zones, but the degree of control they exercise over use by other states varies with the zone and the activity in question. Most fundamentally, the Convention balances the rights and obligations of coastal states to use and protect offshore zones with worldwide freedoms of navigation and telecommunications essential for international security and commerce. As the zones move further offshore, coastal state authority over foreign activities diminishes. A fundamental distinction exists between the sovereignty of the coastal state out to the 12-mile limit of the territorial sea, and the less absolute authorities the coastal state may exercise in the other offshore zones.

Beyond the limits of national jurisdiction, all states have the same rights and obligations on the high seas (the water column), and a unique regime is established for the international seabed and its mineral resources. Further refinements of states’ rights and obligations obtain in international straits and archipelagoes. Section IV.A. States bordering enclosed or semi-enclosed seas are specifically directed to cooperate as they exercise their rights and perform their duties under the Convention.

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4. U.N. General Assembly RES 48/263. For a report of the Secretary-General’s consultations, see UNGA: LOS 1994. The vote on adoption was 121 in favour, with seven abstentions.

5. The Agreement facilitates early acceptance by States that had ratified the Convention prior to adoption of the Agreement. Nevertheless, for a few of these States that have chosen not to apply the Agreement provisionally, the original deep seabed regime technically applies until they ratify the new Agreement.

Figure 1. Ocean Zones
The establishment of different ocean zones has been criticized for drawing artificial boundaries that truncate marine ecosystems, ignore the movements of marine species, and turn a blind eye to the winds and currents transporting pollutants. On the other hand, it would be impossible to encompass within a single geographic unit or a single management authority all the complex and interactive factors that affect marine environments and species. The Convention's legal foundation for managing ocean uses from an ecosystem perspective is considered in Section VI. The institutional implications of environmentally-sound ocean management are considered in Section VIII. The roles of existing international institutions are summarized in Section II.C.

C. What's New About the Convention Ocean Law Regime?

Several significant shifts from the earlier international ocean law regime occurred as a result of the Third U.N. Conference on the Law of the Sea. Most importantly, the Convention recognizes:

- that the expansion of coastal states’ rights to develop and manage offshore resources must be linked to duties to conserve living resources and protect the marine environment;
- that advancing scientific knowledge and the pace of political, economic, and technological change require radical new approaches to the progressive development and implementation of a rule of law for the oceans; and
- that cooperation to strengthen all nations' scientific, technical, and management capabilities is essential if the Convention is to be meaningfully implemented.

While much of the LOS Convention has been considered binding as customary international law during the last decade, its entry into force reaffirms and stabilizes customary law developments, adds important refinements, and puts in place the most elaborated arrangements for compulsory and binding dispute settlement of any international environmental agreement to date.

Coastal State Resource Rights: The coastal state enjoys sovereign rights over resources within the 200-mile EEZ. With respect to living resources, high seas fishing freedoms no longer exist in the EEZ and coastal state rights have expanded. For the first time, these rights are qualified by conservation obligations, and, in an attempt to retain benefits for the wider international community, by the obligation to share any surplus resources (resources that are not harvested by the coastal state) with other countries. The coastal state’s exclusive control over continental shelf resources is reaffirmed and explicitly extended to the edge of the continental margin. Figure 1. It is obliged to share revenues with the international community from any mineral resources exploited beyond 200 n.m. That is, for nations lucky enough to have very wide continental shelves, the extension of their exclusive resource rights entails some contribution to international well-being. (Continental shelf resources include all non-living resources of the seabed and subsoil, and any living organisms belonging to sedentary species. Section V.B.)

Other Coastal State Economic Rights: Within the EEZ, the coastal state has sovereign rights not only over resources but also over other activities for the economic exploitation and exploration of the zone, such as the production of energy from water, currents, or winds. Within the EEZ and on the continental shelf, the coastal state has jurisdiction over the establishment and use of artificial islands and most installations and structures. In short, the Convention grants rights to control all activities carried out for economic development purposes to the coastal state, including activities carried out by other states that may prejudice these rights.
Coastal State Environmental Rights and Duties: The Convention recognizes that environmental protection must go hand in hand with control over development activities if the viability of those activities is to be sustained. Coastal state rights are subject to explicit obligations to protect and preserve the marine environment. Within the EEZ, the coastal state has jurisdiction for this purpose and acquires a greater degree of authority to set and enforce rules for foreign vessels in order to protect its marine resources and coastlines, balanced with obligations to respect international navigation rights. Port states (countries in whose ports vessels are voluntarily located) are granted additional rights to enforce international rules and standards applicable to foreign ships even if the violation has taken place outside a port state’s EEZ. Section IV.A.

Environmental/Conservation Obligations and Principles: The Convention establishes for all states the unqualified obligation to protect and preserve the entire marine environment. Its comprehensive framework addresses many aspects of this obligation, mandating in many cases that more detailed, supplementary agreements be reached through appropriate international fora. Also articulated are a number of principles to guide the formulation of additional international rules and standards. As these more detailed rules and standards are elaborated and updated, they are incorporated by reference to the LOS Convention. The Convention, as elaborated, forms the basis for national law and policy. The obligations and principles in the Convention have set the pace for international environmental law. They have shaped ecosystem-based marine living resources agreements and evolving concepts of marine protected areas. They support a preventive approach to marine pollution and require caution in the use of technologies and the introduction of new or alien species. Principle 21 of the Stockholm Declaration — a state’s responsibility to ensure that activities within its jurisdiction or control do not cause damage to the environment of other states or to areas beyond national jurisdiction — is codified in the Law of the Sea Convention with respect to marine pollution, without qualification. It is strengthened by obligations to assess the potential adverse effects of planned activities, monitor the results, and communicate the findings internationally. An integrated approach to wastes management and pollution control is promoted by the duty not to transform one type of pollution into another nor transfer damage or hazards from one area to another. The entry into force of the Convention will more firmly ground these and other forward-looking principles as the basis for the progressive development of international ocean law. Sections II, III, V.A., and VI.

Compliance, Enforcement, and Dispute Settlement: The LOS Convention contains new rules on compliance and enforcement, particularly with respect to pollution by vessels, high seas fishing, and any future deep seabed mining. In addition, it establishes an unprecedented system for the settlement of oceans disputes. If more voluntary procedures fail, most disputes may be submitted by any disputant to binding international arbitration or adjudication. All environmental disputes and many fisheries disputes are subject to these procedures. The entry into force of the Convention will bring this system into effect for its parties and establish a new International Tribunal on the Law of the Sea. The system provides an important point of reference to ensure that framework Convention provisions, as supplemented by related agreements, are consistently interpreted and applied. Sections II.B. and V.A.

Marine Scientific Research: The coastal state gains jurisdiction over marine scientific research carried out in its EEZ. While the 1958 Continental Shelf Convention already required the consent of the coastal state for foreign research on the shelf, the 1982 Convention adds a requirement for coastal state consent to foreign research in the EEZ (effectively, the water column). The balance between coastal state control and foreign access, however, is more subtle. Although coastal state concerns over possible commercial or military “research espionage” shifted the balance toward coastal state control, there are numerous stipulations in the Convention that facilitate access for all states to carry out “basic” or “fundamental” research — as opposed to research of direct significance for the exploration and exploitation of natural resources (Articles 246, 252). They also facilitate research programs undertaken under the auspices of
an international organization (Article 247). Moreover, the thrust of the relevant articles is to respond to coastal State interest in taking part in research ventures and in sharing and interpreting the results, and to ensure that research results are made internationally available (Articles 244, 249). Section VII.

A New Global Bargain: In order to conclude a comprehensive package deal, the participants in UNCLOS III struck several global bargains. On the one hand, these represent trade-offs among the specific interests and concerns of the nations taking part in the Conference. On the other, they introduce major new dimensions in international law-making, including universal participation in multilateral negotiations and recognition of the need for international cooperation to assist developing nations implement treaty provisions.

The Trade-Offs: Among the ‘deals’ incorporated into the Convention, the major maritime nations conceded extended coastal state jurisdiction in exchange for guaranteed rights of international navigation, overflight, and telecommunications, in particular through international straits and archipelagoes, Sections I.D. and IV.A. To ensure this balance, some concessions were made to developing nations in structuring the regime for the international deep seabed. In addition, coastal states endowed with bountiful offshore zones agreed to share a portion of these resources with the international community. The major industrialized nations with multinational resource interests and the nations with distant-water fishing capabilities effectively conceded to coastal states the right to exact a price for granting foreigners access to EEZ resources. For marine research programs, the price of access to coastal state zones was explicit: the right to participate in research ventures and learn from the results. In making use of national rights, all nations agreed to preserve and protect the marine environment and to conserve marine living resources.

The regime for the international deep seabed — beyond the EEZ and the continental shelf — establishes the seabed and its resources as the “common heritage of mankind”. For the first time, the international community fashioned a system for collective management of common property resources not subject to national sovereignty or appropriation. This “common heritage” concept has been usefully distinguished from the term “common concern” — employed in the Framework Convention on Climate Change and the Convention on Biological Diversity. The latter conventions apply primarily to activities taking place in areas subject to national sovereignty, whose cumulative results add up to a “common concern”. The collective management of deep seabed resources required new international machinery to ensure international recognition of rights and avoid conflicts; to promote the orderly development of the resources; to guarantee human safety and environmental protection; and to ensure that mankind as a whole benefitted. The deal struck in the 1982 Convention, as modified by the 1994 Agreement, offers the developing nations equitable participation in resource management decisions, and financial and technical benefits once deep seabed mining becomes commercially feasible.

New dimensions in international law-making: participation in decision-making and international technical and financial support. The international politics of the time, brought about by changing political and economic circumstances, produced explicit recognition of the importance of universal participation in the elaboration of the law. It reaffirmed that the law should ensure more substantial international cooperation in the use and development of the oceans, so that the entire world community would benefit. This goes well beyond the regime developed for the international deep seabed. It permeates every aspect of ocean use. In the Convention preamble, states parties:

“Recogniz[e] the desirability of establishing ... a legal order for the seas and oceans which will ... promote the peaceful uses of the seas and oceans, the equitable and efficient utilization of their resources, the conservation of their living resources, and the study, protection and preservation of the marine environment, ... and
"Bear[] in mind that the achievement of these goals will contribute to the realization of a just and equitable international economic order which takes into account the interests and needs of mankind as a whole and, in particular, the special interests and needs of developing countries, ...

Part XII of the Convention, “Protection and Preservation of the Marine Environment”, requires states, directly or through competent international organizations, to promote scientific, educational, technical and other assistance to developing states for environmental purposes, and requires that international organizations grant developing states preference in allocating resources and special services for these purposes (Articles 202, 203). Parts XIII and XIV of the Convention address cooperation in “Marine Scientific Research” and the “Development and Transfer of Marine Technology”. They are supplemented by Annex VI (Resolution on Development of National Marine Science, Technology and Ocean Service Infrastructures, Final Act of the Third U.N. Conference on the Law of the Sea), which foreshadows more recent developments in international environmental agreements and Agenda 21. The resolution recognized that unless urgent measures were taken, rapid advances in marine science and technology would widen the gap between developed and industrialized nations, endangering the very foundations of the new regime. It supported national and international action to strengthen national capabilities, and called for states to determine priorities in national development plans for strengthening their marine science, technology, and ocean services.

Anticipating current efforts to improve and increase technical and financial assistance for national implementation, the resolution urged international support for national programs and more coordinated efforts on the part of the U.N. system. It recommended that the World Bank, the regional banks, the U.N. Development Programme, and other multilateral funding agencies augment and coordinate their operations to this end. The resolutions adopted annually by the U.N. General Assembly on the law of the sea have consistently emphasized the needs of states arising from the new legal regime, including the need for technical and financial assistance. Section VII.

D. UNCLOS III: The Context

Several factors influenced the 1970 decision of the U.N. General Assembly to convene a comprehensive global conference on the law of the sea. From a national security perspective, the major powers feared that a growing number of excessive claims by coastal states would undermine traditional freedoms of navigation and overflight. The conferees who drafted the 1958 Conventions had been unable to agree on the limits of coastal state territorial sovereignty or coastal state exclusive jurisdiction over fisheries. The second law of the sea conference in 1960 also failed to resolve these questions. A compromise proposal on a six-mile territorial sea and a further six-mile zone of exclusive fisheries jurisdiction did not quite win sufficient support. While there was a general international understanding, based on long-standing custom, that coastal states were entitled to a three-mile territorial sea and more limited rights in the nine miles beyond, this was beginning to erode.

The distinction between the territorial sea, subject to national sovereignty, and natural resource rights (fishery zone, EEZ) is an important one. Territorial sovereignty is an inclusive concept of coastal state authority; within the territorial sea the coastal state wields discretionary control over all activities, subject only to the limited international right of “innocent passage” for ships navigating on the surface. (Unless otherwise agreed, submarines must navigate on the surface and airplanes need permission to fly over.) Resource rights are restricted to exploring, exploiting, and managing resources. Beyond the territorial sea, international high seas rights of navigation and overflight may not be curtailed, nor the laying of submarine cables and pipelines.
During the late 1960s, more and more nations extended their claims offshore, both in limits and in scope. These proliferating claims threatened fundamental security interests in freedom of navigation and overflight; they raised the spectre of multiple conflicts over resources and other ocean uses; and they created a patchwork of unilaterally-declared zones subject to different and changing rules, further undermining a stable and predictable climate for international commerce and ocean use.

Clearly, wider territorial seas would restrict submarine navigation and overflight, and hamper surface transit. The extension from three to twelve miles subjected approximately 100 international straits less than 24 n.m. wide to the more restrictive “innocent passage” rule. Many of these straits represent the sole point of entry (Strait of Hormuz and Bab el Mandeb to the Persian Gulf) or a major short-cut, reducing the time and cost of alternative routes (Strait of Malacca, adjacent to Indonesia, Malaysia, and Singapore, which is the main sea route between the Indian and Pacific Oceans; or the Strait of Gibraltar, which provides access to the Mediterranean and, through the Suez Canal, to the Indian Ocean). As a result, the LOS Conference defined the right of “transit passage” through international straits to preserve important traditional navigation rights through and over such straits.

Claims to 200-mile territorial seas caused particular concern, for in addition to potentially restricting high seas freedoms, they would reduce areas subject to conservation obligations for living resources and were likely to curtail high seas fishing rights and the possibility of scientific research undertaken by foreign vessels. There were also fears that claims to protect the marine environment would be used as a back-door approach to restricting foreign navigation, whether in the Canadian or (then) Soviet Arctic or in the Strait of Malacca.

Many of the newly independent nations in the 1960s did not endorse the 1958 Geneva Conventions. They believed that the limits on coastal state resource rights favored the major maritime and industrialized nations with their distant-water fishing and deep-water technological capabilities. A few coastal states objected to alleged foreign surveillance activities just beyond the three-mile territorial sea, manifested by North Korea’s seizure of the U.S. Pueblo in 1968. Others were wary of foreign research vessels, whose findings seemed to give the advantage to foreign firms in locating fish and offshore minerals or negotiating resource development contracts. Vocal constituencies in some of the industrialized nations sought expanded coastal state jurisdiction over fisheries.

The growing importance of offshore oil and gas in future world energy scenarios had a major influence on both developed and developing nations. Their aim was to reafirm exclusive rights over these resources and thus improve the potential for national energy self-sufficiency and/or resource revenues. (Oil and gas resources form in the sediments deposited from the continental land mass, throughout the continental margin. Figure 1. The abyssal plain of the deep seabed lies beyond these sediments.) While exclusive coastal State rights to continental shelf resources were recognized in the 1958 Convention, the outer limit of these rights was elastic, contingent on technological developments; that is, “where the depths of the superjacent waters admits of the exploitation of the natural resources”. Even though further legal judgments defined the shelf as the natural prolongation of the continental land mass, there was still no agreement about how to determine the outer boundary.

When the mineral resource potential of the deep seabed began to be discussed (and exaggerated) in the late 1960s, there was virtually unanimous opposition to permitting a free-for- all of national claims. From the perspective of the major maritime states, this could impede traditional high seas activities — notably, submarine navigation and detection. From the perspective of the developing nations, the technologically-advanced states would have a clear advantage. A 1967 speech by Ambassador Arvid Pardo of Malta led to a U.N. resolution calling for the seabed beyond national jurisdiction to be reserved exclusively for peaceful purposes and for its resources to be used for the benefit of all mankind, taking
into account the special interests and needs of the developing nations. As international machinery was designed to administer exploration and exploitation rights and to give concrete expression to the idea that mankind as a whole should benefit from deep seabed minerals development, the debate centered on the allocation of control between international and national authorities and the system of international decision-making.

Broader international developments also affected the law of the sea negotiations. Growing disparities in wealth made the debate over economic development increasingly contentious between the industrialized and developing nations. In addition to asserting permanent national sovereignty over natural resources, developing nations favored price and production controls and international trade preferences as a means of increasing returns to raw materials producers. Many sought strong international directives that would facilitate access to scientific and technical information and rapidly developing new technologies. Stringent investment codes and high taxes for multinational corporations were perceived as a means of ensuring substantial benefits to host countries, and the establishment of state-controlled enterprises a way to avoid and control direct foreign investment.

From the perspective of environmental protection, the LOS Convention was captive to the most visible and widely-reported incidents of marine pollution at the time. These included the 1967 Torrey Canyon oilspill off Land’s End, England, and Thor Heyerdahl’s accounts of tarballs in the mid-Atlantic near major shipping routes. Offshore oil development had also produced disastrous blow-outs like the 1969 Santa Barbara Channel oilspill off California. It was not until 1982 that the first comprehensive assessment of The Health of the Oceans emerged, followed by a second in 1990. Figure 2. These reports began to call attention to the chronic land-based sources of marine pollution and the problems of coastal and habitat degradation, which were far more significant than pollution from vessels. The LOS Convention elaborates a more detailed regime for vessel-source pollution, carefully balancing coastal and maritime interests, and maintains that balance for other sea-based activities that could impede navigation freedoms. For land-based activities, it establishes a solid foundation of obligations and principles to be elaborated through supplementary agreements.

The issue of land-based activities was affected by the same tension that had surfaced at the 1972 Stockholm Conference: the developing nation view of economic development as the means to cure their major environmental problems contrasted with the developed nation view of economic development as the source of their environmental problems. During the LOS Conference, there was a substantial debate over the “double standard”; that is, whether to specify that developing nations could adopt lower standards for protection of the marine environment than the industrialized nations to avoid impeding their development. By demonstrating that mounting marine pollution off the larger coastal cities of the South was every bit as serious as in the North, the conferees forged agreement on common commitments. The trade-offs were both explicit and implicit. Without assistance, there were limits to what the developing nations could accomplish in dealing with land-based activities. They would employ means “at their disposal” and “in accordance with their capabilities”. It was up to the industrialized nations to live up to their commitments to provide assistance. Sections IV.C. and VII.

7. The U.N. Conference on the Human Environment forwarded a number of principles on marine pollution to UNCLOS III. Developed by an Intergovernmental Working Group on Marine Pollution, which was established by the preparatory committee for the Stockholm Conference, they laid out a comprehensive approach to dealing with marine pollution. These principles are reflected in Part XII of the LOS Convention and helped shape the 1972 Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter. [UNGA: LOS 1989 and UNCED Research Paper No. 10].

8. This is the same understanding laid out in Recommendation 109 of the non-binding Stockholm Action Plan and in Principles 9, 11 and 12 of the Stockholm Declaration: that the flow of assistance to developing nations should be adequate to meet their additional environmental requirements.
Figure 2
The State of the Marine Environment

The first global assessment of the marine environment detected no significant effects of marine contaminants on the open sea ecosystem [GESAMP 1982]. It characterized the effects of oilspills on open ocean communities as "rarely drastic", with recovery usually a question of weeks or months. Instead, the report highlighted findings of adverse effects in semi-enclosed seas, shelf seas, and coastal zones, where substantial concentrations of contaminants from land- based sources existed. It noted that in some semi-enclosed seas, fisheries had had to be curtailed due to serious local contamination, and that ecosystem balance had been disturbed as a result of eutrophication and other causes. Increasing sewage disposal in the coastal zone was cited as a cause for concern, in terms of both human health and ecosystem disturbance, with possible regional and even global consequences.

The 1982 assessment stressed that adequate management of fisheries "requires an assessment of all pressures on the stocks - pollution as well as fishing". That prescription is even more valid today. The report drew attention to mounting activities and impacts in the coastal zone, with locally detrimental effects on habitat, and it pointed out that ecosystems such as coral reefs and mangroves could be particularly at risk. It urged increased effort to protect coastal zones and semi-enclosed seas, supported by research and international agreements, and noted that "the marine environment of the coastal zone is vital to mankind, on a global as well as on a local basis."

In looking to the future, the report warned that adverse effects from exploitation of non- living resources could gradually spread from the coastal zone, along the shelf area, and towards the open ocean. It concluded that trends in industrial and agricultural expansion would inevitably increase emissions and effluents — significantly, sewage and energy production. It noted also the potential effects of carbon dioxide on climate, temperature, and sea-level changes. Problems requiring further examination included the introduction of new chemicals, growing tourism, new techniques for waste disposal, mariculture, expanded offshore oil development and deep seabed mining, and possible increased reliance on nuclear power and attendant growth in the at-sea disposal of low-level radioactive waste.

The second global assessment [GESAMP 1990] reiterates that while human impacts on the open ocean are slight, coastal areas and habitat are in significant decline. In order of importance, it identifies the major causes of concern on a global basis as nutrients (sewage and agricultural run-off from fertilizer-treated fields and intensive stock raising), which cause eutrophication; microbial contamination of seafood and beaches by sewage; fouling of seas and beaches by plastic litter; and the progressive build-up of synthetic organic compounds (especially in the tropics and subtropics due to pesticide use). It registers less concern with pollution by radionuclides, trace elements, and oil than in the 1982 report, noting, however that the accumulation of tar on beaches may impact recreational activities and related revenue from tourism. Where concentrations of oil, trace metals, and toxic substances exist, the report cites these as a possible cause for local concern.

In a rough estimate of impacts, the 1990 global assessment attributes contributions to marine pollution from human activities as follows:

<table>
<thead>
<tr>
<th>Source</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maritime transportation</td>
<td>12%</td>
</tr>
<tr>
<td>Dumping</td>
<td>10%</td>
</tr>
<tr>
<td>Offshore production</td>
<td>1%</td>
</tr>
<tr>
<td>Run-off and land-based discharges</td>
<td>44%</td>
</tr>
<tr>
<td>Atmosphere</td>
<td>33%</td>
</tr>
</tbody>
</table>

The report indicates that sediments merit special attention. They are transported to the oceans via rivers — as a result of inland deforestation, agricultural practices, over-grazing, and mining — and they derive directly from coastal manipulations, marine mining, and oil drilling. Traditionally, the fate of sediments
in the coastal zone has been considered largely an engineering problem, but the report identifies sediments as a major threat to coastal organisms in some parts of the world and suggests that evidence warrants that they be regarded as pollutants per se. It recommends that GESAMP review the matter.

GESAMP 1990 states that effective control of land-based sources of marine pollution will require major changes in long-established agricultural and industrial practices, as well as the development or expansion of waste treatment facilities both along the coast and well inland. If coastal development is to be controlled and habitats protected, coastal and inland planning will also have to be modified.

The GESAMP assessments, which reflect the consensus of the scientific community, continue to establish the sound scientific basis needed to determine international priorities.

1. GESAMP, the Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection, was established in 1969. (This name was changed in 1994 from the group of experts on "scientific aspects of marine pollution"). The U.N. Conference on the Human Environment (Stockholm 1972) recommended that GESAMP assemble scientific data and provide advice on scientific aspects of marine pollution, in particular those of an interdisciplinary nature. In 1977, GESAMP was explicitly charged with preparing periodic reviews of the state of the marine environment. Hundreds of scientists from around the world contributed to the 1982 and 1990 assessments. GESAMP is co-sponsored by the United Nations, the U.N. Food and Agriculture Organization (FAO), the United Nations Educational, Scientific and Cultural Organization (UNESCO), the World Health Organization (WHO), the World Meteorological Organization (WMO), the International Maritime Organization (IMO), the International Atomic Energy Agency (IAEA), and the Intergovernmental Oceanographic Commission (IOC). IMO serves as its administrative secretariat.

From the perspective of conserving marine living resources, the political momentum behind wider zones of coastal state control over fisheries was reinforced by concern to avert the "tragedy of the commons", defined by Garrett Hardin in 1968. Coastal fishing communities in both industrialized and developing nations sought coastal state authority out to 200 miles in order to get rid of foreign competition over the 90 percent of world fisheries found in these zones. Many also saw the EEZ as a way to vest conservation responsibilities in coastal states. For some of the developing nations, the EEZ offered, in addition, a basis for contractual arrangements with foreign fishing interests that would increase benefits to the coastal State, whether in terms of revenue, equipment, or technical assistance. Ironically, the failure to stem the decline in world fisheries is primarily the result of coastal state failures to exercise their expanded authorities and duties in environmentally-sound ways.

The ten-year LOS Conference negotiations took place in a climate of growing international insecurity over navigation and overflight rights, coastal state desires to expand control over offshore resources, expectations of substantial international benefits from deep seabed mineral resources, and heightened North-South tension. The Convention's provisions on resources conservation and marine environmental protection (other than vessel-source pollution) were least affected by these trends. In retrospect, they benefitted from that 'neglect'. Were nations to negotiate these issues today in a series of limited-purpose agreements, or modeled on more recent global environmental agreements, it is unlikely that the same sweeping, fundamental obligations could be achieved.
Section Two. The Law of the Sea Convention as a Legal and Institutional Framework for Marine Environmental Protection, and Related Dispute Settlement

This section considers the Convention's basic legal framework for marine environmental protection, the fundamental obligations undertaken by all states, the nature of each country's obligations to implement international rules and standards, and related dispute settlement. It describes the relationships between the LOS Convention and other international agreements on marine environmental protection, including institutional relationships. Section III examines the Convention's general principles on marine environmental protection and the legal developments built upon them. Section IV then explores in more detail Convention provisions governing each source of marine pollution and subsequent international initiatives.

The LOS Convention as a framework for marine living resources protection, conservation, and management is the subject of Section V.

A. The Legal Framework: Marine Environmental Protection

The Law of the Sea Convention represents the first comprehensive statement of international law on protection and preservation of the marine environment, going well beyond the 1958 treaties and other sources of environmental law. It establishes a basic structure of obligations, objectives, and principles covering all sources of marine pollution:

- pollution by vessels (operational and accidental discharges from ships);
- dumping (the deliberate disposal of wastes at sea by ships, aircraft, platforms, or other man-made structures);
- pollution from activities carried out on the seabed within national jurisdiction (e.g., offshore oil development);
- pollution from the development of deep seabed mineral resources beyond national jurisdiction;
- pollution from land-based sources; and
- pollution from or through the atmosphere (pollutants deposited into the sea from the air, whatever the source, including aircraft).

The Convention calls for international rules, standards, and recommended practices and procedures to be further elaborated at global and regional levels and ensures that these more specialized processes are guided by its basic structure. It will be interpreted by authoritative tribunals, in view of these progressive international legal developments and the circumstances that influence them.
"The [LOS Convention's provisions on protection and preservation of the marine environment] are without prejudice to the specific obligations assumed by States under special conventions and agreements concluded previously which relate to the protection and preservation of the marine environment and to agreements which may be concluded in furtherance of the general principles set forth in this Convention.

"Specific obligations assumed by States under special conventions, with respect to the protection and preservation of the marine environment, should be carried out in a manner consistent with the general principles and objectives of this Convention." (Article 237)

The Convention also requires that the rules established through competent international organizations or diplomatic conference be "re-examined from time to time as necessary," building in periodic updates.

National Obligations and International Law

The obligation of all states to protect and preserve the marine environment is not qualified in any way (Article 192). Each country must take all measures necessary to prevent, reduce and control pollution from any source and endeavor to harmonize its policies with other states (Article 194.1). Stockholm Principle 21 — permitting states to exploit their own natural resources pursuant to their own environmental policies — is qualified, in the LOS Convention, by their duty to protect and preserve the marine environment (Article 193.2).

The obligation to give effect in national law to international rules differs, depending on the pollution source in question (Articles 207, 208, 209, 210, 211, and 212). For all activities that actually take place within ocean space (vessel-source pollution, dumping, offshore seabed activities, mining the deep seabed), *international rules represent minimum standards*. National laws and regulations must be as effective as international rules and standards, without qualification. No allowance is made for varying national capabilities. For pollution that derives from activities within national land territory (land-based and airborne sources), national laws need only *take into account* international rules and standards. The measures each state employs must rely on the "best practicable means at [its] disposal" and be "in accordance with [its] capabilities".

This distinction reflects the concern that not all countries will be in a position to retool national development activities immediately to avoid marine pollution. Without qualifying basic obligations, the Convention anticipates the concept of common but differentiated responsibilities: individual nations must act in accordance with the means at hand; otherwise, their goals and timetables are contingent upon upgrading the means available. The Convention refers expressly to international cooperation, directly and through "competent international organizations", to provide assistance to developing nations. *Section VII*. This conditionality is without prejudice to any specific agreements that states have entered into. If on a bilateral, regional, or global basis, states have accepted particular rules and standards for domestic sources, they would be required, in that case, to give effect in national law to agreed obligations. Moreover, every state may enact national laws that are more stringent than international rules for domestic sources, including ships flying its flag and aircraft of its registry.

Among the sources for which minimum international rules are contemplated, the "generally accepted international rules and standards" developed in the International Maritime Organization (IMO) for vessels are more numerous and detailed than others. Widely-accepted international treaty law, such as the International Convention on the Prevention of Pollution from Ships and its 1978 Protocol (MARPOL 73/78), creates a presumption of "general acceptance" and is thus construed as setting minimum rules for all nations that are party to the LOS Convention, even if they are not party to the specific pollution
treaty establishing the standard. Entry into force of the LOS Convention thus creates new obligations for many states. This system is reinforced in MARPOL 73/78, which permits parties to apply its requirements to the ships of non-parties to ensure that non-parties do not receive more favorable treatment. In relation to other pollution sources, as international rules and standards are developed through competent international organizations or diplomatic conferences and achieve reasonably widespread and representative acceptance within the relevant regional or global arena, this creates a presumption of "general acceptance" binding on states in that arena that are also parties to the LOS Convention.

The role of international soft law (non-binding) is particularly important in the context of the LOS Convention framework. As widely-endorsed soft law begins to shape state practice, it creates a presumption in favor of that practice as "generally recommended". It may inform national laws and regulations and advance the development of more specific, binding international agreements. For example, in relation to marine-based activities, the IMO Guidelines and Standards for the Removal of Offshore Installations and Structures on the Continental Shelf and in the EEZ (1989) arguably assume "generally recommended" status, and a coastal state’s measures may be no less effective. For domestic sources, one could argue that all states should take into account UNEP’s 1985 Montreal Guidelines for the Protection of the Marine Environment against Pollution from Land-Based Sources, the World Health Organization (WHO) water quality standards, or the WHO/FAO standards for food products, such as fish. No matter that generally-recommended practices, criteria, or guidelines are not binding; they establish a benchmark for the development of national laws and policies that is reinforced through the LOS Convention. They may also precipitate consensus on binding standards; for example, in the context of an agreement on land-based sources of marine pollution.

[UNGA/LOS 1989; Oxman 1991; Stevenson and Oxman 1994; Chamey 1994]

B. Dispute Settlement

The framework nature of the LOS Convention with respect to both marine environmental protection and resources conservation has important implications for the settlement of disputes. The Convention’s general obligations, objectives, and principles inform the development of more specific international agreements and more detailed international rules and standards. The LOS Convention, in turn, incorporates by reference these more specific obligations. Although the general obligations of the LOS Convention might alone justify proceedings against a state in the face of flagrant failure to respect them, more specific rules and standards help determine if a violation has occurred. The internationally-agreed rules and standards articulated in other fora and incorporated by reference into the LOS Convention can provide that specificity. The LOS Convention is explicit on this point in relation to disputes over marine environmental protection. It stipulates that two types of disputes shall be subject to the compulsory procedures entailing binding decisions:

1. "when it is alleged that a coastal state has acted in contravention of specified international rules and standards for the protection and preservation of the marine environment which are applicable to the coastal state and which have been established by this Convention or through a competent international organization or diplomatic conference in accordance with this Convention"; and

2. in disputes over navigation rights and freedoms, when it is alleged either that a coastal state has acted in contravention of the LOS Convention, or that a state exercising these rights and freedoms has acted in contravention of the LOS Convention or of laws or regulations adopted by the coastal state in conformity with the LOS Convention and other rules of international law not incompatible with the LOS Convention. (Article 297.1)
Thus, even if another global or regional agreement governing protection of the marine environment does not itself provide recourse to compulsory, binding dispute settlement (as is often the case), the LOS Convention procedures may be utilized among states parties to the LOS Convention to resolve disputes under the other agreement. In addition, an agreement related to the purposes of the LOS Convention may provide explicitly for submission of disputes to any of the compulsory, binding procedures provided for in the LOS Convention (Article 288(2) and (4); Annex VI, Article 22).

The LOS Convention’s dispute settlement provisions regarding high seas fishing permit the enforcement of the duties to conserve and to cooperate in conservation measures against any party to the LOS Convention, even if a state is not party to the particular regional conservation agreement. Moreover, it is likely that the tribunal’s decision would be influenced by the regional agreement. Section V.

**LOS Convention Provisions on Dispute Settlement**

The LOS Convention established a unique system for international dispute settlement, since adapted to other international agreements. It offers states a flexible menu of options for settling disputes, but in the end, they must submit to compulsory, binding procedures in most cases. (The procedures are compulsory because either party to the dispute is permitted to submit it for arbitration or adjudication. Most international treaties require both parties’ consent and therefore do not have compulsory procedures. Under the LOS Convention, consent effectively occurs in advance, upon ratification. The procedures are binding if the parties to the dispute must comply with the decision. Normally, the decisions of courts and arbitrators are binding; the results of conciliation procedures are not.)

The Convention establishes four optional fora for compulsory, binding settlement: the International Court of Justice, the International Tribunal for the Law of the Sea, established by Annex VI of the LOS Convention; an arbitral tribunal, constituted in accordance with Annex VII; or a “special” arbitral tribunal, constituted in accordance with Annex VIII. A “special” arbitral tribunal differs from a regular tribunal in two ways. First, the scope of the special tribunal is limited to a dispute regarding Convention provisions in one of four subject areas: fisheries, protection and preservation of the marine environment, marine scientific research, or navigation (including pollution from vessels and by dumping). Second, its members are drawn from lists of experts in each field as opposed to a single list of persons experienced, more generally, in maritime affairs (read “law”). These lists are maintained by the U.N. Food and Agriculture Organization (FAO), UNEP, the Intergovernmental Oceanographic Commission (IOC), and the IMO, respectively.

There are no limitations on the application of compulsory, binding dispute settlement to disputes regarding protection and preservation of the marine environment. Moreover, in circumstances where serious harm to the marine environment may result, the court or tribunal seized of the dispute may prescribe provisional measures to prevent harm, and there are safeguards to ensure that appropriate provisional measures are not delayed in urgent situations. The parties to the dispute must comply with the provisional measures (Article 290).

On vessel-source pollution, flag states are obliged to enforce the Convention vis-a-vis their vessels. In addition, the Convention stipulates the circumstances in which coastal and port states may institute proceedings against foreign vessels for violations of applicable national and international rules and standards to prevent, reduce, and control pollution. Section IV.A. This in no way affects the institution of civil proceedings in respect of any claim for loss or damage resulting from pollution of the marine environment (Article 229). Only monetary penalties may be imposed for violations of these national laws or applicable international rules and standards by foreign vessels, except in the case of a wilful and serious act of pollution in the territorial sea (Article 230).
Disputes over *deep seabed mining* may involve states, the International Seabed Authority, the international Enterprise (the operational arm of the Authority), or public (state-owned) entities and private contractors involved in mining operations. They may be considered in the Sea-Bed Disputes Chamber of the new Law of the Sea Tribunal, a special chamber of the Tribunal, an ad hoc chamber of the Sea-Bed Disputes Chamber, or a binding commercial arbitration procedure (Articles 186, 187, 188, 189, 190, 191; Annex VI, Articles 14, 15, 35-40). Any one of these procedures might apply to a dispute over requirements for marine environmental protection.

The Convention does not apply compulsory, binding procedures to international disputes over *marine scientific research and marine living resources in the EEZ*. Compulsory recourse to a non-binding conciliation procedure is available as an alternative in some cases, as provided in Annex V of the Convention. The report of the conciliation commission is to be communicated to appropriate international organizations (Article 297.2 and 297.3). States may except from compulsory binding procedures disputes over maritime boundaries, military activities, and issues before the U.N. Security Council (Article 298). They may also except disputes concerning law enforcement regarding the exercise of coastal state rights and jurisdiction over fishing activities and marine research in the EEZ (Article 298 as it refers to the exclusions set forth in Article 297.2 and 297.3). The Convention provides for prompt release of a detained vessel without prejudice to the merits of any case against the vessel (Article 292).

**International Developments**

The seat of the new International Tribunal for the Law of the Sea is Hamburg, Germany. Although the Convention provides that the election of its members is to take place within six months of its entry into force (Annex VI, Article 4.3), these elections have been deferred until August 1, 1996 to afford an opportunity for more countries to have ratified the Convention and thus participate in the first elections.

**C. The Institutional Support Structure**

The LOS Convention assigns certain depositary and reporting functions to the U.N. Secretary-General, including the convening of necessary meetings of States parties (Article 319). But it is permeated with requirements for support by international institutions. These encompass two basic functions:

1. promoting and facilitating the formulation of supplementary ocean law agreements, through global and regional bodies, which articulate more specific international rules and standards or recommended practices and procedures and tackle new issues; and

2. fostering implementation of the law — through regional and global initiatives on marine research, monitoring, data management, environmental assessment, and the exchange of information, and through programs that strengthen national capabilities to manage sustainably the use of the marine environment and its resources.

Core support is provided by the Convention secretariat, the Division for Ocean Affairs and the Law of the Sea (DOALOS) in the U.N. Office of Legal Affairs in New York. DOALOS monitors actions taken by governments, to ensure that national law and practice is consistent with the Convention, and it maintains an overview of international organizations’ program initiatives so that they conform with Convention requirements and do not function at cross purposes. The Convention’s framework nature makes it essential that international agencies supporting Convention implementation are kept up to date on applicable international rules and standards, agreed international policies and criteria, and recommended practices and guidelines, both global and regional. Agenda 21’s recognition of the LOS
Convention as the international legal basis for the protection and sustainable use of the marine and coastal environment/resources underscores the importance of this evolving legal basis for national and international action. Since 1984, DOALOS has prepared for the U.N. General Assembly an invaluable annual overview of the main developments related to the Convention. Among other activities to assist states in applying the Convention, it has convened expert workshops to develop detailed guidance and handbooks for state practice, and it responds to requests for advice from governments on managerial, scientific, and technical aspects of implementation.

There are several international fora in which the progressive development of international ocean law takes place. In the case of vessel-source pollution and maritime safety, the Convention assumes that a uniform, global approach is needed and effectively recognizes the competence of the IMO. In addition to conventions on maritime safety and pollution prevention, the IMO is responsible for administering global agreements on dumping and marine pollution emergencies (e.g., vessel accidents), both of which are supplemented by regional agreements. With respect to offshore facilities, the IMO deals with some aspects of offshore oil and gas development as well as safety considerations that may affect international shipping. It has a long-standing technical cooperation program to assist developing nations give effect to treaty obligations and thus pave the way for their ratification of relevant global and regional agreements.

For deep seabed minerals development, uniform rules will be developed by the International Seabed Authority established by the Convention.

The U.N. Environment Programme (UNEP) has been the catalyst for most of the regional marine agreements. Additional treaties in the Northeast Atlantic/North Sea, the Baltic Sea, and Antarctica predate UNEP’s involvement. Today UNEP’s Oceans and Coastal Areas Programme Activity Centre includes eleven well-established regional programs and action plans, nine of which have adopted regional framework conventions. In East Asia, governments have opted not to negotiate a regional convention. Draft legal instruments are pending in South Asia, and initiatives in the Northwest Pacific and Southwest Atlantic are in the early stages of development. Secretariat arrangements for these conventions are made within each region, with varying degrees of administrative and program support provided by UNEP.

The regional agreements constitute framework conventions in their own right. They continue to be supplemented by protocols and annexes covering: pollution from ships; combatting marine pollution emergencies; dumping and wastes management, including radioactive pollution; land-based sources of marine pollution; protected areas and species; and continental shelf activities and/or exploitation of offshore hydrocarbon resources. Efforts to develop further protocols on environmental impact assessment and the transboundary movement of hazardous wastes are underway. Related regional agreements deal with port state enforcement of standards for vessel safety and pollution control.

A (non-binding) Arctic Environmental Protection Strategy was adopted by the eight Arctic rim countries in June 1991. Its Arctic Monitoring and Assessment Program forms the backdrop for efforts to curb pollution of the Arctic environment in six action areas: persistent organic contaminants, oil pollution, heavy metals, noise, radioactivity, and acidification. Early cooperation on prevention, preparedness, and response to pollution accidents from any source, and cooperation to conserve Arctic flora and fauna are other important objectives. The need for further international legal instruments to prevent Arctic pollution is under study.
Figure 3
Regional Framework Agreements on Protection and Preservation of the Marine Environment

Antarctica


Europe

*This agreement supersedes the 1974 Paris Convention on land-based sources and the 1972 Oslo Convention on dumping. It includes a small segment of the Arctic Ocean.*

*This supersedes the 1974 Baltic Convention.*

Convention for the Protection of the Mediterranean Sea against Pollution, Barcelona (1976).


Middle East and North Africa

Regional Convention for Co-operation on the Protection of the Marine Environment from Pollution, Kuwait (1978).


Africa


South America and Pacific


Convention for the Protection and Development of Natural Resources and Environment of the South Pacific Region, Noumea (1986).

Caribbean


*Soft Law:*

Other notable oceans responsibilities found within the U.N. family of organizations are noted below. There are also various joint arrangements, such as joint advisory services (e.g., GESAMP) and jointly-supported programs (e.g., GIPME - Global Investigation of Pollution in the Marine Environment, supported by IOC, UNEP, and IMO).

- Intergovernmental Oceanographic Commission (IOC) of UNESCO, whose headquarters and regional programs support marine pollution inventory and assessment and the development of national and regional scientific capabilities, and which promotes major global research and monitoring programs, in cooperation with UNEP, the World Meteorological Organization (WMO), and other organizations;

- Food and Agriculture Organization (FAO), responsible for some regional fisheries arrangements, aquaculture, and related programs in coastal development and habitat protection, including efforts to reduce the use of agricultural chemicals;

- International Atomic Energy Agency (IAEA), which supports the London (Dumping) Convention by research, monitoring, and assessment regarding radioactive pollutants and a program in radioactive wastes management, and whose Marine Environment Laboratory in Monaco provides worldwide support for studies and data quality assurance related to all aspects of marine pollution;

- World Health Organization (WHO), long involved in promulgating water quality standards to protect human health and, together with FAO, standards for fish product safety;

- WMO, responsible for research and monitoring programs related to air/sea interactions and climate and weather, as well as technical advice regarding airborne pollution of the marine environment;

- UNESCO, with programs in coastal zone management and implementation of the Biosphere Reserve Programme;

- U.N. Industrial Development Organization (UNIDO), whose programs include efforts to abate industrial wastewater pollution;

- HABITAT, concerned in particular with urban issues of water sanitation and related waste disposal;

- International Labor Organization (ILO), regarding treaties and standards for the well-being of seafarers; and

- International Civil Aviation Organization (ICAO), responsible for treaties and standards on aircraft safety and pollution control.

Marine and coastal programs are also found in numerous regional organizations outside the U.N. system, and pursuant to a variety of global and regional treaties, as considered in this report. Financial support comes from bilateral donors; trust funds established by international organizations in support of specific treaties or program initiatives; U.N. technical assistance funds managed by U.N. Development Programme (UNDP) or particular specialized agencies; the multilateral development banks; and the Global Environment Facility (GEF).
Major International Developments

The oceans chapter of Agenda 21 set in motion three intergovernmental initiatives, the first two of which relate directly to the implementation of the LOS Convention. It also endorsed a global conference to exchange experience in the field of integrated coastal zone management and development, organized and sponsored by the Netherlands in November 1993.

A conference on straddling fish stocks and highly migratory fish stocks, convened under the auspices of the United Nations. Agenda 21 states that the work and the results of the conference should be fully consistent with the provisions of the LOS Convention, in particular the rights and obligations of coastal states and states fishing on the high seas. The U.N. Conference on Straddling Fish Stocks and Highly Migratory Fish Stocks held three meetings during 1993 and 1994. Two final meetings are expected in 1995. Section V.

A meeting on protection of the marine environment from land-based activities, convened under UNEP auspices. A series of preparatory sessions will culminate in a meeting in Washington, DC in November/December 1995. Section IV.C.

The first Global Conference on the Sustainable Development of Small Island Developing States (SIDS), convened under U.N. auspices. Preparatory meetings were followed by an April/May 1994 conference in Barbados. Section VI.E.

Agenda 21 calls for the U.N. General Assembly to regularly consider marine and coastal issues within the U.N. system, including environment and development matters, and for strengthened coordination among U.N. organizations with relevant responsibilities, including subregional and regional components of these organizations. DOALOS has regularly provided the annual oceans overview for General Assembly deliberations. Inter-governmental follow-up to Agenda 21 within the U.N. system is undertaken by the U.N. Commission on Sustainable Development, which reports through the U.N. Economic and Social Council to the General Assembly. The Commission will review the oceans chapter of Agenda 21 at its 1996 meeting.

At the inter-agency level, follow-up to Agenda 21 is the responsibility of an Inter-Agency Committee on Sustainable Development (IACSD). In September 1993, the IACSD established an inter-agency Subcommittee on Oceans and Coastal Areas to integrate and coordinate U.N. system initiatives, including harmonized information systems. Its secretariat is provided by the IOC.

The renamed Joint Group of Experts on Scientific Aspects of Marine Environmental Protection (GESAMP) is to help provide the scientific basis for the IACSD subcommittee. Since 1977 it has been charged with periodic review of the state of the marine environment. In 1994, GESAMP launched a review of the “state-of-the-art” in integrated coastal area management. Figure 2.

The U.N. Department for Policy Coordination and Sustainable Development has overall responsibility for supporting the Commission and the inter-agency process. It provided secretariat support for the SIDS conference. DOALOS is responsible for supporting the U.N. Fisheries Conference. This diverse support structure for U.N. system ocean activities has accreted over four decades. As international programs and legal agreements evolve to implement the LOS Convention, it becomes more important to maintain a well-functioning institutional memory and coordination mechanisms that can ensure consistency among international laws and policies and cost-effective program development and
implementation. Equally important are mechanisms to ensure that lessons learned in one region are shared with others, and that the latest developments in analytical methods and practical approaches to sustainable use of the oceans are widely exchanged. Well-founded analytical support is crucial. Section VIII.
Section Three. Preservation and Protection of the Marine Environment: General Principles

This section examines the general principles for marine environmental protection articulated in the Convention and the legal developments built upon them. It covers the scientific basis for and the definition of pollution, provisions that encourage prevention and precaution, response to marine pollution emergencies, and transboundary damage to the marine environment and related responsibility and liability. Section II described the basic legal and institutional framework for marine environmental protection, including relationships between the LOS Convention and other international oceans agreements. Section IV explores in more detail Convention provisions governing each source of marine pollution, and considers the further development of international rules, both global and regional, for each source.

A. The Scientific Basis

The general obligation of states to take all measures to prevent, reduce, and control pollution of the entire marine environment is unqualified, as is the obligation to cooperate in elaborating regional and global rules. Recognizing, however, that much remains to be learned about marine pollution, the Convention requires international collaboration to promote studies, undertake research, and exchange data and information. The objective is to acquire knowledge for assessing the nature and extent of pollution, exposure to it, and its pathways, risks and remedies (Article 200). This is reinforced by monitoring obligations to observe, measure, evaluate, and analyze the risks or effects of marine pollution, directly or through competent international organizations. In determining the risks or effects of marine pollution, states must rely on "recognized scientific methods" (Article 204).

The resulting knowledge is to be used by states, acting directly or through international organizations, to establish appropriate scientific criteria for formulating and updating national and international rules and standards, and recommended practices and procedures. (Article 201) In addition to the international decision-making process, these criteria would also inform any dispute settlement proceedings, including the assessment of pollution damages.

The thrust of these articles is that international efforts may expedite the analysis of the problem and the determination of appropriate response measures. This will assist all nations in developing national and international rules. Convention negotiators did not anticipate any tension between the scientific basis and international regulation; that is, that inadequate information might delay appropriate or precautionary response measures. Rather, they saw the interplay between evolving international agreement on scientific criteria and evolving international agreement on rules and regulations as an essential aspect of a framework convention and a positive force for advancing protection goals. They were influenced at the time by the failure to heed scientific warnings about the decline in world fisheries.

B. The Definition of Pollution Expands

"Pollution of the marine environment" means the introduction by man, directly or indirectly, of substances or energy into the marine environment, including estuaries, which results or is likely to result in such deleterious effects as harm to living resources and marine life, hazards to human health, hindrance to marine activities, including fishing and other legitimate uses of the sea, impairment of quality for use of sea water and reduction of amenities". (Article 1.4)
The LOS Convention’s definition of pollution unites several concepts expressed in one or another of the early marine agreements and has, for the most part, been replicated in subsequent agreements. It covers “energy” as well as “substances”; refers to “direct or indirect” human introduction; adds “impairment of quality for use of sea water” to other possible deleterious effects; explicitly incorporates “estuaries” to the area of the marine environment; and anticipates a precautionary approach in noting that pollution includes not only the introduction of substances that result in deleterious effects but also those “likely to” do so.9

Legal Developments

There have been three significant developments, below, utilizing this building block. In addition, it should be noted that the term “pollution” is increasingly replaced by “degradation”, as in Agenda 21, to ensure that erosion and sedimentation, habitat destruction, and the use of harmful technology and fishing practices are embraced, as well as harmful substances. Similarly, the broad obligation to “protect and preserve the marine environment” is increasingly emphasized in legal instruments as preferable to the obligation to “prevent, reduce, and control marine pollution”.

With two exceptions, all subsequent regional agreements use the precautionary language of “likely to” or “liable to”.10 Moreover, the precautionary principle has been accepted as a non-binding norm pursuant to several agreements and incorporated into two recent binding agreements (Northeast Atlantic, Baltic).

The concept of harm to living resources has been broadened to include harm to marine ecosystems (Northeast Atlantic, Baltic). The ramifications of this enlarged scope are considered in Section VI.

The geographic scope of the area into which pollution is introduced has expanded. One regional agreement incorporates the introduction of pollution into “coastal zones and related inland waters” as well as into the marine environment (West and Central Africa). This question of expanded geographic scope is considered further in relation to land-based sources of marine pollution, dumping and wastes management, and ecosystem management, Sections IV.B., IV.C., and VI.

C. Prevention and Precaution

The general obligations to “prevent, reduce, and control” marine pollution from all sources and to “protect and preserve the marine environment”, and the “likely to” definition of pollution, constitute three building blocks for precaution and prevention. When the LOS Convention was negotiated during the 1970s and early 1980s, states were just beginning to get a grip on the sources, pathways, extent, risks, and impacts of marine pollution and how to anticipate and avoid it. Several LOS Convention provisions therefore articulate additional precautionary obligations:

* In view of the rapid pace of technological development and more intensive use of the oceans, states are required to take all measures to prevent, reduce, and control pollution resulting from the use of technologies under their jurisdiction or control, and the intentional or accidental introduction of new or alien species to a particular part of the marine environment, which may cause significant and harmful changes to that environment (Article 196.1).

9. The LOS Convention definition is closest to that in the 1974 Baltic Sea Convention, but the latter refers only to introductions “resulting in” deleterious effects. On the other hand, the early dumping conventions (1972) and vessel-source pollution treaties (MARPOL 73/78) refer to substances “liable” to cause deleterious effects.

Section Three

* In addition to the stipulation that states must take measures to prevent, reduce, and control marine pollution from all sources, the Convention calls further for measures designed to "minimize, to the fullest extent possible", the release of toxic, harmful, or noxious substances, in particular those that are persistent (Article 194.3.a). This emphasis in reiterated in relation to rules for land-based sources of marine pollution (Article 207.5).

* Similarly, the Convention calls for measures designed to minimize pollution from vessels and to minimize pollution from installations and devices used in offshore seabed (continental shelf) development or for other purposes, with particular emphasis on measures to prevent accidents and respond to emergencies (Article 194.3.b,c,d). States are encouraged to jointly develop and promote contingency plans for responding to marine pollution incidents (Article 199). See below.

The Convention balances this obligation by requiring that all States, acting directly or through competent international organizations, must provide appropriate assistance, especially to developing states, in order to minimize the effects of major incidents which may cause serious marine pollution (Article 202.b).

* During LOS Convention negotiations, prior environmental assessment had not yet been widely endorsed.\(^\text{11}\) The LOS Convention requires that states assess the potential effects of planned activities under their jurisdiction or control, when they have reasonable grounds for believing they "may cause substantial pollution of or significant and harmful changes to the marine environment". States must either publish the results or convey them to the competent international organization, which should make them available to all nations (Articles 205, 206). The requirement for assessment is not limited by location; that is, potential effects may occur in zones under the jurisdiction of the responsible state, in zones under the jurisdiction of neighboring states, or in the marine environment beyond national jurisdiction. Specifically in relation to dumping within national jurisdiction, before the coastal state permits the activity, it must consider the matter with any states that may be adversely affected due to their geographic situation (Article 210.5).

The content of environmental assessment reports, the timing of their release and circulation, and the procedures for doing so would benefit from further elaboration. The Convention does not address content and merely indicates that reports should be conveyed to competent international organizations "at appropriate intervals". There is no mention of a notification and consultation procedure for potentially affected states, although this and other deficiencies have since been addressed to some extent in a few of the regional agreements. Section VI.D.

This requirement for states to assess planned activities is limited by the language "as far as practicable". Because some states may not be in a position to carry out assessments, the Convention balances the obligation with the requirement that all states, acting directly or through competent international organizations, must "provide appropriate assistance, especially to developing states, concerning the preparation of environmental assessments" (Article 202.c). Programs to assist developing nations with targeted and cost-effective assessment procedures would be useful. Section VII.

* Each state must monitor the effects of any activity which it permits or engages in, to determine whether it is likely to pollute the marine environment (Article 204.2). This obligation is unqualified. Reports are to be published and circulated in the same manner as assessment reports (Article 205). Although the obligation is unqualified, the Convention does provide for assistance to developing states regarding monitoring facilities (Article 202.a.v).

\(^{11}\) The non-binding UNEP Guidelines and Principles on this subject were not completed until 1987.
The timing and procedures for release and circulation of monitoring reports would benefit from greater precision. Efforts to agree on indicators for monitoring the health of marine/coastal environments/resources, to harmonize monitoring protocols, and to assist developing nations with targeted and cost-effective monitoring programs would be useful. Section VII. IUCN may be well positioned to help define such indicators, protocols, and programs.

* Another forward-looking provision of the LOS Convention, albeit one requiring further interpretation, is the duty of states, in taking measures to prevent, reduce, and control pollution of the marine environment, not to transform one type of pollution into another or transfer, directly or indirectly, damage or hazards from one area to another (Article 195). This provision might be construed in different ways; for example, to avoid that wastes generated in the normal operation of ships and off-loaded at port reception facilities are then deliberately disposed of at sea (dumping). Alternatively, it might be interpreted to ensure no net increase in marine pollution. However interpreted, the provision lends support to a comprehensive approach to wastes reduction, management, and disposal, encompassing all potential sources of marine pollution and careful consideration of disposal options. Section IV.B.

[UNGA/LOS 1989; UNCED Research Paper No. 10]

D. Response to Marine Pollution Emergencies

In cases of imminent or actual pollution damage from vessel accidents, the LOS Convention was preceded by the 1969 International Convention relating to Intervention on the High Seas in Cases of Oil Pollution Casualties, inspired by the Torrey Canyon disaster. This treaty addresses protective actions a coastal state may take on the high seas when its coastline or related interests are in "grave and imminent danger" from marine pollution as a result of a maritime accident. A 1973 protocol extends coverage to specified substances other than oil. The LOS Convention took the next step by calling for international rules requiring vessels to promptly notify coastal states that may be affected by maritime incidents (Article 211.7). In addition, it requires any state that becomes aware of such a situation to notify immediately other countries that might be affected by the damage as well as competent international organizations. States in the affected area are to cooperate in eliminating the effects of pollution and in preventing or minimizing the damage. To that end, they are to jointly develop and promote contingency plans for marine pollution emergencies (Articles 198, 199), and to assist developing countries in minimizing the effects of major accidents (Article 202.b). A related obligation in dealing with marine pollution emergencies is the obligation not to "transfer, directly or indirectly, damage or hazards from one area to another" (Article 195).

The Convention article on the use of technologies and the introduction of new or alien species exempts actions taken to prevent, reduce, and control marine pollution (Article 196.2). In a hypothetical situation, if biological agents were proposed for dealing with an oilspill, precautions regarding potential pollution caused by the biological agent would not be necessary. On the other hand, this exception would be limited by general obligations not to pollute the marine environment nor transform one type of pollution into another, and by the requirements for contingency planning and advance assessment. Thus, potential clean-up remedies should also be assessed in advance, so that situation-specific decisions on the spur of the moment are based on well-founded analyses and criteria.

Institutional and Legal Developments

Several regional initiatives on contingency planning and emergency response for marine pollution emergencies followed the Intervention and LOS Conventions. The early agreements promote cooperative arrangements for reporting, assessing, and responding to grave and imminent danger of pollution by oil as a result of maritime casualties (e.g., accident, collision, grounding). On the practical side,
several cite the need to coordinate with the IMO. The nine UNEP regional conventions look to the further development of sub-regional arrangements, supported by centers for regional assistance, whereas the Baltic, Northeast Atlantic, and North Sea agreements rely more on direct, state-to-state assistance. Among the more recent agreements, including revisions of earlier agreements, the substantive scope has expanded. They cover, variously, pollution arising from an accumulation of small discharges from vessels (Mediterranean, Black Sea); pollution due to blow-outs from petroleum drilling and production activities or the failure of industrial installations (Kuwait, West and Central Africa, Red Sea); and imminent danger of pollution from harmful substances other than oil (Baltic, North Sea, East African, South Pacific). The Northeast Atlantic agreement (Lisbon 1990) covers all pollution incidents, but appears to concentrate on occurrences due to ships and fixed or floating platforms. The non-binding Arctic Strategy includes cooperative arrangements to prevent, prepare for, and respond to pollution accidents from any source as an important objective.

Following the 1989 Exxon Valdez oilspill, the IMO concluded a new global agreement, the International Convention on Oil Pollution Preparedness, Response and Cooperation (OPRC 1990). This complements the regional response agreements by emphasizing preventive measures and emergency planning on board the vessels or facilities where accidents might occur. It covers ships, offshore units engaged in gas or oil activities or the loading or unloading of oil, and sea ports and oil handling facilities, including oil terminals and pipelines. Requirement to report pollution incidents are also strengthened. A similar preventive approach was taken in the 1991 Antarctic Protocol. In addition to general directives to cooperate in contingency planning and response to environmental emergencies, its Annex IV on marine pollution adds requirements for contingency plans for ships operating in the area, particularly ships carrying oil as cargo, and for oilspills originating from coastal installations which may enter the marine environment, with reference to the advice of the IMO.

These agreements recognize the need for specialized planning, communication, and response measures to deal with oil pollution — drawing on information and capabilities worldwide — and they recognize that such specialized capabilities are relevant for all types of incidents resulting in oil pollution of the sea, whatever the source. The IMO oil pollution reporting system, and its role in information services, education and training, technical services, and technical assistance, is meant to support and strengthen both national and regional capabilities for responding to maritime emergencies. This specialized system has proved useful, on an ad hoc basis, for mobilizing a response to marine pollution emergencies originating from sources on land, for example during the 1990 Gulf war.

A different perspective on marine pollution emergencies is covered by the 1989 International Convention on Salvage. It provides financial incentives for actions to protect the marine environment, in addition to clarifying other aspects of the international legal regime for assistance to endangered vessels or property at sea. The Convention requires both the salvor and the owner to prevent and minimize damage to the environment, and it requires that the reward due the salvor take into account skill and effort applied to that end. Even if the salvage operation is unsuccessful, the treaty provides for the award tribunal to give special compensation to a salvor who has acted to prevent or minimize environmental damage. (For limitations of this treaty due to the contractual nature of salvage arrangements, see Plant.)

As marine pollution emergencies from harmful substances increase, specialized systems for preparedness, communication, and response dealing with substances other than oil are likely to be necessary. Recent agreements on the transboundary effects of nuclear and industrial accidents take a specialized approach like that of the IMO's oil system. The potential benefits of grouping similar substances — whatever the type of incident causing the release into the marine environment — may warrant examination, as well as the respective roles of a global information repository/schematic — which can draw on worldwide expertise and technical capabilities — and regional cooperative arrangements. Between emergencies, these facilities may provide advice and training to strengthen national and regional capabilities.
Figure 4
Agreements Related To Marine Pollution Emergencies

**Principal Marine Focus**


Protocol concerning Co-operation in Combating Pollution of the Mediterranean Sea by Oil and Other Harmful Substances in Cases of Emergency, Barcelona (1976).

Protocol concerning Regional Co-operation in Combating Pollution by Oil and Other Harmful Substances in Cases of Emergency, Kuwait (1978).

Agreement on Regional Co-operation in Combating Pollution of the South East Pacific by Hydrocarbons and Other Harmful Substances in Cases of Emergency, Lima (1981), and 1983 Supplementary Protocol.


Protocol concerning Regional Co-operation in Combating Marine Pollution by Oil and Other Harmful Substances in Cases of Emergency (Red Sea), Jeddah (1982).

Agreement for Cooperation in Dealing with Pollution of the North Sea by Oil and Other Harmful Substances, Bonn (1983).


Accord of Cooperation for the Protection of the Coasts and Waters of the Northeast Atlantic Against Pollution Due to Hydrocarbons or Other Harmful Substances, Lisbon (1990).


**Major Related Agreements**

Section Three

Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency, Vienna (1986) - IAEA.


Soft Law:


UNEP: Environmental Law Guidelines and Principles No. 2: Principles of conduct in the field of the environment for the guidance of states in the conservation and harmonious utilization of natural resources shared by two or more states (1982).

In April 1994, an International Conference on Chemical Safety (UNEP, WHO, ILO) decided to establish an Intergovernmental Forum on Chemical Safety and agreed on priorities for its work. These were endorsed by the U.N. Commission on Sustainable Development in June 1994. The Forum offers a vehicle for advancing consideration of effective preparedness and response arrangements, including for the marine environment.

In relation to contingency planning for marine pollution emergencies, an examination of the effectiveness of existing regional arrangements would be useful.

From IUCN’s perspective, the adequacy of mapping of sensitive areas and vulnerable resources is of particular concern. Agenda 21 calls for the preparation of coastal profiles identifying critical areas. The IUCN network offers specialists who could assist in such planning and mapping, help determine priorities, assess potential response measures and damage, and support rehabilitation efforts. A mechanism to expedite recourse to such specialists could be considered.

E. Transboundary Damage and Damage to the Global Commons, including Responsibility and Liability

The LOS Convention gives binding legal effect to Stockholm Principle 21. It requires all states to ensure that pollution from activities under their jurisdiction or control does not cause damage to the environment of other states. In addressing areas beyond national jurisdiction, it improves upon Principle 21 by requiring them not only to avoid environmental damage, but also to prevent the spread of pollution to these areas (Article 194.2). This is reinforced by the requirement not to transfer damage or hazards from one area to another (Article 195). (While “pollution” is defined in the LOS Convention (Article 1), “damage” is not.)

12. Under the 1969 Intervention Convention, the coastal state may consult with independent experts, whose names are to be chosen from a list maintained by IMO. In view of the fact that affected coastal state interests include fishing, tourist attractions, the well-being of the coastal area, and the conservation of living marine resources and wildlife, IUCN expertise should be included on this list.
The LOS Convention does not articulate any detailed, *substantive norms or standards on state responsibility and liability* for damage caused by pollution of the marine environment. It does support *individual responsibility and liability* through its procedural requirements, below. In relation to states, it specifies responsibility for fulfilling international obligations concerning the protection and preservation of the marine environment and liability “in accordance with international law”. They must cooperate in implementing any existing international law, and they are to further develop international rules for damage assessment, compensation, and related dispute settlement, as well as criteria and procedures to facilitate compensation, such as compulsory insurance or compensation funds (Article 235). Convention provisions are without prejudice to the application of existing rules and the development of further rules regarding responsibility and liability under international law (Article 304).

*In relation to marine pollution damage arising from marine scientific research*, both states and international organizations are responsible and liable for damage arising from research undertaken by them or on their behalf (Article 263.3).

*In relation to deep seabed mining*, Convention provisions on liability for damage do not explicitly refer to pollution damage but implicitly cover it. The 1994 Agreement requires that the International Seabed Authority concentrate on the adoption of rules, regulations and procedures incorporating applicable standards for the protection and preservation of the marine environment (Annex to the 1994 Agreement, Section 1, Article 5.g). Damage caused by the failure of a state party or an international organization to carry out its responsibilities entails liability. Joint and several liability obtains when states or international organizations are acting together. Nevertheless, a state party is not liable for damage caused by a contractor it has sponsored if it has taken all necessary and appropriate measures to secure effective compliance by that contractor (Article 139.2; Annex III, Article 4.4). In relation to damage resulting from minerals operations, a contractor is liable for the actual amount of damage caused as a result of any wrongful acts it has committed in conducting operations. The same is true of the International Seabed Authority in the exercise of its powers and functions (Annex III, Article 22). Pursuant to the 1994 Agreement on deep seabed mining, the operating arm of the Authority, the Enterprise, is subject to the same obligations as contractors (Annex to the 1994 Agreement, Section 2, Article 4). Convention provisions are without prejudice to the rules of international law as they develop (Article 139.2).

Another general reference to liability covers situations where member states have transferred competence over matters governed by the LOS Convention to an international organization (e.g., the European Union). The organization is responsible for failure to comply with the Convention or any violation in respect of the competencies transferred; where responsibility as between member states and the organization is not clearly specified, joint and several liability results (Annex IX, Article 6).

*Procedurally*, the LOS Convention requires states to ensure that recourse is available in accordance with their legal systems for prompt and adequate compensation or other relief for pollution damage caused by natural or juridical persons under their jurisdiction (Article 235.2). Moreover, nothing in the Convention affects the institution of civil proceedings in respect of any claim for loss or damage resulting from marine pollution (Article 229). While these provisions would permit access for foreigners to pursue damage claims in other nation’s courts, the variability among existing legal systems may make pursuit of such claims difficult, time-consuming, and expensive for individual claimants.

*Sovereign Immunity*: Warships and other government ships (and aircraft) operated for non-commercial purposes enjoy sovereign immunity regarding Convention provisions on the protection and preservation of the marine environment (Article 236). Nevertheless, states must ensure that such craft act consistently with the Convention, insofar as is reasonable and practicable. In exercising international passage rights in the territorial sea, international straits, or archipelagic waters, the flag state’s responsibility is more explicit (Articles 31, 42.5, 54).
Institutional and Legal Developments

International regimes for liability, responsibility, and compensation for marine pollution damage emerge from the general rules of international law as well as treaties governing source-specific damage, such as nuclear facilities or maritime transport of oil or nuclear materials. International compensation funds have been established both by treaty and by industry-organized schemes; for example, oilspill liability from tankers. Beyond these, few detailed rules of international law exist. A 1977 agreement on oil pollution damage resulting from seabed mineral resources development covers the Baltic and North Seas and part of the Northeast Atlantic, but it is not in force. More narrowly, several agreements on marine pollution emergencies address the recovery of actual costs of assistance and may specify principles for reimbursement; notably the 1990 OPRC in its Annex.

Most of the regional marine agreements urge that liability rules be formulated, but the few existing measures are quite circumscribed. They may govern bilateral circumstances, limit coverage to actual damage—such as property damage or impaired use, or cover damage from wrongful acts only (as with the LOS Convention’s provisions on deep seabed mining, above). Several refer to cost recovery for emergency assistance and encourage states to enter into more detailed bilateral or sub-regional agreements for reimbursement.

The procedural approach to individual responsibility and liability taken in the LOS Convention is recommended also in the Montreal Guidelines on land-based sources: that states ensure that recourse is available in accordance within their legal systems for relief from pollution damage caused by those under their jurisdiction. The 1992 Black Sea agreement provides for recourse in domestic courts as stipulated in the LOS Convention. This approach may be considered either as interim or as supplementary to the further development of international law. For example, the 1988 Convention on the Regulation of Antarctic Mineral Resource Activities (CRAMRA) specified it as an interim measure for dealing with any damage claims that resulted from prospecting, before the more comprehensive liability regime covering exploration and development as well as prospecting had been concluded and entered into force.

With respect to damage to the global commons or to general ecosystem health, international rules and procedures are not well developed. While the definition of pollution informs the assessment of damage and any awards, there is no widely agreed definition of environmental damage beyond direct damage to property or impaired use of established interests (e.g., fisheries). Nor is there agreement on who would be responsible for pursuing such environmental damage claims. These questions were addressed in CRAMRA, which has been set aside. Several aspects of the CRAMRA rules were introduced in the draft environmental regulations for deep seabed mining. Section IV.F.

Several initiatives are underway to further develop international law regarding responsibility, liability, and compensation related to marine pollution damage:

- The IMO updated its 1969 and 1971 treaties on liability and compensation for oil pollution damage from vessels in 1984 and again in 1992. The 1984 revisions did not achieve the necessary support, so the 1992 amendments lower the requirement for entry into force.

- The 1989 Basel Convention calls for the parties to develop a protocol on liability and compensation for damage resulting from the transboundary movement and disposal of hazardous wastes and other wastes within its scope (Article 12). Work on this subject has been initiated.

- The IMO Legal Committee is considering a draft International Convention on Liability and Compensation in Connection with the Carriage of Hazardous and Noxious Substances by Sea (HNS) and hopes to complete work in 1996.
The 1991 Antarctic Treaty Protocol on Environmental Protection calls for the parties to elaborate rules and procedures relating to liability for damage arising from activities taking place in the Antarctic Treaty area and covered by the Protocol (Article 16). Expert meetings have been convened to consider this charge. IUCN is specifically charged with supporting the development of an annex on liability to the Protocol (Resolution 19.96).

The United Nations' International Law Commission continues its work on international liability for injurious consequences arising out of acts not prohibited by international law; state responsibility; liability for damage to the global commons; and liability with respect to non-navigational uses of international watercourses.

Among the issues that must be considered in further developing international law regarding liability for damage by pollution of the marine environment are how to define and assess damage to the global commons and general ecosystem health; establishing who has the right to pursue such claims — within and beyond national jurisdiction; liability and compensation without regard to fault; mechanisms to assess damage and determine awards; and mechanisms for compensation. Vital to the implementation of any law is the refinement of methodologies and procedures for valuing species and ecosystems and the damage they incur.

As an interim measure, each country could provide for recourse in accordance with its domestic legal system for compensation or other relief for damage resulting from marine pollution caused by persons under its jurisdiction, modeled on Article 235.2 of the LOS Convention.

The preventive approach is likely to be the most fruitful one, however, and one where IUCN's members could make a substantial contribution. For it is obvious that prior environmental assessment and planning, and consultation with potentially affected states, can help avoid the spread of pollution and transboundary damage.\(^\text{13}\) Sections III.C. and VI.D.

13. This is clearly recognized as far back as a 1974 agreement among the Nordic states, the Convention on the Protection of the Environment between Denmark, Finland, Norway and Sweden. Each contracting party must grant access of its courts to nationals of other contracting parties - to the same extent and on the same terms afforded its own nationals — to question the permissibility of environmentally harmful activities it proposed to undertake, including proposed measures to prevent damage. If damage occurs, the Convention also grants reciprocal access to each party's courts/administrative authorities to pursue compensation claims. The agreement covers discharges into watercourses, lakes, or the sea. It also covers the use of the land, the seabed (continental shelf), buildings, or installations in any was that may entail environmental nuisance by water pollution or any other effect on water conditions, sand drift, air pollution, noise, vibration, changes in temperature, and other matters.
Section Four. Prevention, Reduction, and Control of Marine Pollution: Source Categories

This section explores Convention provisions governing each of the following sources of marine pollution: ships, at-sea dumping and wastes management, including hazardous wastes; land-based sources and activities; offshore seabed (continental shelf) activities subject to national jurisdiction; airborne sources; deep seabed mining; and other new and emerging activities. Bearing in mind that these provisions were essentially agreed by the late 1970s, it concentrates on the further development of international rules, global and regional, for each source.

A. Vessel-Source Pollution (Ships)

Traditionally, it has fallen to the flag state to ensure that ships flying its flag or of its registry comply with applicable international rules and national law. Yet lax enforcement has often failed to yield results. The 1969 Intervention Convention was concluded to enhance a coastal state’s right to protect itself from pollution caused by foreign vessels in emergency situations. During the LOS Conference, discussions continued over how to strengthen protections for the coastal state.

As a result, the LOS Convention supplements the traditional rights of the flag state with the duty to ensure that its vessels comply with generally accepted international rules and standards. In addition, it extends coastal state standard-setting authorities, subject to international approval, and it grants both port and coastal states broad rights to enforce these standards vis-a-vis foreign vessels. When rules and standards to control pollution from vessels are referred to, the term is broadly construed to include preventing accidents, dealing with emergencies, ensuring safety of operations at sea, preventing intentional and unintentional discharges, and regulating the design, construction, equipment, operation, and manning of vessels (Article 194.3.b). The International Maritime Organization (IMO) is the source of “generally accepted international rules and standards”. The right or duty to enforce these rules and standards under the LOS Convention applies to all parties to the Convention, even if the flag state is not party to the specific agreement pursuant to which the standard was established. Sections II.A. and II.B.

Flag State Obligations

The Convention seeks to ensure that all vessels meet certain international minimum requirements for vessel safety and pollution control. Any state may adopt more stringent national rules applicable to its flag vessels. Flag state environmental regulations must have “at least the same effect” as generally accepted international rules and standards (Article 211.2). Its measures to ensure safety at sea must conform to generally accepted international regulations regarding construction, equipment, seaworthiness, and manning, and secure observance by the crew of applicable international regulations concerning pollution prevention and control and vessel safety (Article 94).

Coastal State Standard-Setting Rights in Offshore Zones and International Navigation Rights

The distinctions between the offshore zones established by the LOS Convention (figure 1) come into play most prominently in relation to the standard-setting and enforcement authority of a coastal state vis-a-vis foreign vessels. Closer to shore, the coastal state may prescribe more stringent national standards in addition to generally accepted international standards. Further out, that right is limited to
prescribing generally accepted international standards and more stringent requirements for specific areas if approved by the IMO. Even the types of international standards that may be prescribed by the coastal state vary with the zone; that is, where unilateral construction standards could seriously impede international navigation, certain types of unilateral discharge standards are considered less problematic. (It is important to bear in mind that by prescribing standards, the coastal state may then enforce them if a vessel voluntarily enters its ports or internal waters or calls at its offshore terminals, and as otherwise provided in the LOS Convention’s coastal state enforcement regime, below.)

The result is that, within ports, rivers, and certain other internal waters, coastal state sovereignty is not restricted by the Convention. The coastal state may enact and enforce any environmental or safety measure and apply it to all vessels voluntarily within its ports. This includes requirements regarding construction, manning, equipment, and design.

When states establish particular requirements for marine pollution control as a condition of port entry, they may enter into cooperative arrangements with other states to harmonize the requirements (Article 211.3). When such arrangements exist, participating states in the region may collaborate to determine whether a foreign vessel meets the requirements of the state toward which it is proceeding. Thus, when the foreign vessel is navigating within the territorial sea, it must respond to the coastal state’s inquiry as to whether it is proceeding to another state in the region participating in the scheme, and if so, whether it complies with that state’s port entry requirements. Such information requests may in no way prejudice the vessel’s “innocent passage”. (This provision helped set the stage for regional port state control regimes, considered below.)

In the territorial sea, coastal state sovereignty is qualified by the right of “innocent passage” for foreign vessels. The coastal state may enact laws and regulations for innocent passage relating to marine environmental protection, pollution control, navigational safety, and living resources conservation. This includes discharge standards in the territorial sea that are more stringent than international rules and standards. In designating seaports or prescribing traffic separation schemes for foreign ships, the coastal state must “take into account” any recommendations of the IMO but is not bound by them (Article 22). However, rules on the design, construction, manning, or equipment of ships can only be applied to foreign vessels if they give effect to generally accepted international rules and standards (Articles 21.2, 211.4).

Within two areas where international passage rights are vital — international straits and archipelagic seaports — coastal state standard-setting authorities vis-a-vis foreign ships are more restricted than elsewhere in the territorial sea. The pollution control rules that bordering states may adopt are limited to those that give effect to certain international discharge regulations (Articles 42.1.b, 54), and any seaports and traffic separation schemes must be adopted by the competent international organization (Articles 41.4, 53.9, 211.1).14 (The Convention defines specific regimes for “transit passage” by foreign ships and aircraft through and over international straits and for “archipelagic seaports passage” through and over the waters of states that qualify as “archipelagic.”) Section I.D.

In the EEZ, the coastal state may adopt vessel-source pollution rules for foreign vessels that conform to and give effect to generally accepted international rules and standards. Certain additional measures may be applied by coastal states to foreign ships to protect specific areas, if approved by the IMO. These include routing systems designed to minimize the threat of accidents and pollution damage (Article

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14. At the same time, flag state obligations are more explicit. All ships must comply expressly with generally accepted international regulations, procedures, and practices regarding vessel-source pollution and safety at sea, including the International Regulations for Preventing Collisions at Sea (Articles 39.2, 54).
211.1); and more stringent international rules designed to protect clearly defined special areas within the EEZ that meet certain conditions of vulnerability (Article 211.6). These more stringent measures may relate to navigational practices or discharges, but they may not require foreign vessels to observe design, construction, manning, or equipment standards other than generally accepted international rules and standards. In ice-covered areas, coastal States may, subject to specified criteria, adopt and enforce unilateral rules regarding marine pollution from vessels (Article 234). Section VI.A.

*Baselines* are important because they form the outer boundary of internal waters and the starting point for the delimitation of the zones beyond. Normally, the baseline is the low water line, and internal waters landward of the low water line include certain bays as well as rivers, estuaries, and ports. In specific geographic situations, baselines may be drawn that encompass quite extensive (and often vulnerable) marine areas within internal waters. From the perspective of coastal dumping, the effect is that international rules may not apply to these areas.\(^\text{15}\) Section IV.B.

**Enforcement**

The following paragraphs describe the port state and coastal state enforcement authorities provided for in the Convention, which supplement flag state enforcement. The essential distinctions between port and coastal state enforcement are that port state enforcement is not limited to violations in areas subject to that state’s jurisdiction, does not involve physical interference with navigation at sea, and is restricted to violations of applicable international discharge standards. Coastal state enforcement refers to the right of the state *within whose waters any violation may have occurred* to take action against the offending vessel.

Expanded port state enforcement rights are based on the assumptions that at-sea enforcement actions are dangerous, expensive, and impede international navigation more than actions taken while a vessel is in port, and that states have essentially unrestricted authority in their ports. Thus, states are given more latitude to investigate possible violations and institute proceedings while a vessel is in port. However, in specified circumstances, a flag state may pre-empt either port or coastal state proceedings as long as it meets its environmental duties under the Convention (Article 228).

The restriction of port state enforcement to discharge standards is based on the fact that violations of construction, manning, equipment, and design standards endure regardless of where the vessel is located, whereas discharge violations are location-specific. Any state may take enforcement action for the former violations when the vessel is in its ports, internal waters, or territorial sea. For discharge violations outside national jurisdiction or in the EEZ, without port state enforcement, it would be difficult to initiate action.

*Port state enforcement* refers to the right of a state, when a foreign vessel is voluntarily in its ports or at an offshore terminal, to undertake investigations and, if warranted, institute proceedings regarding violations of applicable international discharge standards anywhere in the world. If the violation has taken place within waters under another state’s jurisdiction, either that state, the flag state, or a state

\(^{15}\) For islands on atolls or with fringing reefs, the baseline is seaward of the low-water line of the reef. Where the coastline is deeply indented or if a fringe of islands runs near the coast, straight baselines joining appropriate points (subject to specific conditions and requirements) are permitted. The regime of "innocent passage" is maintained in internal waters created by the use of straight baselines (Article 8.2). In the case of *archipelagic* states, baselines may join the outermost points of the outermost islands and drying reefs (consistent with specific conditions and requirements set forth in the Convention). The regime of archipelagic seaways passage applies to the "archipelagic waters" within these baselines and the adjacent territorial sea. Otherwise, "archipelagic waters" have the same status as territorial waters: the archipelagic state exercises full sovereignty and other states enjoy the right of innocent passage. Internal waters may be delimited within "closing lines", based on the rules for drawing baselines that apply to non-archipelagic states. (Articles 46-54).
damaged or threatened by the discharge violation must request that the port state intervene. (A coastal state within whose waters the violation occurred may request that proceedings instituted by the port state be suspended and the evidence and records transmitted to it, unless the port state itself is damaged or threatened by a discharge violation (Articles 218, 219).

**Coastal state enforcement** refers to the right of the state *within whose waters a violation may have occurred* to take action against the offending vessel. The further offshore the violation, the more limited the coastal state’s enforcement authority. The more serious the incident, the greater the coastal state’s enforcement authority. Thus, when the responsible vessel is voluntarily within its port or at an offshore terminal, the coastal state may inspect and institute proceedings against the vessel, whether the violation has occurred in the territorial sea or the EEZ. When a violation is believed to have occurred as the foreign vessel navigated in its territorial sea, the coastal state may, based on *clear grounds*, physically inspect the vessel in the territorial sea and, if warranted, institute proceedings and detain the vessel. In both cases, the violation in question must be of coastal state laws adopted in accordance with the Convention or of applicable international rules and standards.

When a violation is believed to have occurred as a foreign vessel navigates in the EEZ, the coastal state, based likewise on *clear grounds*, may request while the vessel is within its jurisdiction that it answer questions about its identity and ports of call (facilitating port state action at a later port of call). In keeping with coastal state standard-setting authority in the EEZ, the suspected violation must be of applicable international rules and standards or of national laws that conform to and give effect to them. Further enforcement actions for suspected EEZ violations may be taken by the coastal state only if the violation has resulted in a substantial discharge causing or threatening significant pollution, and if the vessel has refused to give information or the information is manifestly at variance with the factual situation. In that case, the coastal state may physically inspect the vessel. In a final stage, when there is *clear objective evidence* that a violation has been committed in the EEZ, *resulting in* a discharge causing or threatening major damage to the coastline or related interests, or to any resources within its jurisdiction, the coastal state may institute proceedings and detain the vessel. (Article 220)

These specific rights are without prejudice to the right of states to take and enforce measures beyond the territorial sea — proportionate to the actual or threatened damage — to protect their coastline or related interests from pollution due to a maritime casualty (Article 221). The latter provision reaffirms rights specified in the 1969 Intervention Convention, while lowering the threshold for action from “grave and imminent danger” of pollution to pollution “which may reasonably be expected to result in major harmful consequences”.

The right to physically inspect a foreign vessel is limited to verifying that the ship carries certificates and other documents required by generally accepted international rules and standards, unless these are inadequate or there are clear grounds for believing that the vessel’s condition or equipment does not correspond to the documents (Article 226). The LOS Convention’s provisions incorporate the inspection right under MARPOL 73/78 when a vessel is in port, but extend it offshore in limited circumstances. An additional right granted states when a vessel is in port or at an offshore terminal (under both the LOS Convention and MARPOL 73/78) is that when the state ascertains that the vessel is in violation of applicable international rules and standards relating to seaworthiness, and thereby threatens damage to

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16. It is argued that innocent passage may only be prevented if the vessel engages in an act of *wilful and serious pollution contrary to the LOS Convention*, pursuant to Article 220.2 and 19.2h. [Bodansky 1991].

17. *In the contiguous zone*, which may extend up to 24 nautical miles from the baseline, the coastal state may exercise the control necessary to prevent and punish any infringement of its customs, fiscal, immigration, or sanitary laws and regulations which has taken place within its territory or territorial sea (Article 35).
the marine environment, it is obligated to take administrative measures to prevent the vessel from sailing until the violation has been remedied. (Articles 219, 226) The development of regional port state inspection arrangements, below, utilizes these provisions as building blocks to strengthen enforcement regimes.

Beyond the EEZ, enforcement is the responsibility of the flag state. (Port state enforcement authorities apply once the vessel enters internal waters, and coastal states may intervene in the event of a maritime casualty, as noted above.) The flag state is obligated to ensure that an inquiry is held regarding every marine casualty or incident of navigation on the high seas involving a ship flying its flag and causing serious damage to the marine environment (Articles 94.7, 217).

Sovereign Immunity: The Convention's provisions regarding protection and preservation of the marine environment do not directly bind warships or other government-owned or operated ships or aircraft engaged in non-commercial service. Nevertheless, each state must ensure that such vessels or aircraft act in a manner consistent with the Convention, "so far as is reasonable and practicable" (Article 236). If a ship does not comply with its territorial sea rules, the coastal state may require it to leave the territorial sea immediately (Article 30). Section III.E.

[Bodansky 1991; Charney 1994]

Institutional and Legal Developments

The major treaties and other legal instruments developed under IMO auspices are not considered in any detail in this report. Figure 5. They cover pollution prevention, emergency response, safety of life at sea (which includes measures for packing, documenting, and stowing dangerous goods with the objective of reducing the risk of pollution), and liability and compensation for pollution damage. A related IMO agreement, and one which received renewed attention in the wake of the Exxon Valdez oilspill, governs standards for crew training and certification (1978 International Convention in Standards of Training, Certification and Watchkeeping for Seafarers (STCW)). The IMO is taking steps to ensure that these different agreements and related mandatory codes and guidelines are integrated to serve both maritime safety and pollution prevention.

The safety of fishing vessels is covered by the 1977 IMO International Convention for the Safety of Fishing Vessels (Torremolinos), revised by a 1993 Protocol. In its revised form, it explicitly provides for port state control, whereby contracting parties ensure that non-parties do not receive more favorable treatment. A revised STCW is expected to be adopted in 1995, containing a separate instrument on standards for crew training and certification on fishing vessels. The International Labour Organization (ILO) is responsible for treaties on the welfare of seafarers. These agreements clearly affect safety and thus pollution prevention.

Regular meetings at the IMO continually review the implementation of these agreements, develop new legal instruments, and update existing ones. These “generally accepted international rules and standards” are effectively incorporated to the LOS Convention as they enter into force. Section II.C. Within the IMO, the Marine Environment Protection Committee (MEPC) is responsible for coordinating IMO follow-up to Agenda 21. Numerous calls for action in Agenda 21 lend support to initiatives already underway. For a summary of major IMO initiatives related to Agenda 21, see Nolkaemper 1993. Other regular reviews are noted in footnote 2.

In an innovative exercise of the right of port state control, several European countries concluded a non-binding Memorandum of Understanding on Port State Control in Paris in 1982. Its purpose is to
Figure 5
Agreements Related to Vessel Source Marine Pollution

Principal Marine Focus


International Convention relating to Intervention on the High Seas in Cases of Oil Pollution Casualties, Brussels (1969), and 1973 Protocol - IMO. (INTERVENTION)

Convention relating to Civil Liability in the Field of Maritime Carriage of Nuclear Material, Brussels (1971) - IMO.


Convention on the International Regulations for Preventing Collisions at Sea, London (1972) - IMO. (COLREG)

- Annex I - Oil Discharges.
- Annex II - Noxious Liquid Substance Discharges.
- Annex III - Harmful Substances in Packaged Form and Containers.
- Annex IV - Sewage Discharges.
- Annex V - Garbage Discharges.


Merchant Shipping (Minimum Standards) Convention (1976) - International Labour Organization (ILO) 147.

International Convention for the Safety of Fishing Vessels, Torremolinos (1977), and 1993 Protocol - IMO.


Convention Concerning Seafarers' Welfare at Sea and in Port (1987) - ILO 163.


Enforcement:

Memorandum of Understanding on Port State Control (Europe), Paris (1982).


Memorandum of Understanding on Port State Control in the *Asia Pacific* Region (1993).

*Soft Law:* (See also figures 4 and 6.)


**Major Related Agreements**

**Aircraft:**

Convention on International Civil Aviation, Chicago (1940) - International Civil Aviation Organization (ICAO).

reinforce flag state responsibilities, not replace them. The parties undertake to inspect a target 25% of the vessels voluntarily entering their ports each year to determine whether they are in compliance with specified international treaties. The results are entered in a computerized data bank, shared among the members and with flag states, and deficiencies reported to the IMO. In this way, substandard ships may be detained until serious problems are remedied and future ports of call made aware of any deficiencies. Inspections cover technical requirements as well as “the human element” governed by IMO treaties (MARPOL 73/78, SOLAS, STCW, COLREG, LOAD LINES), as well as ILO treaties on standards for seafarers. In 1993, the member States of the European Union announced a common policy on maritime transport to improve enforcement in waters under their jurisdiction. Among other measures, it strengthens port state control.

As a result of the European experience, the IMO in 1991 endorsed regional port state control arrangements and, together with the secretariat of the Paris Understanding, has actively supported the development of such arrangements. Drawing on a U.S. Coast Guard database, it is working on an international ship information database targeting substandard ships. Regional agreements were concluded in South America in 1992 and in the Asia Pacific region in 1993. Substantial progress has been made on a Caribbean agreement, and discussions continue in several other regions. Further developments with respect to inter-regional exchange of port state control data are expected.
There are many worthy initiatives related to vessel-source pollution control that may be pursued in the IMO and, in some cases, regional fora. These include:

- further specification of laws and regulations that may be enacted by the coastal state regarding innocent passage in the territorial sea — that would be considered consistent with the Convention’s requirement that they not hamper “innocent passage”

- in order to protect the marine environment, control pollution, and conserve living resources. [Bodansky 1991]

- further specification of laws and regulations that may be enacted by states bordering congested international straits and archipelagic states to prevent and control pollution, consistent with Convention regimes on international passage rights;

- international agreement on special precautionary measures and documentation for nuclear-powered ships and ships carrying nuclear or other inherently dangerous or noxious substances engaged in innocent passage, as contemplated in Article 23 of the LOS Convention;¹⁸ See also Section IV.B.

- further specification of appropriate navigation practices, ships’ routeing measures, reporting measures, and vessel traffic service systems, as well as procedures for international approval of mandatory application of these measures, in conjunction with;

- further development and application of concepts for protecting vulnerable marine and coastal areas from maritime activities, including ice-covered areas [Nollkaemper 1993, “Reports” (MEPC 1992 and 1994), Peet]. Sections VI.A and VI.B.

- collective establishment among the Arctic rim nations of requirements for navigation in Arctic and sub-Arctic waters, based on Article 234; Section VI.B.

- designation of the Arctic as a “special area” pursuant to the MARPOL 73/78 annexes; Sections VI.A and VI.B.

- further development of coastal and port state enforcement authorities, including coastal state enforcement of mandatory navigation practices and routeing measures; [Bodansky 1991, Nollkaemper 1993] Section VI.A and VI.B.

- the development and extension of cooperative port state control arrangements in other regions.

B. Dumping and Wastes Management

The LOS Convention’s provisions on dumping (deliberate at-sea disposal of wastes) are reinforced by the more specific 1972 Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter (London Convention), which in turn is supplemented by several regional dumping agreements. Figure 6. The London Convention was developed in parallel with preparations for the 1972 Stockholm Conference. Of major concern at the time was the disposal of radioactive wastes and other hazardous substances in international waters beyond the then narrow band of coastal state jurisdiction. The LOS Convention significantly extends coastal state standard-setting and enforcement authority throughout the EEZ and with respect to dumping on the continental shelf.

It was understood during the LOS negotiations that the global rules and standards referred to as minimum standards for national dumping laws were those set forth in the London Convention. States are also encouraged to establish regional rules. Every party to the LOS Convention must enact and enforce measures that are no less effective than the London Convention, even if it is not a party to the London Convention.

The LOS Convention and the London Convention both prohibit the dumping of wastes or other matter without the express prior approval of government authorities, through a permit. The London Convention contains a "black list" of Annex I substances that may not be dumped at sea (e.g., high-level radioactive wastes, persistent plastics, mercury); a "grey list" of Annex II substances that may be dumped, subject to strict controls and a special permit; and Annex III criteria for determining whether other substances may be dumped at sea, pursuant to a general permit. Under the LOS Convention, permitting and enforcement authority (for vessels and aircraft) extend to the flag state or state of registry and to the state in whose territory (and territorial sea) the matter is loaded, as with the London Convention. They also extend to the state whose fixed or floating platforms are believed to be engaged in dumping and at whose offshore terminals loading of wastes occurs. In addition, the LOS Convention requires the express prior approval of the coastal state for dumping in the territorial sea, EEZ, or onto the continental shelf. (Articles 210, 216) Moreover, before dumping is permitted, the coastal state is required to consider the matter with other states which, by reason of their geographical situation, may be adversely affected (Article 210.5).

**Institutional and Legal Developments**

The London Convention has evolved substantially since 1972. This report will not consider that evolution in detail. Recent developments include decisions to prohibit the ocean disposal of low-level radioactive wastes and ocean incineration of industrial wastes and sewage sludge, effective February 20, 1994; and to prohibit ocean dumping of industrial wastes, effective December 31, 1995. (Ocean incineration of noxious liquid wastes by the parties effectively terminated in 1991, when the last incineration vessels were taken out of service.)

In its long-term strategy, the London Convention contemplates a multi-media assessment, where at-sea disposal would be assessed in comparison with land-based options and risks, as contemplated in Article 195 of the LOS Convention. Such an analysis of alternative impacts, hazards, risks, and costs entails a good deal of information and sophisticated comparisons. Today, there is increasing support for prohibitions on dumping, combined with strategies to minimize the generation of wastes.

For the most part, the regional agreements do not elaborate substantially on the 1972 Convention. Certain decisions at the regional level, however, have set the pace for parties to the London Convention; for example, the decision in the Northeast Atlantic to ban ocean incineration of industrial wastes. On the other hand, the bans adopted pursuant to the London Convention are not always reflected at the regional level, several regions are not covered by agreements, and many states are not parties to the London Convention. With the entry into force of the LOS Convention, the London Convention requirements become binding on all contracting parties of the LOS Convention, even if they are not parties to the London Convention.

*The regional agreements have evolved in one interesting respect — their geographic scope.* As the dumping of noxious and hazardous materials in international waters has increasingly been brought under control, concern over coastal dumping of dredged materials and domestic and municipal wastes has grown. (Globally, over 80% of dumped materials result from dredging, most of it associated with operations to keep harbors, rivers, and other waterways from silting up. [GESAMP 1990] This material
Figure 6
Agreements Related to At-Sea Dumping and Wastes Management
Including Nuclear Contamination

Principal Marine Focus


Protocol for the Protection of the South Pacific Region by Dumping, Noumea (1986).


Nuclear/Radioactive Contamination:


Treaty for the Prohibition of Nuclear Weapons in Latin America, Mexico City (1967), and Protocols.


South Pacific Nuclear Free Zone Treaty, Raratonga (1985), and Protocols.


Major Related Agreements


Convention on Civil Liability for damage resulting from activities dangerous to the environment (covers dangerous substances; facilities for wastes treatment, incineration recycling, and handling; and genetically modified organisms and other micro-organisms), Lugano (1993) - Council of Europe.

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54
Draft Nuclear Safety Convention (covering civilian land-based nuclear power plants) and proposed international convention on the safety of radioactive waste management - IAEA.

**Soft Law:**

IMO: General Guidelines for Classification of Substances to Annexes I and II to the London Dumping Convention, 26 October 1979.


may contain serious accumulations of pollutants.) The early dumping agreements did not cover *internal waters, landward of the baselines, Section IV.A.* States were more concerned with foreign vessels dumping further offshore, and they were wary of international rules intruding into areas where national sovereignty was absolute. To tackle these new concerns, the 1992 Baltic and Northeast Atlantic agreements expressly cover dumping in internal waters. Proposals to amend the London Convention to include internal waters are currently under consideration, and the issue is beginning to be considered in the Mediterranean regional forum. In addition, the effects of dredging on coastal areas is a subject increasingly encompassed in the regional framework agreements and in protocols on *land-based sources of marine pollution*, below. Moving seaward, the high level of concern among the South Pacific countries over the dumping of nuclear wastes, combined with the configuration of the islands’ 200-mile zones, produced a dumping agreement (1986) extending beyond the EEZ to cover the pockets of high seas that are surrounded by the islands’ EEZs.

*The discussion of a long-term strategy for wastes management within the context of the London Convention, growing concern with coastal dumping, and emphasis today on pollution prevention all lend support to an integrated approach to wastes reduction, management, and disposal. This would entail consideration of wastes generated on land that may be dumped at sea; wastes carried out to sea by rivers, tides and currents; wastes deposited in coastal landfills or marshes from which pollutants are leached into the marine environment; or wastes received in port from ships. An integrated approach is reinforced by the duty set forth in the LOS Convention, and reiterated in most of the regional agreements, not to transform one type of pollution into another (Article 195).*

55
Hazardous Substances and Nuclear Contamination

The process for assessing the hazards and risks of substances that may stress the marine environment was formalized with the implementation of the London Convention and MARPOL 73/78. The International Atomic Energy Agency (IAEA) is responsible for assessment of radioactive matter under the London Convention, and GESAMP developed the hazard profiles used for chemical substances transported by sea, pursuant to the MARPOL 73/78 Annexes. As a result, thousands of substances that may be disposed of at sea or transported by sea have been classified in relation to their effects on the marine environment. These profiles today inform (1) the deliberate disposal of hazardous and toxic wastes at sea, regulated by the dumping agreements; (2) maritime transport of hazardous substances and substances derived from normal ship operations, regulated by IMO treaties on vessel safety and pollution control; and (3) efforts to eliminate and reduce pollution from land-based activities, where toxic and hazardous substances have generally been given priority, below.

The effect of the LOS Convention’s provisions on navigational safety and vessel-source pollution is to require Convention parties to adopt measures no less effective than generally accepted international rules and standards regarding the transport, discharge, or dumping of hazardous materials. They also permit coastal and port states to enforce those standards, and permit coastal states to establish more stringent requirements for specific areas if approved by the IMO, with which foreign vessels must comply. The Convention requires that in exercising “innocent passage” in the territorial sea, foreign ships carrying nuclear or other inherently dangerous or noxious substances and nuclear-powered ships carry documents and observe special precautionary measures established for such ships by international agreements (Article 23).

The 1989 Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal represents the final link in agreements governing hazardous substances. It governs import and export of such wastes, as well as passage through third countries. In general, it promotes minimizing the generation of hazardous wastes, disposal in the state in which they were generated, and the responsibility of this “state of origin” for transport and disposal that does not endanger either human health or the environment. Radioactive wastes covered by other international control systems (e.g., London Convention) are excluded from the scope of the Basel Convention. There are proposals to amend the London Convention to prohibit waste exports to non-parties [UNGA: LOS 1993].

At the regional level, the African Bamako Convention supplements the Basel Convention. The Black Sea Convention suggests that a protocol may be adopted on the transboundary movement of hazardous wastes and any illegal traffic therein. This issue has been discussed in the context of the Wider Caribbean, Kuwait, Pacific, and Mediterranean regions as well. In Antarctica, the 1959 Treaty prohibits the disposal of any radioactive waste in Antarctica and, pursuant to Annex III of the 1991 Protocol, establishes a “cradle-to-grave” system for the management of wastes generated in Antarctica. The Basel Convention prohibits the export of wastes within its scope to the Antarctic Treaty area for disposal. Under the 1991 Arctic Strategy, hazardous substances and radioactivity are among the six priority action areas.

In relation to the LOS Convention, the Basel and Bamako Conventions preserve the standard-setting and enforcement rights of coastal and port states regarding vessel-source pollution and dumping, together with the exercise by ships and aircraft of international navigation and overflight rights. Coastal state obligations to protect and preserve the marine environment in offshore zones are reinforced by the Basel Convention’s requirements for environmentally-sound management and disposal of hazardous wastes and other matter at the national level and with respect to any transboundary movements.
The threat of contamination as a result of nuclear activities has long been a particular concern of the international community. Agreements banning underwater weapons testing and seabed emplacement of nuclear weapons were concluded decades ago. More recent agreements on accidents at nuclear facilities address planning and response for pollution emergencies and related liability. These instruments clearly encompass pollution of rivers and coastal areas. Under the London Convention, the disposal into the seabed and subsoil of wastes or other matter (read “radioactive”) has generally been considered “dumping.” Current proposals would formally amend the Convention to include the sub-seabed. The decision to ban ocean disposal of low-level radioactive wastes in 1994 supplements the Convention’s original “black-listing” of high level radioactive wastes.

At the regional level, it is in the South Pacific, where nuclear testing and the risks to human health and the environment have been real considerations, that the regional marine agreement explicitly calls for measures to prevent, reduce, and control pollution from the storage of toxic and hazardous wastes and from the testing of nuclear devices, and prohibits the storage of radioactive wastes or other radioactive matter. Both Pacific agreements ban seabed burial of radioactive wastes or other radioactive matter (1989 South East Pacific Protocol on radioactive contamination, 1986 South Pacific Convention). The Bamako Convention, unlike the Basel Convention, includes radioactive wastes, bans all at-sea dumping of wastes covered by the Convention, including in internal waters, and in addition bans all seabed and sub-seabed disposal of such wastes. Further guidance on the transboundary movement of radioactive wastes was adopted by the IAEA in 1990. Revelations in 1992-93 about the dumping of radioactive wastes in the Arctic have given added impetus to the Arctic Monitoring and Assessment Program, sponsored under the auspices of the Arctic Strategy.

The network of agreements for dealing with the risks of pollution by hazardous and toxic substances is far from complete, as considered by the U.N. Commission on Sustainable Development at its 1994 meeting. It endorsed the decisions of the International Conference on Chemical Safety (Stockholm, April 1994) to establish an Intergovernmental Forum on Chemical Safety and certain priorities for cooperative action. These include expanding and accelerating international assessment of chemical risks and information exchange on toxic chemicals and risks; measures to strengthen national capabilities for dealing with such risks and illegal traffic in dangerous products; improved delineation and coordination of responsibilities among governments as well as international organizations having responsibility for chemical safety; and promoting harmonized classification and labelling of chemicals.

An easy-to-access and reliable database on toxic and hazardous substances, their risks and pathways related to the marine environment, and appropriate prevention and response measures would make an important contribution to reducing marine pollution from such substances. The International Forum on Chemical Safety has the potential to promote a well-functioning, integrated database(s) and referral system for governments and international agencies as well as non-governmental actors. It should specifically address the needs of marine pollution prevention as well as pollution of other environments.

See suggestions at Section IV.A. on special precautionary measures for nuclear-powered ships or ships carrying nuclear or other hazardous substances, and on requirements for Arctic navigation.

C. Land-Based Sources and Activities

The unfortunate “catchword” — land-based sources of marine pollution (LBSMP) — fails to convey the full scope of contributing factors from inland and coastal activities. As noted in Section III.B., the concept of marine pollution is being reformulated to encompass the broader implications of marine and
coastal degradation and the health of marine ecosystems. In the context of "land-based" contributions, Agenda 21 has influenced a reformulation to "land-based activities", in order to capture all of the following:

- pollution discharged directly to the sea from point sources, such as outlets for industrial wastewater or sewage treatment plants, or other pipelines and conveyances carrying, for example, domestic wastewater;
- diffuse, non-point sources, or "run-off" that flows directly into the sea, such as motor oils or agricultural chemicals washed into the sea by rainwater, or untreated sewage;
- all point and non-point sources that contribute to pollution carried by rivers, estuaries, canals, and other watercourses, including underground watercourses, into the sea;
- sediments resulting from land erosion and land use practices in upstream and coastal areas; and
- the deposition into the marine environment of most airborne pollutants. (The LOS Convention considered pollution from or through the atmosphere separately from land-based sources, but the LBSMP agreements have subsequently encompassed, at a minimum, air pollution emitted from sources on land and, in some cases, from offshore facilities. See "Airborne Sources", below.)

The LOS Convention requires states to cooperate in formulating and elaborating international rules, standards, and recommended practices and procedures for the preservation and protection of the marine environment (Article 197). Every state must implement and enforce rules and standards specified in international agreements to which that state is a party, such as a regional agreement or protocol ("applicable international rules", Article 213). In addition, national laws and regulations must take into account other international rules and standards or recommended practices and procedures (Article 207.1). The latter may include non-binding global or regional guidelines that have received widespread endorsement. States must endeavor to harmonize their policies, specifically at the regional level (Articles 207.3, 123). Uniquely for land-based sources of marine pollution, states, in seeking to establish global and regional rules, are permitted to take into account "the economic capacity of developing states and their need for economic development" (Article 207.4). "Characteristic regional features" may also be taken into account whenever rules are developed at the regional level (Articles 197, 207.4). Sections II.A. and II.B.

The thrust of the LOS Convention’s provisions may be interpreted today in light of developments associated with the 1992 Rio Conference and recent international environmental agreements; that is, new and non-traditional approaches responding to differing socio-economic and geographic circumstances may be preferred to uniform global standards, and they may alleviate the concern that imported standards and practices from the North could stunt national growth in the South. Coupled with external assistance, higher national and regional standards may be achieved. Sections I.C. and VII.

Institutional and Legal Developments

Human understanding of the scope of LBSMP has evolved significantly since UNCLOS III completed these texts. The LOS Convention emphasizes efforts to minimize the release of toxic, harmful, or noxious substances, especially those which are persistent (Article 207.5). This remains essential. But there is a far greater appreciation today of the extent and seriousness of diffuse, non-point sources, toxic or otherwise, and in particular of the significant contributions made by inland/upstream and airborne sources. Upstream land use and agricultural practices may significantly alter dynamic coastal processes
and ecosystems. In the coastal zone, the growing intensity of human activities has heightened concern over the impacts of construction, development, and dredging—on coastal wetlands, estuaries, lagoons and other partially-enclosed areas, and on sensitive ecosystems like mangroves and coral reefs. Both global ocean assessments [GESAMP 1982, 1990] underscored these issues. *Figure 2.*

The UNEP Governing Council in 1982 identified LBSMP as one of three priorities for the development of environmental law. Following expert group meetings from 1983 to 1985, the Governing Council adopted the Montreal Guidelines for the Protection of the Marine Environment Against Pollution from Land-based Sources. These drew on experience at the time with the existing regional programs in the Northeast Atlantic, the Baltic, and the Mediterranean. By emphasizing planning strategies and environmental impact assessment, they set the stage for a more comprehensive approach to the causes of marine and coastal degradation and for evaluation of potential adverse impacts in the planning stages, as new development policies, projects, and practices are considered. The Guidelines cite as regional planning strategies coastal zone management, watershed or drainage basin planning, and the identification, based on specific criteria, of areas requiring special protection.

The six regional LBSMP agreements reflect to some extent the broad substantive and geographic scope of the problem and the approaches outlined in the Montreal Guidelines, in word if not in practice. They extend geographic coverage to internal waters and, in the case of watercourses, up to the freshwater limit. Under the 1992 Baltic Sea agreement, the landward boundary of internal waters is to be designated by each state. The Mediterranean and Kuwait Protocols explicitly include saltwater marshes communicating with the sea and, in the case of Kuwait, intertidal zones. Two of the regional conventions include the coastal zone as well as the sea area (West and Central Africa, South East Pacific).

The substantive scope of some of the regional conventions includes obligations to prevent, reduce, and control coastal erosion caused by human activities (West and Central Africa, Red Sea, South East Pacific, East Africa, South Pacific), including pollution caused by land reclamation and coastal, estuarine, or river dredging (Red Sea, East Africa, South Pacific), and by coastal engineering, mining activities, and sand removal (South Pacific). The Kuwait LBSMP protocol envisages regional regulations and programs to control wastes from coastal development.

*Agenda 21, chapter 17,* made a major contribution to advancing these issues in its emphasis on an integrated approach to marine and coastal areas and by reformulating the problem to encompass land based activities. It refers to all sources of pollution as well as the physical destruction of coastal and marine areas and related watershed management practices. In keeping with its overall approach, *Agenda 21* promotes economic incentives and clean production techniques/practices and the development of guidance on appropriate technologies.

*Agenda 21* called on UNEP to convene an inter-governmental meeting on protection of the marine environment from land-based activities. The November/December 1995 meeting in Washington is to identify approaches for addressing land-based activities that can be tailored to particular economic and/or geographic circumstances; areas requiring and opportunities for international cooperation on a bilateral, regional, and global level; and criteria for development and technical assistance projects. The preparatory process has supported the development of a global action program.

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19. The Montevideo Programme for the Development and Periodic Review of Environmental Law was adopted in 1982; the Montreal Guidelines in 1985. The Montevideo Programme was reviewed during meetings in 1991 and 1992. This review influenced the UNCED recommendation that the UNEP Governing Council convene a further global conference in LBSMP.
Figure 7
Agreements Related to Land-Based (and Airborne) Sources of Marine Pollution

Principal Marine Focus


Protocol for the Protection of the Mediterranean Sea against Pollution from Land-Based Sources, Athens (1980).

Protocol for the Protection of the South-East Pacific against Pollution from Land-Based Sources, Quito (1983).

Protocol for the Protection of the Marine Environment against Pollution from Land-Based Sources, Kuwait (1990).


Major Related Agreements


Sea-Level Rise:


Airborne Pollution:


Protocol on Substances that Deplete the Ozone Layer, Montreal (1987).


Soft Law:

WHO/FAO Codex Alimentarius, regarding standards for food products, including fish.

WHO: Guidelines for Drinking Water Quality.


Framework Convention on Climate Change (FCCC): In the context of developing strategies to mitigate and adapt to sea level rise, the FCCC and the regional marine agreements may reinforce each other. Efforts to protect vulnerable ecosystems, such as coral reefs and mangroves, not only enhance environmental and habitat protection but also strengthen coastal barriers to sea level rise. Under the Climate Convention, special attention is to be given to small island developing countries and developing countries with low-lying coastal areas (Article 4.8). Emphasis is also given to promoting conservation and enhancement of sinks and reservoirs of greenhouse gases, including oceans and coastal and marine ecosystems (Article 4.1.d).

The progress achieved on LBSMP at the regional level falls far short of what is desirable. Several regions are not covered, and implementation of existing agreements has been slow. In some regions, untreated domestic and industrial wastes are disposed directly into the sea and into rivers flowing to the sea; in others, point sources are controlled but efforts to reduce non-point sources such as agricultural run-off are only beginning. National laws are usually limited in scope or unenforced, and very few countries have tackled non-point sources. IUCN members could contribute substantially to the improvement of existing LBSMP agreements and the conclusion of new ones. In the Wider Caribbean, a decision to negotiate a protocol on LBSMP was approved in December 1994.

IUCN has supported a "regional seas" type of agreement in the Arctic Ocean, specifically to control land-based sources of pollution (Resolution 19.97). The governments involved in the Arctic Strategy are considering the development of further legal instruments.

The exchange of information among regions and nations is inadequate, with respect to sources and risks, inventory and assessment techniques, environmental planning and monitoring strategies, clean technologies and production processes, and other practical measures to prevent and reduce marine and coastal degradation and the circumstances in which they are appropriate. It is only recently in the 1992 Baltic and Northeast Atlantic agreements that clean production alternatives have been adopted and efforts launched to develop a harmonized approach to best available technology and best management practices. Cost-effective monitoring and assessment techniques to improve the availability of reliable information on non-point sources are urgently needed. An improved system for exchanging relevant information among nations and regions is critical. Sections VII and VIII.

The 1995 UNEP meeting and related regional efforts on LBSMP offer a "wedge" of opportunity to promote integrated approaches to the prevention, reduction, and control of pollution/wastes affecting the marine and coastal environment, including appropriate approaches to integrated coastal and watershed management. That is, where individual pollutants or coastal development questions may lead to narrowly focused national laws or international agreements, the cumulative effects of nutrients, contaminants, and sediments manifested in coastal areas may offer a handle for more effective pollution/wastes management strategies and for assessment and planning of coastal and watershed activities that takes account of impacts on marine ecosystems. They may also permit an integrated approach to

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20. Growing interest in several regions in free trade agreements offers opportunities (and pitfalls) to advance environmental protections (marine and coastal, freshwater, air). The 1994 meeting of ASEAN Ministers for the Environment adopted targets and timetables to achieve harmonized ambient air and river quality standards, bearing in mind the governments' 1992 decision to establish an ASEAN Free Trade Area. The Strategic Plan of Action contemplates the ultimate establishment of long-term goals for coastal water quality. [ASEAN: Strategic Plan] In the Wider Caribbean, the impetus for regional collaboration on LBSMP stems in part from regional free trade initiatives and possible participation in NAFTA. [Kimball 1995; UNEP: Appropriate Approaches 1994].

61
land-based (including airborne), coastal, and offshore sources of marine pollution. Moreover, integrated approaches facilitate the identification of priority actions for implementation. Sections VI.C., VI.E., and VIII.

An integrated approach to the causes of marine and coastal degradation, through inventory, monitoring, and assessment, can help identify priority actions. In this respect, the Arctic Environmental Protection Strategy appropriately links monitoring and assessment with the action program for pollution control. The North Sea Task Force offers another example of a useful mechanism for assisting decision-makers determine priorities. Section VIII.

An integrated approach to coastal area planning and management, based on techniques and processes updated regularly with lessons learned, is essential. LBSMP provides the legal context for this management approach. IUCN has already made substantial contributions in this regard and should continue to refine appropriate approaches, drawing on its members' worldwide experience and expertise. [Pernetta and Elder (IUCN 1993)] IUCN has urged governments to develop global networks to enhance management capacity and training to maximize sharing between nations and regions regarding experience, research, and technical information on integrated management of coastal, shallow sea, and marine environments and resources (Resolution 19.46).

That the 1995 UNEP meeting is explicitly tasked with identifying criteria for assistance projects in relation to the broad scope of land-based activities. This has the potential to influence significantly how major donors take these concerns into account and establish priorities. Section VIII.

D. Offshore Seabed (Continental Shelf) Activities Subject to National Jurisdiction

The LOS Convention requires coastal states to adopt laws and regulations to prevent, reduce, and control pollution of the marine environment arising from or in connection with seabed activities subject to their EEZ and continental shelf jurisdiction, and from artificial islands, installations and structures under their jurisdiction in the EEZ and on the continental shelf (Articles 208, 56). As international rules and standards emerge, national rules must be no less effective. States must endeavor to harmonize their policies, specifically at the regional level (Articles 208.4, 123). A state must also enforce any rules and standards specified in international agreements to which that state is a party, such as a regional agreement or protocol ("applicable international rules") (Article 214).

21. An experts meeting on LBSMP in the Wider Caribbean Region in March 1994 recommended that the proposed protocol encompass all point and non-point sources, including pollution reaching the marine environment through airborne deposition and freshwater courses and pollution from coastal development. It recommended also that the protocol include discharges from offshore structures within national jurisdiction, consistent with MARPOL 73/78; provide that riparian nations cooperate to ensure the full application of the protocol in shared watercourses; and ensure that special area and species designations in the region are reinforced by control measures for land-based sources. The term "special area" is understood to encompass designations pursuant to MARPOL 73/78 and the regional protocol on protected areas and wildlife. Some of the experts took the view, because dumping is closely related to management and disposal of land-based wastes, particularly in island states, that it should be addressed in a regional instrument (consistent with the London Convention), either as an annex to the protocol or in a separate instrument. Others took the view that dumping was more appropriately dealt with through the London Convention. [UNEP: Report 1994, Annex IV].

22. The interplay between international legal instruments and the policies and practices of international assistance agencies has long been recognized. The Montreal Guidelines are noted to have influenced the World Bank's Guidelines on Marine and Coastal Pollution. [UNEP: The Montevideo Programme 1991].
**Figure 8**
Agreements Related to Marine Pollution from Continental Shelf/Offshore Seabed Activities

**Principal Marine Focus**


**Soft Law:**


The coastal state's obligations regarding offshore structures include advance notice, the possible establishment of safety zones around them, and permanent warning of their existence. Any abandoned or disused structures must be removed to ensure safety of navigation and with due regard to fishing and the protection of the marine environment (Articles 60, 80). In view of possible interference with or hazards to navigation, the LOS Convention contemplates that generally accepted international standards may be established by competent international organizations regarding removal and safety zones. It also gives particular emphasis to minimizing pollution from installations and devices used in offshore seabed activities, with attention to measures designed to prevent accidents and deal with emergencies, to ensure the safety of operations at sea, and to regulate the design, construction, equipment, operation, and manning of such installations and devices (Article 194.3.c). "Dumping" is defined to include any deliberate at-sea disposal of wastes or other matter from platforms or other man-made structures, as well as the deliberate disposal of man-made structures (Article 1.5.a).

**Institutional and Legal Developments**

The international dumping agreements cover fixed or floating platforms within coastal state jurisdiction operating for the purpose of deliberate at-sea disposal (and treatment) of wastes, as well as any deliberate disposal at sea of man-made structures such as offshore platforms. The discharge at sea of wastes and pollution, including sewage and garbage, incidental to or derived from the normal operation of fixed or floating platforms is covered in part by MARPOL 73/78 (which includes them in the definition of ships). Neither the London Convention nor MARPOL 73/78, however, covers the discharge of harmful
substances or the disposal of wastes or other matter directly arising from, or related to, the exploration, exploitation, and associated offshore processing of seabed mineral resources. Nevertheless, MARPOL 73/78 Annex I requires drilling rigs and other fixed or floating platforms engaged in such activities to comply with certain oil discharge requirements, in particular in special areas (Regulation 21). Response to marine pollution emergencies, including those from offshore facilities, is considered in Section III.D.

UNEP has developed two relevant sets of guidelines: those on offshore oil and gas drilling within the limits of national jurisdiction (1982) and the Montreal LBSMP Guidelines (1985). The latter address marine pollution from activities on offshore fixed or mobile facilities to the extent that they are not covered by other international agreements.

In 1989, the IMO adopted non-binding Guidelines and Standards for the Removal of Offshore Installations and Structures on the Continental Shelf and in the EEZ. They are intended to guide states in implementing LOS Convention articles 60 and 80. The bottom line is that such structures are to be removed, but certain criteria are set forth for determining whether an offshore structure may be left in place, including for use as an artificial reef. The rules cover maintaining abandoned rigs, and techniques for dismantling structures in an environmentally sound manner.

The regional agreements cover pollution from seabed activities in the same general manner as the LOS Convention. Figure 8. Supplementary agreements of two types have been concluded. These distinguish offshore minerals development (specifically, oil and gas development) from other types of seabed activities. The 1980 Mediterranean LBSMP Protocol covers fixed structures other than those used for minerals exploration and exploitation, and a new protocol to govern offshore minerals development is likely to be adopted by the end of 1994. The 1978 Kuwait treaty covers fixed or mobile offshore facilities serving purposes other than exploration and exploitation of the seabed/continental shelf in its 1990 LBSMP Protocol, while offshore oil and gas development is addressed in a 1989 Protocol. The 1992 Northeast Atlantic and Baltic agreements cover, in annexes, discharges and emissions from offshore installations and pipelines related to oil and gas activities. The Baltic agreement requires the entire removal of abandoned or disused rigs.

In effect, responsibility for the progressive development of international rules and regulations on pollution from offshore facilities is a bit murky. The discharge of wastes and pollution from the operation of offshore facilities that are not engaged in minerals development may be considered by the IMO. It appears unlikely, however, that further work on global rules and standards will be undertaken, unless they are related directly to maritime safety. Follow-up at the regional level is more likely, and more in keeping with the LOS Convention's emphasis on regional harmonization.

The further development of international requirements and guidance for facilities engaged in offshore minerals development and processing is needed. As new agreements are formulated, it may be useful to consider the 1989 Kuwait agreement on offshore seabed minerals activities, for two reasons. First, based on the definition of pollution, measures are required to prevent, reduce, and control marine pollution from all possible sources, including, importantly, airborne sources such as flared gas. Second, by narrowing its focus to the oil and gas industry, the Kuwait agreement specifies detailed rules and practices tailored to the activity and encompasses such associated activities as garbage, sewage, and related wastewater generated by the facility; marine debris resulting from operations; a moored tanker used temporarily for oil storage; and any at-sea treatment or pipeline transport to shore. Requirements include a detailed plan showing intended chemical use and possible risks; prior environmental impact assessment and advance circulation for comment to other contracting parties; as well as contingency

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23. Resolution A.672(16), 19 October 1989. These do not apply to installations used for carrying out deep seabed mining activities in the area beyond national jurisdiction, which are subject solely to rules, regulations, and procedures to be adopted by the International Seabed Authority (Article 147).
plans and equipment to minimize the risk of accidental pollution and respond promptly to pollution emergencies. The removal of offshore installations in the interests of fishing and safety of navigation is also provided for.

In the Arctic region, and bearing in mind the Arctic Environmental Protection Strategy, IUCN has urged Arctic governments to adopt strict guidelines to manage and control offshore development (Resolution 19.97).

As the types and uses of offshore structures increase—from artificial reefs and mariculture to power plants, ports, airports, and recreational facilities—further consideration should be given to the most effective means of addressing pollution from these structures. This should include sector- and activity-specific measures and at the same time ensure that the cumulative impacts of offshore and other activities are taken into account in any sub-region or region. Sections VI.E. and VIII.

E. Airborne Sources: Vessels, Aircraft, Land-Based Sources, and Offshore Facilities

The LOS Convention covers pollution of the marine environment from or through the atmosphere. States are required to adopt and enforce laws and regulations to prevent, reduce, and control such pollution applicable to national airspace and to ships and aircraft flying their flag or of their registry. These rules must take into account internationally-agreed rules and standards and recommended practices and procedures, and they must implement applicable international rules and standards. For vessels and aircraft, applicable international rules and standards are developed by the IMO and the International Civil Aviation Organization (ICAO), respectively. (Articles 39.3, 54, 212, 222).

Institutional and Legal Developments

The IMO has considered measures to reduce air pollution from ships since 1988. It established a working group in 1990 to develop agreed measures, which include targets and timetables for reducing emissions from ozone-depleting CFCs, halons, exhaust gases, and volatile organic compounds that result from ships' fuels, machinery, and cargo handling operations. Emissions from at-sea incineration have also been addressed, but as a result of recent decisions under the international dumping agreements, these will be curtailed. Section IV.B. A new annex to MARPOL 73/78 on air pollution from ships is expected to be completed in 1994.

For aircraft emissions, ICAO has since 1981 established worldwide uniform certification procedures, based on common testing standards, to ensure that aircraft engines conform with agreed emissions levels. In accordance with the 1944 Chicago Convention on International Civil Aviation, ICAO standards are considered mandatory over the high seas. Subject to notification to ICAO, member nations within national territory may deviate from these standards.

The regional marine agreements do not cover airborne pollution from ships and aircraft, presumed dealt with in IMO and ICAO. All of the regional agreements cover airborne pollution from sources on land. Figure 7. These sources may be included in the definition of LBSMP (e.g., 1974 Baltic; 1992 Northeast Atlantic); included in an article or a protocol dealing with LBSMP (1978 Kuwait; 1980 Mediterranean Protocol; 1982 Red Sea; 1983 Southeast Pacific Protocol; 1992 Black Sea Protocol); or covered in separate articles on airborne pollution from land, as in the LOS Convention (1981 West and Central Africa; 1983 Caribbean; 1985 East Africa; 1986 South Pacific).

24. The 1992 Black Sea agreement does apply to ships and aircraft, but merely references generally accepted international rules and standards. The 1981 West and Central African agreement covers all "pollution resulting from or transported through the atmosphere".
Regarding implementation under the regional agreements, however, very little has been done. A technical annex to the Mediterranean LBSMP protocol on atmospheric pollution, developed with assistance from the World Meteorological Organization (WMO), was adopted in 1991. In Europe, protocols to the 1979 Convention on Long-Range Transboundary Air Pollution (LRTAP) specify requirements for reducing land-based emissions of sulphur, nitrogen oxides, and volatile organic compounds. These effectively cover land-based sources of marine pollution. Since 1988, land-based air pollution inputs to the Baltic Sea have been monitored under the LRTAP monitoring program. In 1993, the contracting parties to the Baltic Convention decided to improve the availability of reliable data on the amounts of harmful substances carried to the sea by air, as a basis for agreeing on efforts to minimize these sources of marine pollution.

In a few cases, the regional agreements cover airborne pollution from activities taking place in offshore areas under national jurisdiction, such as offshore oil development. Thus, the Caribbean, East African, and South Pacific agreements expressly cover “discharges into the atmosphere from activities under their jurisdiction” (emphasis added). The 1992 Northeast Atlantic treaty includes in LBSMP those sources associated with man-made structures in offshore areas under national jurisdiction, but expressly excludes offshore facilities used for hydrocarbon exploration or exploitation. The protocols governing the exploitation of offshore seabed resources clearly have the potential to cover air emissions, as considered in the previous section.

**Framework Convention on Climate Change (FCCC):** To the extent that greenhouse gas emissions contribute to airborne pollution of the marine environment, strategies developed under the FCCC to prevent and reduce those emissions will correspondingly benefit the marine environment. Strategies developed pursuant to ocean law agreements for vessels or other sources will contribute to the objectives of the FCCC.

**Montreal Protocol on Ozone Depletion:** As noted in relation to the use and consumption of CFCs on vessels, strategies developed under the ocean law agreements may contribute to the implementation of the Montreal Protocol, and vice-versa.

> The particular vehicle used to address airborne sources of marine pollution is less important than ensuring that the impacts of airborne emissions on the marine environment are taken into account. The regional agreements on land-based sources should incorporate specific annexes on airborne sources, and emissions from offshore facilities of all types should be addressed.

> Airborne sources should be inventoried to determine their extent and priorities for actions vis-à-vis other sources. The national inventories of greenhouse gas emissions called for under the FCCC offer a useful tool for identifying emissions that may affect the marine environment.

**F. Seabed Mining Beyond National Jurisdiction**

The International Seabed Authority is the organization through which states parties to the LOS Convention regulate seabed minerals exploration and exploitation, in accordance with the 1982 Convention as modified by the 1994 Agreement. The Authority’s primary organs are a plenary Assembly and a 36-member Council. The Assembly’s plenary powers are in large measure exercised by the Council.

The 1994 Agreement calls for an evolutionary approach to the establishment of the Authority, in keeping with its functional needs. During the period before any interest in commercial exploitation emerges, the
Authority is encouraged to concentrate on, among other things, adopting rules, regulations, and procedures incorporating applicable standards for the protection and preservation of the marine environment, promoting marine research, with particular emphasis on research related to the environmental impact of mining activities, and monitoring relevant technology developments, especially those relating to marine environmental protection (1994 Agreement, Annex, Section 1, Article 5).

The 1994 Agreement also provides that applicants seeking contracts must submit an assessment of potential environmental impacts and a description of a program for oceanographic and baseline environmental studies. The Authority is to elaborate rules on these matters (1994 Agreement, Annex, Section 1, Article 7). States are obliged to promote international cooperation and programs for scientific and technical training, technical assistance, and research in marine science and technology and marine environmental protection related to deep seabed mining (1994 Agreement, Annex, Section 5, Article 1.c.).

Environmental Rules: A 15-member Legal and Technical Commission is responsible for drafting and revising specific rules on prospecting, exploration, and exploitation, and for advising the Council on legal, technical, and environmental matters. Its members must include individuals qualified in protection of the marine environment, and its recommendations must take into account the views of recognized experts on marine environmental protection (Articles 163, 165). Among the rules, regulations, and procedures to be adopted by the Authority are those to prevent, reduce and control pollution and other hazards to the marine environment, including the coastline; to prevent, reduce, and control interference with the ecological balance of the marine environment; and to protect and conserve the natural resources of the deep seabed and prevent damage to the flora and fauna of the marine environment. Particular attention is to be paid to the need to protect against harmful effects of activities such as drilling, dredging, excavation, disposal of waste, and construction and operation or maintenance of installations, pipelines, and other devices related to such activities (Article 145; Annex III, Article 17.1.b.xii).

Several of the Authority's responsibilities relevant to environmental protection are unique for an international organization. These include the right to issue emergency orders, which may include orders for the suspension or adjustment of operations to prevent serious harm to the marine environment arising out of deep seabed mining (Article 162.2.w); and the right to disapprove areas for exploitation in cases where substantial evidence indicates the risk of serious harm to the marine environment (Article 162.2.x).

Environmental Monitoring: The Legal and Technical Commission is charged with recommending to the Council — and coordinating the implementation of — an environmental monitoring program. The purposes of the program are to observe, measure, evaluate, and analyze, on a regular basis, the risks or effects of marine pollution caused by seabed exploration or exploitation, based on recognized scientific methods; to ensure that existing regulations are adequate; and to ensure that existing regulations are complied with (Article 165.2.h). It must also prepare assessments of the environmental implications of seabed exploration and exploitation, and its draft rules must expressly take these implications into account (Article 165.2.d and f).

In accordance with the Authority’s rules and their contract terms, deep seabed mining operators must transfer to the Authority data deemed necessary and relevant for the Authority to exercise its powers and functions. While protections for proprietary data are provided, “data necessary for the formulation by the Authority of rules, regulations and procedures concerning protection of the marine environment and safety, other than equipment design data, shall not be deemed proprietary” (Annex III, Article 14).

Compliance: While deep seabed mining operators must comply with the terms of their contract, states are responsible for taking all measures to ensure that the contractors they sponsor comply with these
contract terms (Articles 139, 153.4). Every state must adopt laws and regulations to prevent, reduce and control pollution of the marine environment from exploration and exploitation in the international seabed area undertaken by vessels, installations, structures and other devices flying its flag, of its registry, or operating under its authority. These requirements may be no less effective than international rules, regulations and procedures provided for in the Convention (Article 209).

The Authority exercises such control over exploration and exploitation activities as is necessary to secure compliance with the Convention and its own rules and contracts, and it may inspect relevant installations (Articles 153.4, 153.5, 162.2.1, 162.2.2, 215). It has the right to institute proceedings before the Sea-Bed Disputes Chamber of the International Tribunal for the LOS in cases of non-compliance (Article 162.2.u); and the right to recommend measures to be taken following decisions rendered by the Sea-Bed Disputes Chamber — for example, sanctions in the form of monetary penalties or suspension or termination of contract rights (Article 162.2.v; Annex III, Article 18). It falls to the Legal and Technical Commission to make recommendations to the Council on these matters (Article 165.2).

Prospecting and Processing: The Authority's primary functions are related to on-site exploration and exploitation of mineral resources on the deep seabed. Nevertheless, its environmental mandate is somewhat broader, and for certain purposes extends to prospecting (preliminary to exploration and exploitation), and to processing of seabed mineral resources above a mine site. The Convention requires a written undertaking that a prospector will comply with the Convention and relevant rules on protection of the marine environment, and accept verification by the Authority of that compliance (Annex III, Article 2). The flag state is required to supervise and enforce prospector compliance with relevant environmental provisions of the Convention. In relation to shipboard processing, the Convention provides for the Authority to adopt rules to protect the marine environment from harmful effects immediately above a mine site with respect to minerals derived from that mine site, "taking into account the extent to which harmful effects may directly result from drilling, dredging, coring and excavation and from disposal, dumping, and discharge into the marine environment of sediment, wastes or other effluents" (Annex III, Article 17.2.f). A sponsoring state or a flag state may impose more stringent environmental or other laws and regulations on contractors sponsored by it or ships flying its flag (Annex III, Article 21.3). Other "generally accepted" international rules and standards governing vessel safety and pollution control also apply.

Conservation of Seabed Mineral Resources: The LOS Convention calls for seabed mineral resources to be developed in an orderly and rational manner, and, "in accordance with sound principles of conservation, the avoidance of unnecessary waste" (Article 150.b). While this provision was in part intended to protect the financial interests of countries that produce the same minerals on land, it nevertheless provides a basis for avoiding unnecessarily wasteful practices, such as high-grading.

Institutional and Legal Developments

Absent unanticipated changes in demand and supply, deep seabed mining is not expected to become commercially feasible for at least another two decades. It is therefore unlikely that detailed rules and regulations, including environmental regulations, will be adopted for some time. When the LOS Convention was concluded in 1982, Conference Resolution I established a Preparatory Commission for the International Seabed Authority and the International Tribunal for the Law of the Sea, whose mandate included the preparation of draft rules and regulations to enable the Authority to commence its functions. (Annex I to the Final Act of the Conference). The Preparatory Commission met twice a year, beginning in 1983. Its final meeting takes place coincident with the first meeting of the Assembly of the Authority in 1995.

The Preparatory Commission refined a number of draft rules on the protection and preservation of the marine environment. Its final report was adopted in August 1994, including draft rules on protection and
preservation of the marine environment. The draft rules in some cases elaborate substantially on Convention provisions; for example on environmental impact assessment and liability. They also draw on national legislation, incorporating the concept of “reference zones” from the United States, which would be used to assess and monitor environmental impacts. Yet they are in no way definitive, and the Authority need only take them into account when it adopts the final rules (1994 Agreement, Annex, Section 1, Article 16). For an assessment of these rules, see Nolkaemper 1991.

G. New and Emerging Activities

In its effort to establish a comprehensive framework for ocean activities, the Convention includes references designed to anticipate new uses. These include provisions on the use of technologies and the introduction of new or alien species (Article 196). Several developments have taken place regarding the introduction of new or alien species. Section VI.A.

The issue of biotechnology from living marine resources within and beyond national jurisdiction is addressed to some extent by the Biodiversity Convention. Section VI.B.

The coastal state has sovereign rights not only for the purposes of exploring and exploiting the natural resources of the EEZ and continental shelf, but also regarding other activities for the economic exploitation and exploration of the zone, such as the production of energy from water, currents, and winds (Article 56), artificial reefs, or offshore installations and structures used for mariculture. Requirements for marine environmental protection would be covered by the general obligations under the Convention, as well as provisions governing offshore installations and structures, including pollution from them (Article 194.3.d, 208, 214); their removal (Articles 60, 80); and accident prevention and response (Article 194.3.d). Thus, the Convention provides for the further development of national and international law in relation to other economic activities. Section IV.D.

Pollution from mariculture activities is a matter of increasing concern. These issues may be linked to the introduction of new or alien species, including genetically-modified organisms. Whether further international guidance is needed could be considered. Section VI.B.

Marine scientific research is to be conducted in compliance with all relevant regulations adopted in conformity with the LOS Convention, including those for the protection and preservation of the marine environment (Articles 240.d, 194.3.d, 263).

States have the duty to protect objects of an archaeological and historical nature found at sea and to cooperate for that purpose, without prejudice to other relevant international agreements and rules of international law (Article 303). Within the contiguous zone (out to 24 n.m.), coastal state approval is required for removal of such objects from the seabed. All such objects found in the seabed beyond national jurisdiction are to be preserved or disposed of for the benefit of mankind as a whole, with particular regard to the preferential rights of the country of origin, of cultural origin, or of historical and archaeological origin (Article 149).

In 1986, the United States sought international support for its designation of the Titanic as a maritime memorial, and the development of international guidelines regarding research, exploration, and, if appropriate, salvage. The possibility of international community designation of protected sites beyond national jurisdiction is raised in Section VI.B. Any salvage operations of this type should be guided by assessment of possible adverse impacts and minimizing environmental damage from salvage, Section III.D.
Section Five. Protection, Conservation, and Management of Marine Living Resources Within and Beyond National Jurisdiction, and Related Dispute Settlement

This section covers Convention provisions on the protection, conservation, and management of marine living resources. It first examines the framework of principles and obligations established, including dispute settlement, and then turns to the species-by-species approach taken in the Convention. 

Provisions on protected areas and species, particularly at the regional level, are considered in Section VI.

A. The LOS Convention Framework

The provisions of the LOS Convention regarding marine living resources establish basic obligations for states to protect, conserve, and manage these resources, in areas both within and beyond national jurisdiction. They also serve as the basis for the development of more specific regional and global fisheries agreements, including current discussions in the U.N. Conference on Straddling Fish Stocks and Highly Migratory Fish Stocks. The Convention defines the rights and obligations of coastal states and of states fishing on the high seas, and it establishes principles for the progressive development of international and national law. Its general conservation and management obligations are reinforced by specific requirements and criteria found in other international agreements, global and regional, as well as recommended practices and procedures. In turn, internationally-agreed measures are reinforced through the LOS Convention — as they attain the status of “generally recommended” standards. Both national measures for EEZ resources and high seas conservation measures are to take into account any generally recommended international minimum standards, whether subregional, regional, or global (Articles 61.3, 119.1). As dispute settlement proceedings are invoked to interpret and apply LOS Convention provisions, the decisions will be informed by the LOS Convention itself and by these more specific standards and criteria.

The LOS Convention expressly calls for further international agreements regarding straddling stocks, highly migratory stocks, anadromous stocks, and catadromous stocks, and for high seas fisheries in general (Articles 63, 64, 66, 67, 118). All such agreements must be compatible with the object and purpose of the LOS Convention. They may not affect the application of the basic principles of the Convention, nor the enjoyment by other states of their rights and the performance by other states of their obligations (Article 311).

Areas Under National Jurisdiction: In considering marine fisheries issues, it is important to bear in mind that 90% of the world’s fish harvest comes from areas within national jurisdiction. The LOS Convention grants coastal states sovereign rights and management authority over marine living resources within the EEZ. These rights are subject to obligations to properly conserve and manage the resources, and obligations to cooperate in managing resources that migrate through other states’ EEZs and/or the high seas. They are also subject to resource-sharing arrangements, or “optimum utilization”, discussed below.
With respect to enforcement in these areas, the coastal state’s laws and regulations are virtually absolute. The coastal state may require catch and effort reports, vessel position reports, arrangements for coastal state observers on board foreign vessels, and other measures. The coastal state may board, inspect, arrest, initiate judicial proceedings against, and fine offending vessels/crew, subject to prompt release of vessels upon the posting of a reasonable bond or other security. Imprisonment and other forms of corporal punishment are not permitted (Articles 62.4, 73).

The conservation of marine living resources is not an explicit obligation of the coastal state within internal waters and the territorial sea — where the resources are subject to absolute coastal state sovereignty — nor in relation to sedentary species anywhere on the continental shelf, discussed below. Nevertheless, several regional and global agreements on protected marine species already qualify coastal state rights, as do the LOS Convention’s requirements on marine pollution. In addition, measures taken to conserve EEZ marine living resources are likely to benefit resources landward of the EEZ. The progressive development of international environmental law reinforces each state’s obligations to conserve natural resources, including the Biodiversity Convention insofar as threats to maintaining the variability of species arise. Section VI.B.

High Seas: The LOS Convention reaffirms the traditional rule that all states have the right for their national to engage in fishing on the high seas. At the same time, it introduces critical qualifications on this right by making it subject to specific treaty obligations; coastal state rights, duties, and interests regarding straddling stocks and stocks that migrate beyond its EEZ; and the duty to cooperate in conserving and managing high seas living resources. In addition, all states have the duty to take measures necessary to conserve high seas living resources, in accordance with the scientific/conservation basis, discussed below. (Articles 116, 117, 118, 119).

The Scientific/Conservation Basis

In exercising its EEZ management and conservation responsibilities, the coastal state must take into account the “best scientific evidence available to it” (Article 61.2). The same requirement applies on the high seas (Article 119). In both cases, all states participating in a fishery are obliged to contribute and exchange on a regular basis — through competent international organizations — available scientific information, catch and effort statistics, and other data relevant to conservation (Articles 61.5, 119.2).

Conservation measures for EEZ and high seas resources must be designed to maintain or restore populations of harvested species at levels which can produce the maximum sustainable yield (MSY), qualified by relevant environmental and economic factors. Qualifying factors include the special requirements of developing states, fishing patterns, the interdependence of stocks, and any generally recommended international minimum standards, whether subregional, regional, or global. All states’ conservation measure must also take into consideration the effects on species associated with or dependent upon harvested species, “with a view to maintaining or restoring populations of ... [such] species above levels at which their reproduction may become seriously threatened” (Articles 61.3 and 61.4, 119.1). Affected species would include seabirds and marine mammals as well as other fish. The LOS Convention thus gives expression to the concepts emerging in the late 1970s that conservation measures for marine living resources should take into account environmental factors and predator/prey relationships that affect sustainable yield. The emphasis on single species management, based solely on MSY, was beginning to erode.

The LOS Convention’s provisions on pollution control support the treaty’s conservation objectives. First, the definition of pollution encompasses harm to living resources and marine life as well as hindrance to fishing. Second, the over-riding obligation of each state to protect and preserve the marine
environment also requires, at a minimum, responsible fishing. Third, all states are obliged to take measures to prevent, reduce, and control marine pollution necessary to protect and preserve rare or fragile ecosystems and the habitat of depleted, threatened, or endangered species and other forms of marine life (Article 194.5). Fourth, pollution measures must avoid the introduction of new or alien species, which may cause significant or harmful changes to the marine environment (Article 196.1). These provisions effectively link the scientific bases and criteria developed for dealing with marine pollution with those for the conservation of marine living resources. Sections III.A., III.B., and III.C.

Dispute Settlement

Disputes concerning fishing beyond the EEZ are subject to compulsory, binding settlement procedures. Other fishery agreements may provide that disputes among parties be submitted to the LOS Convention’s compulsory, binding procedures. If they do not, it may still be possible, among states parties to the LOS Convention, to invoke the LOS Convention’s compulsory, binding procedures for disputes arising under these agreements. Even if the offending state is not formally bound by a particular regional agreement, the LOS Convention’s compulsory, binding procedures might be invoked against any party to the LOS Convention to enforce the LOS Convention’s high seas duties to conserve and cooperate in conservation measures, and related environmental obligations. Those obligations may be violated in situations where an uncooperative harvesting state is undermining conservation measures agreed on a regional basis.

Regarding EEZ fisheries, the coastal state is not obliged to submit to binding settlement any dispute over its sovereign rights or their exercise. This includes any dispute over the coastal state’s discretion to determine the allowable catch, to determine the surplus available for optimum utilization, to allocate that surplus to other nations, or to establish terms and conditions in its fisheries laws and regulations. Disputes over related law enforcement activities by the coastal state may also be exempted from compulsory, binding procedures (Articles 297.3, 298.1b).

In three situations, a coastal state may be obliged to enter into conciliation procedures (compulsory conciliation), the results of which are not binding. Compulsory conciliation may be invoked when it is alleged that a coastal state has manifestly failed to comply with its obligation to ensure that EEZ living resources are not seriously endangered; when a coastal state has arbitrarily refused to determine the allowable catch and surplus available; or when a coastal state has arbitrarily refused to allocate to a state any surplus it has declared to exist. The reports of fisheries conciliation commissions are to be communicated to appropriate international organizations (Article 297.3), which enhances the opportunities for widespread dissemination of the results and the progressive development of national and international law and practice. Section II.B. This procedure, and the dissemination of results, will likely impose substantial pressure on the states involved to conform to the non-binding recommendations of the conciliation commission.

B. International Obligations, Species by Species

Recognizing that different categories of species behave differently, the LOS Convention takes a species-specific approach, distinguishing the respective rights, duties, and interests of coastal states and other states to cooperate in the following management situations:

- species that occur entirely within an EEZ;

- stocks that occur in more than one EEZ (transboundary straddling stocks), and stocks that occur both within an EEZ and on the adjacent high seas (commonly called straddling stocks);
highly migratory species like tuna, which range widely over vast expanses of the ocean within and beyond many EEZs;

- anadromous species like salmon, which spawn in freshwater and spend most of their life at sea;

- catadromous species like eel, which spawn at sea but spend most of their life in freshwater; and

- marine mammals, where coastal states or a competent international organization may prohibit, limit, or regulate exploitation more strictly than warranted for conservation alone; that is, greater protection may be afforded these species.

EEZ Fisheries: The coastal state is responsible for conserving and managing its EEZ living resources to ensure that they are not endangered by over-exploitation. Coastal state conservation measures must meet the scientific/conservation basis cited above, with the added qualification to MSY of the “economic needs of coastal fishing communities”.

The other obligation of a coastal state with respect to EEZ living resources under its jurisdiction is that, in principle, it must share any surplus with other interested states when it does not have the capacity to harvest the entire allowable catch. This principle of “optimum utilization” is intended to ensure that available resources are not hoarded by coastal states. Specific guidance exists to enhance the rights of land-locked countries and “geographically disadvantaged states” (e.g., those unable to claim an EEZ of their own) to participate, on an equitable basis, in the exploitation of a part of the surplus of coastal states’ EEZ living resources in the same sub-region or region (Articles 62, 69, 70, 71, 72). In practice, these provisions give the coastal state wide discretion to determine which species may be caught in its EEZ, the allowable catch of those species, its own capacity to harvest the species, and thus any surplus that might be made available, as well as all regulations governing fishing. The cooperation of the coastal state is therefore essential in giving effect to this provision.

Transboundary and Straddling Stocks: That coastal stocks migrate between different states’ EEZs landward of 200 miles was well recognized during UNCLOS III. It was also recognized that the EEZ boundary would not in all cases reflect the migrations of coastal stocks beyond 200 miles. In the first “transboundary” straddling stock situation, the states concerned are to seek to agree on measures necessary to coordinate and ensure the conservation of the resources. In the second straddling stock situation, the LOS Convention requires that the coastal state and the states fishing the stock(s) in the adjacent high seas seek agreement on measures necessary to conserve the stocks in the adjacent area — either directly or through appropriate subregional or regional organizations. (Article 63) To be effective, the measures adopted for the adjacent high seas would have to be compatible with those applied to the same stock within the EEZ. The respective rights of coastal states and states fishing straddling stocks beyond the EEZ are currently under discussion in the U.N. Conference on Fisheries, below.

Sedentary Species of the Continental Shelf: There is an important distinction between the living resources of the water column and the sedentary species of the continental shelf, in that sedentary species such as crab, lobster, or coral belong exclusively to the coastal state; they are subject neither to conservation nor to optimum utilization requirements (Articles 68, 77). Sedentary species are defined as living organisms “which, at the harvestable stage, either are immobile on or under the seabed or are unable to move except in constant physical contact with the seabed or the subsoil” (Article 77.4). The coastal state’s exclusive rights over these species may extend beyond 200 miles if the coastal state can
claim a continental shelf beyond 200 miles. There have been recent disagreements over whether certain species of scallop on the Canadian continental shelf beyond 200 miles meet the definition of sedentary species and are thus subject exclusively to Canadian authority and control.

**Highly Migratory Species:** Coastal states through whose EEZs these species migrate and other states fishing the species must cooperate to ensure conservation and optimum utilization, both within and beyond the EEZ; that is, throughout the range of the species. International organizations are to be established for this purpose. The LOS Convention’s Annex I lists the species concerned. (Article 64)

The United States initially objected to the view of most coastal states that highly migratory tuna species within the EEZ were subject to national jurisdiction. The U.S. view was that any state could fish for these species in other nations’ EEZs, subject to applicable international agreements. In 1990, the United States reversed this position, claiming jurisdiction over tuna in the U.S. EEZ, effective January 1, 1992. The respective rights and obligations of coastal and distant-water fishing states in relation to highly migratory species are currently under discussion in the *U.N. Fisheries Conference, below.*

**Anadromous Species:** For these species, the state within whose rivers the stocks originate (spawn) is granted primary interest in and responsibility for conservation and management. Harvesting of the stocks is permitted only within EEZs; it may not take place on the high seas. Nevertheless, in situations where economic dislocation of another state’s fishing interests would result, efforts are to be made to agree on terms and conditions for fishing beyond the EEZ. In practice, there are no longer any high seas fisheries for anadromous stocks that are recognized as legitimate. When stocks migrate within the EEZ of a state other than the state of origin, that state must cooperate with the state of origin in management and conservation. Regional agreements are encouraged where appropriate. (Article 66)

**Catadromous Species:** The coastal state in whose waters these species spend the greater part of their life cycle is responsible for them. Harvesting may occur only in the EEZ and is subject to other Convention provisions for EEZ living resources. Where species migrate through the EEZ of more than one state, they are to be managed pursuant to an agreement between the states concerned, which recognizes the special responsibility of the “host” state to maintain the species. (Article 67)

**Marine Mammals:** States are to cooperate in conserving marine mammals within EEZs and on the high seas. Individually or through a competent international organization, they may grant marine mammals greater protection than the standard applicable to other marine living resources. That is, the qualified MSY standard represents a minimum standard, and marine mammals are not subject to “optimum utilization” requirements. For cetaceans (e.g., whales), the particular role of appropriate international organizations (e.g., the International Whaling Commission established pursuant to the 1946 International Convention on the Regulation of Whaling) is recognized as the means to promote their conservation, management, and study. (Articles 65, 120) *Section VI.A.*

**Legal and Institutional Developments**

The extension of coastal state jurisdiction over fisheries led to the re-negotiation of a number of regional agreements on highly migratory species, anadromous species, and straddling stocks. *Figure 9.* Numerous bilateral fishery agreements have also been concluded, as well as new agreements on migratory marine mammals pursuant to the 1979 Convention on the Conservation of Migratory Species of Wild Animals. *Section VI.B.*
Figure 9
Agreements Related to Fishing and the Conservation of Marine Living Resources


International Convention for the Safety of Fishing Vessels, Torremolinos (1977), and 1993 Protocol - IMO.


**Soft Law:**


The LOS Convention affected the role of the U.N. Food and Agriculture Organization (FAO) as well, in particular its regional fishery management commissions. As coastal states assumed fisheries conservation and management responsibilities in EEZs, many needed additional support. In 1984, an FAO world conference on fisheries adopted the Strategy for Fisheries Management and Development and related programs. This was followed in 1989 by an FAO decision to give higher priority to preventing environmental degradation affecting fisheries, and actions in the early 1990s to incorporate environmental considerations into fisheries activities, including aquaculture. [UNCED: Research Paper No. 10]

Both coastal states and the regional agreements have in many cases failed to effectively conserve marine living resources. National efforts, whether or not supported by international organizations, have inadequately addressed problems of over-fishing and over-capitalization of the fishing industry, and they have neglected coastal habitat protection. In many states, effective enforcement is hampered by insufficient resources. International agreements also have failed to resolve disagreements over allocation among the fishing states; the respective rights, duties, and interests of coastal states vis-a-vis those fishing on the high seas; the rights and obligations of new entrants in a fishery; effective enforcement arrangements; and, with respect to anadromous species, the “credit” due the state of origin for efforts to maintain and conserve resources through habitat protection and other means of enhancement. At the same time, there are promising developments with respect to conservation principles and techniques for enhancing compliance and enforcement.25 Several of these issues are before the U.N. Conference on Fisheries, below.

**The Ecosystem Standard:** The LOS Convention’s swing away from single species management to encompass emerging concepts of the interdependence of stocks, the effects of environmental factors, and relationships with associated and dependent species was articulated more precisely and forcefully in the “ecosystem standard” for fisheries conservation set forth in the 1980 Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR). CCAMLR requires that any harvesting and associated activities must be conducted in accordance with the following principles of conservation:

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“(a) prevention of decrease in the size of any harvested population to levels below those which ensure its stable recruitment. For this purpose its size should not be allowed to fall below a level close to that which ensures the greatest net annual increment;

“(b) maintenance of the ecological relationships between harvested, dependent and related populations of Antarctic marine living resources and the restoration of depleted populations to the levels defined in sub-paragraph (a) above; and

“(c) prevention of changes or minimization of the risk of changes in the marine ecosystem which are not potentially reversible over two or three decades, taking into account the state of available knowledge of the direct and indirect impact of harvesting, the effect of the introduction of alien species, the effects of associated activities on the marine ecosystem and of the effects of environmental changes, with the aim of making possible the sustained conservation of Antarctic marine living resources.” (Article II.3)

The Scientific/Conservation Basis: Also pursuant to CCAMLR, a new, more cautious approach to fisheries has evolved. Its objective is to ensure that a fishery does not develop more quickly than the information necessary to ensure that it can and will be conducted in accordance with the ecosystem standard. Effectively, this reverses the presumption that fisheries may proceed based on “best available evidence”. The CCAMLR approach was triggered by a proposal in the 1990s to develop a new fishery for crab. It requires advance notification of exploratory (new) fisheries, which must include an assessment of possible impacts on dependent and related species. Those engaged in the fishery must submit annually a research and fishery operations plan, which is reviewed by the CCAMLR Scientific Committee and Commission. The plan must conform with an annual data collection plan developed by the Scientific Committee and include a description of methods of fishing. The Committee may provide advice on appropriate catch and effort levels and fishing gear. In 1993, a “precautionary” approach to catch levels was extended to existing fisheries for which there is insufficient information to estimate potential yield. [CCAMLR: Report 1993]

Driftnet Fishing: The issue of driftnet fishing arose prominently in 1989 with the adoption by the U.N. General Assembly of a moratorium on large-scale pelagic driftnet fishing on the high seas, which called for specific actions in the South Pacific and North Pacific regions. Subsequent resolutions in 1990 and 1991 called for the cessation of all high seas driftnet fishing by the end of 1992. In addition, a South Pacific Convention specifically bans driftnet fishing, and similar resolutions have been adopted in other regional and global fishing regimes. Figure 9. [UNGA: Large-scale pelagic drift-net fishing]

Marine Debris and Fishing Practices: The problems caused by entanglement in and ingestion of marine debris — plastics and other persistent materials — have emerged largely since the LOS Convention was concluded. In responding to them, the international community has used three avenues: regimes on marine pollution control, regimes on marine species, and the driftnet restrictions. The relevant marine pollution regimes are the London Convention and related regional dumping instruments, Annex V to MARPOL 73/78 (garbage), and emerging regimes on land-based and offshore sources of marine pollution. Pursuant to the marine species agreements, a number of measures have been adopted on such matters as the use of appropriate fishing gear and reporting of lost or discarded gear. These include fisheries regimes, such as CCAMLR26, as well as more recent agreements on marine mammal conservation, such as the 1992 Agreement on the Conservation of Small Cetaceans of the Baltic and North Seas. Figure 9.

26. For example, in dealing with the issue of marine debris, the CCAMLR Commission first recommended that States ratify Annex V of MARPOL 73/78 and the London Convention, and undertook surveys to determine the nature and extent of the problem. Additional protective measures have subsequently been adopted pursuant to CCAMLR.
The U.N. Conference on Straddling Fish Stocks and Highly Migratory Fish Stocks is ongoing. Three meetings took place during 1993 and 1994, and it is expected that two final meetings will be convened in 1995. Although not all participating governments support the outcome of a binding global agreement, the basis for future negotiations is a “Draft Agreement for the Implementation of the Provisions of the U.N. Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks”, prepared by the chairman of the conference. Approximately 70% of fisheries for straddling stocks and highly migratory stocks occur within the EEZ.

The draft Agreement is intended to be fully consistent with the LOS Convention. It focuses on fishing beyond areas under national jurisdiction, but it applies the same general principles of conservation and management to coastal states within their jurisdiction, including the application of a precautionary approach. The draft reflects LOS Convention requirements that coastal states and other states fishing these stocks cooperate in conserving them. But it further specifies, building on the LOS Convention foundation, that the duty to cooperate means that states fishing the stocks must participate in the relevant subregional or regional fishery management arrangements if they wish access to the resources in question; and it leans toward the coastal state by seeking to ensure that fishing efforts and conservation measures beyond national jurisdiction do not undermine measures taken by the coastal state within the EEZ. Modeled on the LOS Convention’s prescription for provisional measures to prevent serious harm to the marine environment or to preserve the respective rights of the parties to the dispute (Article 290) Section II.C, the draft Agreement provides for compulsory provisional measures to prevent damage to the stock(s) in question or to preserve respective rights. They must take into account measures agreed by relevant subregional or regional fisheries management arrangements, and they are binding on all parties to the dispute pending agreement on conservation measures within and beyond national jurisdiction which are compatible.

The Agreement would strengthen means to monitor and enforce high seas conservation and management measures, including with respect to states that are not necessarily parties to specific regional or subregional agreements. It permits enforcement by both flag and port states, reflecting to some extent the provisions on port state enforcement for purposes of marine environmental protection, Section IV.A. Its dispute settlement provisions include those in the LOS Convention (whether or not the states involved are parties to the LOS Convention) and in addition ad hoc technical panels for disputes of a technical nature (non-binding), and an alternative binding arbitration procedure. Where compulsory, binding procedures do not apply pursuant to existing subregional or regional fisheries arrangements, states are to adopt them. Moreover, when the parties to a dispute cannot agree on an alternative procedure, and whether or not they participate in a subregional or regional fisheries organization/arrangement, the LOS Convention’s dispute settlement provisions apply.

With respect to conservation standards, the draft Agreement reiterates the LOS Convention’s qualified MSY standard but elaborates substantially on it. It links more firmly conservation and management measures to the best scientific evidence available, and it strengthens protections for dependent or associated species. It calls for the application of the precautionary approach, where environmental conditions and protecting habitats of special concern are among the factors to be taken into account, and it offers additional guidelines to give effect to that approach. Further elaborations on the LOS Convention standards include requirements (1) to promote development and use of selective, environmentally-safe and cost-effective fishing gear and techniques “in order to minimize pollution, waste, discards, catch by lost or abandoned gear, catch of non-target species (both fish and non-fish species), and impacts on ecologically related species, in particular endangered species;” and (2) to take into account the need to protect biodiversity. For new or exploratory fisheries, the draft incorporates the
CCAMLR idea that they be managed conservatively until sufficient data exists for a thorough assessment. The final annex elaborates minimum standards for data collection and exchange.

Means to assist developing nations to conserve, manage, and develop straddling stocks and high seas fisheries are noted, with reference to cooperation through international organizations like FAO, the Global Environment Facility, and the Commission on Sustainable Development. The draft Agreement emphasizes assistance with respect to data collection, research and assessment, and compliance-related initiatives.

A parallel initiative to prepare a non-binding International Code of Conduct for Responsible Fishing, launched under FAO auspices in 1992, is expected to be completed in 1995. The code is to contain general principles and more detailed and practical sections on fishery management practices; fishing operations; aquaculture development; integrating fisheries into coastal area management; fair trade practices, including post-harvest practices; and fishery research. It would apply to all fisheries within and beyond national jurisdiction. At the same time, a 1993 FAO Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas is expected to enter into force in 1995. This binding agreement addresses flag state responsibilities regarding all its vessels fishing on the high seas, not just those fishing highly migratory and straddling stocks. It requires prior authorization by the flag state for high seas fishing, and measures to ensure that the vessel does not engage in any activity that undermines the effectiveness of international conservation and management measures. In authorizing a vessel to fish, the flag state must in particular verify that it has not recently engaged in such activities and that it has satisfied any penalties for doing so. Each party maintains a record of its fishing vessels, and FAO maintains a master file of this information and circulates it to parties and interested fisheries organizations.

IUCN has supported sustainable marine fisheries and the application of the precautionary principle in fisheries conservation and management in both EEZs and on the high seas. It has endorsed an ecosystem approach that incorporates associated and dependent species as well as target species, promotes recovery of over-exploited stocks, protects habitat, and supports the maintenance of biological diversity. It has advocated that these and other reforms be incorporated into legally binding measures with suitable enforcement mechanisms, with particular reference to highly migratory and straddling fish stocks. (Resolutions 19.55, 19.56, 19.57)

IUCN has also supported implementation of the UN moratorium on large-scale pelagic driftnet fishing (Resolution 19.60), and the development and improvement of devices to minimize by-catch of non-target species, particularly threatened species (Resolutions 19.61, 19.62).

Specifically in the Mediterranean, IUCN has urged governments bordering the sea to urgently negotiate a legally binding international regime for high seas fishing in international waters that would, inter alia, set strict environmental standards for high seas fishing and institute regional mechanisms to ensure that regulations are enforced (Resolution 19.60).

Specifically in the South East Pacific, IUCN has called on governments to harmonize policies for sustainable fishing, especially with respect to migratory stocks (Resolution 19.59).

These mandates suggest further work to give effect to the ecosystem standard and a precautionary approach to marine living resources management, including information sufficiency requirements, as they are evolving (pursuant to the LOS Convention) in regional agreements and in the U.N. Fisheries Conference. As research proceeds on the effects of pollutants and environmental conditions on marine species and ecosystems, the integration of fishery conservation and management measures and marine
environmental protection measures may be improved. In this context, the elaboration of appropriate scientific and technical criteria for conservation measures and determining priorities is critical. The criteria inform the international decision-making process as well as any dispute settlement proceedings. Further work could be undertaken on such matters as:

- how to determine and avoid the adverse effects of harvesting targeted species on dependent and associated species, including assessment of fishing gear and practices;

- how to integrate the scientific bases and criteria developed to avoid marine pollution, as defined in the LOS Convention and subsequent agreements, with those to conserve and protect marine species, habitat, and ecosystems;

- how to identify priorities for special conservation areas, where coastal and oceanic ecosystems are particularly important to the life cycle of stocks, promote recovery of over-exploited stocks, and support the maintenance of biological diversity, in conjunction with efforts in the IMO, the regional seas programs, and other international agreements and programs to give substance to special area concepts and designation criteria. Sections VI.A. and VI.B.;

- how to integrate research and response measures on ozone depletion with priorities for the conservation and management of marine species; and

- how to integrate research and response measures on sea level rise with priorities for the conservation and management of marine species, habitat, and ecosystems. The fact that sedentary species of the continental shelf are not subject to conservation obligations (although they are to be protected from marine pollution) raises additional possibilities for the further development of international law, within the contexts of the LOS Convention and related regional agreements, the Climate Convention, and the Biodiversity Convention. A global initiative to protect coral reefs could lead to the development of objectives and commitments pursuant to all of these agreements, as well as the elaboration of criteria and guidelines for action and the determination of priorities. Under the LOS Convention, the commitments would remedy in part the absence of conservation obligations for sedentary species; conservation obligations might also be extended to other sedentary shelf species. Under the Climate and Biodiversity Conventions, the initiative would help define response strategies and priorities. The most logical vehicles to achieve coral reef objectives are likely to be the regional marine agreements, as evidenced in the Wider Caribbean. Section VI.A.

On legal issues, further specification of appropriate measures for port state enforcement could be considered, as well as guidance on applicable international rules; on the applicability of international dispute settlement to port state enforcement actions; on international reporting and observer schemes; and on international record-keeping and information exchange arrangements.
Section Six. Ecosystem Assessment and Management

Ecosystems offer a rational basis for assessing potential effects of proposed activities on the marine environment and marine species — as they interact and accumulate with impacts from other activities — and for determining priorities for management actions. Increasingly, large-scale ecosystems and landscapes are considered logical management units of choice. The ecosystem approach to sustainable use of environments and resources is articulated throughout Agenda 21 and specified in its chapter on oceans and coasts. That chapter cites the LOS Convention as its international legal basis.

The LOS Convention’s numerous principles and obligations lay a solid foundation for an ecosystem approach to managing and protecting the ocean and its resources. As discussed in previous sections of this report, the Convention establishes an unqualified obligation that all states protect and preserve the entire marine environment; stipulates that conservation measures for marine living resources take into account the interdependence of stocks and effects on associated and dependent species, and that MSY may be qualified by environmental factors; requires international cooperation in management and conservation throughout the range of marine species and stocks; requires that marine pollution measures include those necessary to protect and preserve rare or fragile ecosystems and the habitat of depleted, threatened, or endangered species and other forms of marine life and avoid the introduction of new or alien species; and calls for prior environmental assessment and environmental monitoring. Its definition of pollution and the scientific/conservation bases for marine environmental protection and species conservation substantially underpin this foundation. Sections III.A., III.B., III.C., and V.A. These obligations apply to states individually and collectively, and the Convention requires cooperative efforts to elaborate and implement them. [Belsky]

From the perspective of integrated wastes management and pollution control, earlier sections considered the LOS Convention’s requirement that states not transform one type of pollution into another nor transfer damage or hazards from one area to another. This compels a more integrated approach to wastes reduction, management, and disposal, which takes into account wastes generated on land that may be dumped at sea, particularly in nearshore waters; wastes carried out to sea by rivers, tides, and currents; wastes deposited in coastal landfills or marshes from which pollutants are leached into the marine environment; and wastes received in port from ships. Section IV.B. At national and regional levels, this interaction between waste disposal on land and at sea, combined with the linkages between offshore operations and coastal facilities, compels a more comprehensive approach to LBSMP, dumping, and pollution form offshore structures. Sections IV.C and IV.D.

The legal basis for an ecosystem approach to protecting marine and coastal areas, and its implications for implementation, argue forcefully for improvements in assessment techniques and management processes. These must be capable of anticipating and responding to the effects of multiple human activities on the marine environment, marine fisheries, and the ecosystems they comprise. They argue also for improvements in international institutional arrangements.

This section examines additional opportunities presented by the LOS Convention for advancing an ecosystem-based approach to assessment, planning, and management. Following a description of Convention provisions on protected areas and species, it reviews linkages with other major international agreements and how they may complement and reinforce sustainable oceans development — and
vice-versa. These are divided into linkages with other marine agreements, linkages with protected area and species agreements that are not limited to the marine environment, and, through the vehicle of land-based sources of marine pollution, linkages with river basin agreements. The final two sections touch on the tool of environmental assessment and the potential of regional agreements as a means for addressing all sources, sectors, and activities that degrade marine and coastal environments/resources. Section VIII revisits international institutional arrangements and their support of integrated, regional arrangements.

A. Marine Protected Areas and Species: The LOS Convention

The LOS Convention makes limited reference to specific marine species or areas. But the relationships between these limited references, the other environmental and conservation provisions of the Convention, and other international agreements are fundamentally important. The Convention reinforces designations pursuant to other international agreements and extends the possibilities for protecting clearly defined areas of the marine environment. As further protective measures are adopted pursuant to different global and regional agreements — be they marine agreements or international treaties and programs of broader scope — widely-endorsed measures may become applicable to parties to the LOS Convention.

Marine Mammals: The LOS Convention recognizes the unrestricted right of a coastal state and the competence of an international organization to prohibit, limit, or regulate the exploitation of marine mammals more strictly than required for conservation alone. (Articles 65, 120) The requirement that fish conservation measures, including gear restrictions, take into account effects on associated and dependent species (Articles 61.4, 119.1) helps protect marine mammals. Section V.

Other Protected Species: The Convention requires that measures taken to prevent, reduce, and control marine pollution must include those “necessary to protect and preserve rare or fragile ecosystems as well as the habitat of depleted, threatened or endangered species and other forms of marine life” (Article 194.5).

Introduction of New or Alien Species: The Convention requires states to take all measures to prevent, reduce, and control the introduction of new or alien species to a particular part of the marine environment, because they may cause significant or harmful changes (Article 196.1).

Area Protection from Deep Seabed Mining: For Convention provisions permitting the International Seabed Authority to disallow minerals exploitation in areas where risk of serious harm to the marine environment exists, and the draft implementing regulations permitting the establishment of environmental reference zones, see Section IV.F.

Ice-Covered Areas: Within the EEZ, coastal states may adopt and enforce non-discriminatory (i.e., equal treatment for all ships) laws and regulations to prevent, reduce, and control marine pollution from vessels in ice-covered areas. Certain conditions must be met, however. Particularly severe climatic conditions and ice covering the area for most of the year must create obstructions or exceptional hazards to navigation, and pollution of the marine environment must pose a risk of major harm to, or irreversible disturbance of, the ecological balance. The laws and regulations must give due regard both to navigation and to environmental protection, and they must be based on the best available scientific evidence. (Article 234)
Protected Areas and Maritime Activities: The Convention incorporates by reference the “special area” designations permitted under MARPOL 73/78. These impose more stringent discharge standards — within certain (large) approved areas like the Baltic Sea, the Mediterranean Sea, the Red Sea, the North Sea, the Black Sea, the Gulf of Aden, the Gulf of Mexico, the Wider Caribbean Region, and the Antarctic Treaty area — than otherwise required in relation to one or more of the following substances carried by ship: oil, noxious liquid substances in bulk, and garbage (MARPOL 73/78 Annexes I, II, and V). In addition, under the LOS Convention, if coastal states believe that within a clearly defined area of their respective EEZs, special circumstances warrant the imposition of the higher standards established for “special areas”, they may seek IMO approval to apply them. That is, they may seek IMO approval to apply these standards in EEZ areas that are not necessarily within an approved MARPOL 73/78 “special area”. (Article 211.6.6)

The LOS Convention permits coastal states to go further in two respects. First, in determining whether the higher “special area” measures are necessary, they may take into account not only the rationale set forth in MARPOL 73/78 — that there are reasonable technical grounds for believing that special mandatory measures are required in relation to the area’s particular oceanographical and ecological conditions and the particular character of vessel traffic — but also the area’s utilization and the protection of its resources. Second, they may adopt even more stringent measures for the defined areas they are seeking to protect, provided the IMO agrees. They are to be guided by the same criteria as those for applying the “special area” measures. Scientific and technical evidence must be submitted to the IMO in support of the claim, as well as information on necessary waste reception facilities (for substances that might otherwise be discharged from the vessel). If the IMO determines that the additional measures proposed by coastal states are justified, they become applicable to foreign vessels. These measures may relate to navigational practices or discharges, but they may not require foreign vessels to observe design, construction, manning, or equipment standards other than generally accepted international rules and standards. (Article 211.6.c) Section IV.A.

Legal and Institutional Developments Pursuant to International Ocean Law Agreements

Two significant sets of developments have occurred since the adoption of the LOS Convention: the elaboration within the IMO of additional means to protect vulnerable marine areas from maritime activities27, and the adoption, pursuant to four of the regional seas agreements, of protocols on specially protected areas and wildlife (Mediterranean (1982), East Africa (1985), Wider Caribbean (1990), and South East Pacific (1989)). Figure 10. The former build upon the “special areas” concept and a 1978 IMO resolution. The latter help give expression to Article 194.5 of the LOS Convention on rare and fragile ecosystems and habitat protection. Marine protected area designations pursuant to the Antarctic Treaty permit a somewhat expanded scope, as considered below. Although outside the scope of this report, some international fisheries agreements permit designation of sanctuaries or other special areas for protection, conservation, or scientific study (Whaling Convention, CCAMLR), as do some maritime boundary agreements.

Protected Areas and Maritime Activities: Coastal states assumed new responsibilities under the LOS Convention to conserve resources and protect the marine environment within 200 miles. Article 211.6 recognizes criteria that may justify additional protective measures by coastal states to protect EEZs from marine pollution by ships. (In the territorial sea, the coastal state has full authority to regulate vessel traffic, subject to any international “passage” regimes. Section IV.A.) During the mid-1980s, the IMO began to explore how to protect marine areas vulnerable to environmental damage from ships and

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27. The discussion below regarding areas vulnerable to maritime activities draws heavily on the following reports: IMO Documents MEPC 33/INF.27, 1 September 1992 and MEPC 36/21/4, 4August 1994. For a full discussion of the history and issues, see also Gjerde and Freestone, Peet, Plant, Warren and Wallace.
Figure 10
Agreements Related to Marine and Coastal Specially Protected Areas and Species

**Principal Marine Focus**


MARPOL 73/78 Annexes I, II, and V: special area provisions in relation to pollution by oil, noxious liquid substances in bulk, and garbage. Special areas have been designated in the Mediterranean, Baltic Sea, Black Sea, Red Sea, the Gulf area, Gulf of Aden, North Sea, Antarctic, and Caribbean.

(In addition to the specialized regional protocols noted below, two of the framework regional marine agreements (figure 3) make reference to specially protected areas and species — West and Central Africa, South Pacific. They contemplate further individual and joint actions to protect and preserve rare or fragile ecosystems and depleted, threatened, or endangered flora and fauna and their habitat.)


**Major Related Agreements**


Convention on Wetlands of International Importance Especially as Waterfowl Habitat, Ramsar (1971), and 1982 Protocol. (RAMSAR)


Convention on International Trade in Endangered Species, Washington (1973) - UNEP. (CITES)
Section Six


Convention on the Conservation of European Wildlife and Natural Habitats, Berne (1979) - Council of Europe.


Ozone Depletion:

Protocol on Substances that Deplete the Ozone Layer, Montreal (1987).

Sea-Level Rise:


Genetically Modified Organisms:


Convention on Civil Liability for damage resulting from activities dangerous to the environment (covers dangerous substances; facilities for wastes treatment, incineration recycling, handling; and genetically modified organisms and other micro-organisms), Lugano (1993) - Council of Europe.

Soft Law:


Non-indigenous Species:


87
dumping, whose vulnerability might be of narrower geographic scope than the "special areas" designated pursuant to MARPOL 73/78, and which could complement their substantive rationale. This culminated in IMO's adoption, in 1991, of Guidelines for the Designation of Special Areas and the Identification of Particularly Sensitive Sea Areas (PSSAs).

The first section of the Guidelines, on Special Areas, provides additional guidance for implementing MARPOL 73/78. The area must qualify in three categories: ecological conditions, oceanographic conditions, and vessel traffic characteristics. An application for special area status is strengthened if discharges pose a threat to amenities; if the states concerned are taking, or intend to take, measures to prevent, reduce, and control pollution from sources other than shipping that contribute to stress in the area; and if there is an active regime in the area to manage the area's resources.

The criteria for PSSAs expand the rationales for identification and permit an identified area to qualify in any one of three categories. These encompass ecological characteristics (uniqueness, dependency, representativeness, diversity, productivity, naturalness, integrity, and vulnerability); social, cultural and economic values (economic benefit, recreation, human dependency); and scientific and educational values (research, baseline and monitoring studies, education, historical value). Environmental stresses from other sources are also to be taken into account.

The measures states may take to protect identified PSSAs must be those currently approved by the IMO. They include MARPOL 73/78 discharge standards for special areas, routeing options, and vessel traffic services. The possibility of a buffer zone is also contemplated. The procedures for approval of PSSA protection measures refer back to those currently required for approval of each type of measure pursuant to the relevant IMO instrument.28

Regional Agreements: The regional protocols on protected areas/species vary in their geographic and substantive scope. The Mediterranean and South East Pacific agreements are restricted to area designations, whereas the East African and Caribbean agreements include wildlife also. The initial Mediterranean protocol is limited to area designations within the territorial sea, while the others include all waters within national jurisdiction to the outer limit of the EEZ. (The South East Pacific agreement includes also the continental shelf beyond 200 miles.) Each party may include wetlands or coastal areas in its designations, and the Caribbean Protocol refers also to "related terrestrial areas (including watersheds)". This geographic scope underscores the potential complementarities between the regional marine agreements and other international agreements. In one case, explicit reference is made to developing a coordinated network of protected areas, taking into account the biosphere reserves of UNESCO (Mediterranean). In other cases, coordinated measures to manage and protect threatened or endangered migratory species are mentioned, as well as consistency with the Convention on International Trade in Endangered Species (CITES) and the Convention on the Conservation of Migratory Species of Wild Animals (CMS), below. When protected areas are contiguous to other states' territorial or offshore areas, consultation and the possibility of coordinated measures or corresponding designations are cited. Governments may establish special areas to protect a variety of values, and they may employ a wide range of protective measures. Figure 11.

28. MARPOL 73/78 and Annexes for "special area" designations; International Convention for the Safety of Life at Sea (SOLAS 1974) and the General Provisions on Ships Routing (IMO Resolution A.572(14); Convention on the International Regulations for Preventing Collisions at Sea (COLREG 1972). The routing measures include areas to be avoided, traffic separation schemes, inshore traffic routes, precautionary areas, and deepwater routes. Other measures considered relevant to enhancing protection for PSSAs are the Guidelines for Vessel Traffic Services (Resolution A.578(14), 20 Nov. 1985) and voluntary or compulsory pilotage. Mandatory ships' reporting, special construction requirements, speed restrictions, control of ballast water discharges, and prohibiting cargo transfer for ships operating in PSSAs have also been suggested. See IMO Document A 17/Res.729, 9 January 1992; MEPC 33/INF.27; and MEPC 36/21/4.
Of particular note is the approach employed under the Caribbean agreement. Annex III species (harvesting permitted, but only on a rational and sustainable basis) include all species of mangrove forests, coral reefs, and seagrasses, which are considered vital for the protection and recovery of fragile and vulnerable ecosystems in the region. These designations offer a precedent- setting means of protecting systems that may cross national boundaries. [Freestone 1991]

In the Antarctic region, Annex V to the 1991 Protocol covers continental as well as marine designations. Its reference to “wilderness” values is unique among the regional agreements with a significant marine focus. Recognizing that Antarctic conditions and circumstances are themselves unique, it is nevertheless interesting that “specially managed areas” — to assist in the planning and coordination of activities, avoid possible conflicts, improve cooperation between parties, or minimize environmental impacts — may include marine areas. In addition, Protocol Annex III on wastes management and disposal refers explicitly to efforts to avoid deposition of particulate matter from open burning of wastes in areas accorded protection under the Treaty.

Under the regional protocols, including the Antarctic agreement, it is clear that maritime activities only need to be addressed if they pose a threat to the designated area. If so, protective measures must be consistent with international law — that is, international freedoms of navigation as guaranteed by the LOS Convention. Beyond the territorial sea, these require approval through the IMO. If national designations do not address maritime activities, they do not need to be considered by the IMO.

**Whales and Other Marine Mammals:** Under the 1946 International Convention on the Regulation of Whaling, the moratorium on commercial whaling remains in effect, although Norway and Russia, having filed formal objections, are not bound by it. As of 1994 commercial whaling had been banned in sanctuaries encompassing the whole of the Southern Ocean around Antarctica and extending north to 40 degrees south latitude (11.8 million square miles). This area excludes the EEZs of Chile and Argentina and the area north of 60 degrees south latitude already included in the Indian Ocean sanctuary. Japan and Russia have filed formal objections to the Southern Ocean sanctuary. The Southern Ocean ban is to be reviewed every ten years, while the Indian Ocean sanctuary was extended indefinitely in 1992.

The Revised Management Procedure developed by the International Whaling Commission (IWC) is to provide the scientific element of a broader Revised Management Scheme involving also a system of observation and inspection. These have not yet been adopted and incorporated into the Schedule of the IWC. In 1995, the IWC is to address the effects of environmental changes on cetaceans, following a workshop convened to formulate scientific advice to the Commission on appropriate response strategies.

In 1992, the North Atlantic Marine Mammal Commission was established among Greenland, Iceland, Norway, and the Faroe Islands, in part due to dissatisfaction with the IWC. Its purposes are to contribute to the conservation, rational management, and study of marine mammals in the North Atlantic.


**Non-Indigenous Species:** The introduction of non-indigenous species has long been a concern in the marine agreements, although more specific steps to address the problem have only been taken recently. In 1973, IMO and the World Health Organization were to collaborate in studying the role of ballast water
Figure 11
Marine Protected Areas: values and regulations

Summary of Values to be Safeguarded in Marine Protected Areas
- biological and ecological value, in particular fragile, vulnerable, or unique ecosystems;
- genetic diversity and “satisfactory population levels” of species and their breeding grounds and habitats, with emphasis on flora or fauna in danger of depletion or extinction;
- representative types of ecosystems or ecological processes;
- sites of particular scientific, ecological, economic, aesthetic, historical, archaeological, cultural, tourist, or educational interest; and
- wilderness (Antarctica).

Summary of the Scope of Regulations Parties May Apply in Marine Protected Areas
- dumping;
- discharge of wastes, including land-based sources;
- passage of ships and any stopping or anchoring (consistent with international law);
- fishing, hunting, capture of animals, harvesting of plants;
- introduction of non-indigenous species;
- acts likely to harm or disturb flora or fauna, including the introduction of indigenous species;
- seabed (or subsoil) exploration or exploitation, or the modification of soil or seabed profiles;
- archaeological activities;
- scientific activities;
- tourist activities, including pleasure craft; and
- trade in and import and export of animals, parts of animals, plants, parts of plants, or their products or eggs, and of archaeological objects which originate in protected areas and are subject to measures of protection.

As a medium for spreading epidemic disease bacteria. The IMO adopted voluntary guidelines in 1991 to prevent the introduction of unwanted aquatic organisms and pathogens from ships’ ballast water and sediment discharges. In March 1994 a working group was established to develop these guidelines further, and there is a possibility that as ballast water management and treatment processes are improved, a new annex to MARPOL 73/78 may be developed. FAO has developed guidelines on the introduction of marine and freshwater organisms. Through GESAMP, FAO is preparing guidelines for environmentally-sound mariculture practices. Commitments to address these issues exist in many regional and global agreements on protected areas and species, but few specific measures have been articulated.29

IUCN’s Commission on National Parks and Protected Areas (CNPPA) adopted in 1992 a revised System of Classification of Terrestrial and Marine Protected Areas and is promoting the establishment of a representative system of marine protected areas on a global basis. The Assembly has recommended that coastal nations be encouraged to establish under national legislation representative systems of marine protected areas, and that protected areas beyond national jurisdiction be established pursuant

29. As early as 1961, the Antarctic Treaty parties adopted measures to avoid the introduction of alien flora and fauna. More stringent requirements prohibiting the introduction of non native species (with limited exemptions) and providing for special precautionary measures to prevent the introduction of micro-organisms are included in Annex II to the 1991 Antarctic Protocol.
to appropriate international mechanisms. In both cases, it recommends including areas designated as wilderness. (IUCN Resolutions 19.46, 17.38)

Specifically in the South East Pacific, IUCN has commended the establishment of a Network of Marine and Coastal Protected Areas and recommended that more biologically important areas be considered for designation as Biosphere Reserves (Resolution 19.59).

Specifically in the Mediterranean, IUCN has recommended the establishment of a sanctuary for large and small cetaceans by designating the Ligurian Sea in the Western Mediterranean as a marine reserve (Resolution 19.91).

Specifically in the North East Atlantic, including the North Sea, IUCN has urged the parties to the North East Atlantic Convention to consider an instrument containing appropriate guidelines, criteria, and a comprehensive work programme to establish a system of specially protected areas (Resolution 19.91).

Specifically in the Antarctic Treaty area, IUCN is charged with supporting the establishment and management of Antarctic specially protected and managed areas, within the context of the Antarctic Treaty system (Resolution 19.96).

Specifically in the Arctic region and bearing in mind the Arctic Environmental Protection Strategy, IUCN has encouraged Arctic nations to establish protected areas for marine and terrestrial habitats that are representative, unique or especially vulnerable, and to establish international reserves in transboundary areas, such as the Bering Sea and the northern Yukon-Alaska border (Resolution 19.97).

IUCN has reaffirmed its view that the International Whaling Commission remains the appropriate global authority for the conservation and management of whales and the regulation of whaling, pursuant to the 1946 Convention and Agenda 21 (Resolution 19.63). IUCN has supported the Southern Ocean sanctuary and will help formulate a non-lethal, long-term scientific research program and guidelines for non-lethal uses of whales within the sanctuary, such as ecotourism and whale-watching. It will work with other organizations on the planning and coordinating committee for the 1984 UNEP Global Plan of Action for the Conservation, Management and Utilization of Marine Mammals (Resolution 19.64).

IUCN has sought further study and implementation of legal instruments and technical means to control ballast water discharge, including liability on the part of owners or charterers for damage caused by the introduction of foreign organisms from ballast waters (Resolution 17.47).

For further initiatives, see discussion at the end of Sections IV.A. and VI.B.

B. Protected Areas and Species Pursuant to Other International Legal and Institutional Frameworks

Beyond the ocean law agreements, there are a number of international agreements and programs that deal with protected areas and species. To the extent that rare or fragile ecosystems have been so identified under, say, the World Heritage Convention, the Ramsar Convention, or as reserves under the Man and the Biosphere program, the LOS Convention language reinforces all states’ obligations to take measures regarding marine pollution necessary to ensure their protection (Article 194.5). Similarly, for species recognized as depleted, threatened, or endangered under other international agreements, the LOS
Convention reinforces all states' obligations to take measures regarding marine pollution necessary to protect and preserve their habitat and to apply conservation measures for marine living resources that consider effects on such dependent or associated species (Articles 194.5, 61.4, 119.1).

Measures taken pursuant to the Montreal Protocol on Ozone Depletion and the Framework Convention on Climate Change may also benefit marine species and coastal habitat. Thus, reducing ozone depletion will reduce the adverse effects of increased ultraviolet radiation due to ozone depletions on the productivity of marine microorganisms, with amplified effects throughout the marine food web. Efforts to strengthen the natural capacity of coastal systems to respond to possible sea level rise due to global warming will protect coastal areas and habitat; for example, halting damage to reefs and restoring degraded reef ecosystems. The FCCC emphasizes measures to promote conservation and enhancement of sinks and reservoirs of greenhouse gases, including oceans and coastal and marine ecosystems (Article 4.1.d). Research, monitoring, and assessment programs supporting implementation of these Conventions should be coordinated with those focused on marine issues and problems.

The 1979 Convention on the Conservation of Migratory Species of Wild Animals (CMS) identifies in two appendices (1) migratory species that are in danger of extinction throughout all or a significant portion of their range, and (2) migratory species which have an unfavorable conservation status. In both cases, marine species and migratory seabirds are included (e.g., humpback whales, sea turtles, and white pelicans on Appendix I; a variety of ducks, geese, and swans on Appendix II). Coastal habitat is important to these and other species on the lists. Range states are identified as those inhabited or crossed by a particular species (land or water), as well as any state whose vessels may be engaged in taking that species beyond the limits of national jurisdiction.

For Appendix I species, the Convention urges parties that are range states to prohibit takings (subject to scientific and other exemptions), and to take measures to conserve and restore habitat, remove obstacles to migration, and prevent, reduce, and control factors endangering or likely to endanger the species, including introduced species. For Appendix II species, the range states are to endeavor to conclude further conservation agreements and to maintain a network of suitable habitat in relation to migration routes. Agreements on Wadden Sea seals and small cetaceans of the Baltic and North Seas are in force. They explicitly refer to the importance of reducing pollution, and the latter calls for efforts to modify fishing gear and practices to reduce by-catch and marine debris and to prevent other disturbances, "especially of an acoustic nature".

With respect to on-going work, a draft agreement on conservation of African-Eurasian Migratory Waterbirds was considered at a meeting of the parties in June 1994; and agreements on small cetaceans of the Mediterranean and Black Seas and migratory waterbirds of the Asia-Pacific region are under development. There is interest in additional work on small cetaceans and marine turtles in several regions, as well as seals and other oceanic birds. [UNEP: CMS 1994] In some cases, these initiatives are taken in consultation with developments under Ramsar or regional marine agreements.

The 1973 Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) was concluded to protect species threatened with extinction or overexploitation. CITES regulates trade, with diminishing strictness, in three categories of species (and parts thereof): (1) species threatened with extinction which are or may be affected by trade (Appendix I); (2) species that might become extinct unless trade is strictly regulated or in order to bring trade under effective control (Appendix II); and, as between contracting parties that do not enter a reservation, (3) species identified by any party as subject to regulation within its jurisdiction and needing the cooperation of other parties to control trade. Many marine species are included in the appendices. Control is exercised by authorities.

30. For an assessment of climate change and the coastal zone, see Pernetta and Elder.
at points of export and import. Species transported into a state that were taken in the marine environment outside national jurisdiction are subject to the control of the state into which they are introduced from the sea. There is also an exception for marine species protected under other agreements in force prior to entry into force of CITES (e.g., whales, some seals).

**Pursuant to the 1971 Convention on Wetlands of International Importance Especially as Waterfowl Habitat**, each party designates wetlands within its territory for inclusion on a “List of Wetlands of International Importance”. The parties are to cooperate in conserving listed wetlands, and as far as possible promote wise use of other wetlands in their territory. While primacy is given to wetlands of international importance to waterfowl at any season, other wetlands may be selected for the List. Criteria for selection of wetlands of international importance have been developed.

Wetlands as defined in the Convention may include areas of marine water the depth of which at low tide does not exceed six meters. If deeper marine waters lie within the wetlands, they may also be included. In addition, islands and riparian and coastal zones adjacent to wetlands may be incorporated. The 1994 meeting of the parties, noting the importance of wetlands to fishes as well as waterfowl, instructed the Bureau and a new Scientific and Technical Review Panel to adapt the selection criteria for wetlands of international importance to take into account wetlands of importance as fish habitat.

**The 1972 Convention Concerning the Protection of the World Natural and Culture Heritage (WHC)** permits marine areas to be included as either natural or cultural heritage (e.g., Great Barrier Reef). Each party is obliged to avoid actions that might directly or indirectly damage heritage areas in other countries, and together the parties are to establish a system of cooperation and assistance designed to support each other’s efforts to conserve and identify that heritage. Each state submits an inventory of heritage property to a committee of state representatives, which selects properties of outstanding universal value for a list (with the consent of the state concerned). When a listed property requires major operations to preserve it, and international assistance has been requested, it may be included on a second list of properties in danger. The criteria for inclusion on these lists are defined by the committee.

**Biosphere reserves** are not established pursuant to treaty but to a program launched in 1971 by UNESCO. The Biosphere Reserves are intended as a coordinated international network combining nature conservation with scientific research and resources management. Reserves may include representative terrestrial and coastal environments, and marine areas have also been included. For example, a reserve in the upper Gulf of California in Mexico is expected to help protect the small cetacean, vaquita, found only in that region. In the case of marine habitats in coastal areas, the Action Plan makes special reference to ensuring adequate protection of adjacent coasts and drainage basins.

**In addition to the global agreements, there are several regional agreements on nature protection and/or wildlife protection.** They also list protected marine species, habitat in coastal areas vital to terrestrial or marine species, or natural areas (coastal, marine, freshwater) warranting protection for other reasons. Like the conventions considered in more detail above, they establish obligations and provide for various measures to be taken by states, individually or jointly, to implement their objectives. They refer, variously, to the need for coordination among range states to protect migratory species and seek to control and eliminate the introduction of non-native species. Some address trade in protected species. *Figure 10.*

**The 1992 Convention on Biological Diversity**, like the LOS Convention, has both a “territorial” and a “flag state” approach. Each party must apply its provisions to components of biological diversity within the limits of national jurisdiction; that is, including the EEZ and continental shelf beyond. Each party must also apply it to processes and activities under its jurisdiction or control — wherever located.
and carried out — that may have significant adverse impacts on biological diversity — wherever those impacts occur. Its importance lies in taking a comprehensive approach to species and ecosystems and their diversity, and promoting an integrated approach at the national level to conservation and sustainable use.

The Convention’s emphasis on diversity, that is maintaining the variability of species and ecosystems, complements and reinforces agreements focused more narrowly on protecting particular species and defined values in given areas. In lieu of protecting marine and coastal (or freshwater and terrestrial) environments from specific threats of pollution, physical degradation, or ecosystem disturbance, the Biodiversity Convention concentrates on locations and situations where these threats endanger species and ecosystem variability, with consequent effects on human welfare.

The Biodiversity Convention requires that parties implement the agreement with respect to the marine environment consistently with the rights and obligations of states under the law of the sea. Beyond that, however, there are several important provisions that relate to marine biodiversity, where the LOS Convention and the Biodiversity Convention may complement and reinforce each other:

- the indicative criteria for identifying important components of biodiversity (Annex I);
- provisions to control risks to environments (or human health) associated with the release of living modified organisms resulting from biotechnology (Article 8.g);
- provisions on impact assessment related to biological diversity, including potential transboundary impacts and impacts beyond national jurisdiction (Article 14);
- provisions on grave and imminent danger of damage to biological diversity outside national jurisdiction, and arrangements for emergency response (Article 14);
- provisions on liability and redress, including restoration and compensation, for damage to biological diversity (Article 14.2);
- access to genetic resources within national jurisdiction (including the EEZ and continental shelf), on mutually agreed terms, including participation in research by the state of origin, and equitable sharing with the state of origin of the results of research and the benefits of commercial or other utilization, including technologies derived from genetic resources (Articles 15, 16, and 19);
- cooperation beyond national jurisdiction for the conservation and sustainable use of biodiversity (Article 5); and
- the general call for cooperative efforts and international assistance in research and training, public education and awareness, access to and transfer of technology, exchange of information, and technical and scientific cooperation (Articles 12, 13, 16, 17, 18).

In providing an indicative list of criteria to help countries identify important components of biological diversity, Annex I of the Biodiversity Convention builds on values cited in the marine agreements on protected areas and species. Figure 11. In relation to protected ecosystems and habitats, it adds the following: those containing high diversity or large numbers of endemic or threatened species, and those required by migratory species or associated with key evolutionary processes. (The other criteria already found in the marine agreements are social, economic, cultural or scientific importance; representative or unique; associated with key biological processes; and wilderness.) In relation to threatened species and communities, the Biodiversity Convention adds as criteria species that are wild relatives of

94
The application of these additional criteria to marine areas and species should be considered pursuant to the regional marine agreements, the IMO guidelines for areas to be protected from maritime activities, and agreements to conserve and protect marine species.

In addition to protective measures that may be applied pursuant to other international agreements, the Biodiversity Convention emphasizes ex-situ conservation measures. It provides also that specific measures be developed, focused on maintaining biological diversity, in relation to the use and release of living modified organisms resulting from biotechnology; impact assessment and emergency notification and response regarding threats to biological diversity; and liability and compensation for damage to biological diversity. As these measures as developed, they should take into account marine species and marine and coastal conditions and draw on existing marine arrangements. Their application within the context of existing marine agreements should be considered. In particular, contingency planning and emergency response arrangements to avoid harm to marine biological diversity should be coordinated with the marine agreements on this subject, including mapping of sensitive marine and coastal areas.

In relation to genetic resources in marine areas under national jurisdiction and related cooperative research efforts and shared benefits of products derived, there are strong links with the LOS Convention in two respects. First, LOS Convention provisions on marine research within national jurisdiction provide the basis for developing cooperative research arrangements specific to genetic resources in marine areas. The guidance developed for state practice under the LOS Convention may be taken advantage of in implementing the Biodiversity Convention in offshore areas. Second, it would be useful to extract "lessons learned" from the 15-year history of collaborative arrangements made by many coastal states, pursuant to the LOS Convention, to secure benefits from marine research and resources development within their EEZs.

Several commentators have recently noted that biotechnology derived from living resources on the deep seabed beyond national jurisdiction is not expressly addressed by either the LOS Convention or the Biodiversity Convention. The international seabed, ocean floor, and subsoil thereof are the "common heritage of mankind", pursuant to the LOS Convention. The detailed regime for deep seabed mineral resources is not intended to cover living resources. Unlike "sedentary species" of the continental shelf, Section V, there is no attempt to define any living resources of the deep seabed. It is argued that, absent any specific regime for seabed living resources, they are subject to the high seas "freedom to fish" regime. [Burke 1994] The Biodiversity Convention's provision on cooperation beyond national jurisdiction, together with the LOS Convention's designation of the seabed as the common heritage of mankind, as well as the general references to international cooperation in both conventions, might be utilized in elaborating a regime on biotechnology derived from deep seabed living resources. Its application to biotechnology from high seas living resources might also be considered.

The Next Steps

In relation to marine protected areas and maritime activities, the entry into force of the LOS Convention will require some clarification from the IMO with respect to utilizing its PSSA guidance in the implementation of LOS Convention Article 211.6. The same is true with respect to relating the existing procedures for approval of measures applicable in PSSAs, as provided for in different IMO instruments, with procedures for entry into effect of measures pursuant to Article 211.6.
As additional measures to avoid pollution from foreign ships are defined, coastal states may then seek IMO approval to apply them in specific marine areas. Questions remain, however, as to whether the measures and procedures for designating PSSAs — as opposed to Special Areas — should be consolidated and given a firmer legal basis; for example, as a protocol or annex to MARPOL 73/78. A consolidated legal instrument, to be utilized in implementing Article 211.6, would establish a clear and uniform basis for area designations and available protective measures, consistent with international navigation freedoms. This could facilitate designations and offer a convenient means to update criteria and measures. At the same time, it has been suggested that the existing PSSA criteria are very broad and do not address either the level of maritime activities or criteria for assessing the risk of pollution from ships. [Warren and Wallace] An additional threshold of vulnerability to maritime activities would be necessary in the context of the IMO agreements and LOS Convention Article 211.6, particularly for the application of mandatory measures approved by the IMO. Thus, a consolidated legal instrument, precisely crafted to address shipping activities and incidents, would be helpful.

The existing scope of the PSSA criteria remains useful in the context of refining a more integrated approach to marine and coastal protected area designations under different international agreements, in particular the regional seas agreements, below. In this respect, the IMO Guidelines' encouragement of supporting actions to control other sources of marine pollution and actively manage resources in the area is useful. As coastal states regulate such activities as dumping, the development of offshore minerals, and land-based activities that degrade marine and coastal environments, they may incorporate and elaborate upon the PSSA criteria. It is argued that a consolidated legal instrument for shipping would create added value by raising the profile of the identified areas and focusing attention on the need to protect vulnerable areas not only from maritime but also from other activities. [IMO: MEPC 36/21/4]

The PSSA concept might additionally serve as a vehicle to improve coastal state enforcement authorities within an internationally-recognized framework. [IMO: MEPC 33/INF.27; Nolkaemper 1993] The LOS Convention explicitly extends coastal state enforcement authority to national laws and regulations adopted in conformity with Article 211.6 (Article 220.8). But if such an area straddles various offshore zones, different enforcement authorities apply. If a refined PSSA concept became the basis for LOS Convention designations pursuant to Article 211.6, uniform enforcement capabilities might be applied throughout, even if the PSSA straddled various jurisdictional zones.

Finally, the development of the PSSA concept may offer an agreed basis for the designation of marine protected areas beyond national jurisdiction. As concepts and vehicles for designating protected marine areas beyond national jurisdiction evolve, the indicative list of criteria annexed to the Biodiversity Convention should also be considered. The relatively recent discovery of deep ocean vent life forms opens a new realm of species and ecosystems whose component values merit protection. The most concrete manifestations of such designations to date include the proposal for international recognition of the Titanic memorial and the draft regulations for deep seabed mining, both based on U.S. laws. Sections IV.F. and IV.G. Agenda 21 also suggests the need to preserve high seas habitats and other ecologically sensitive areas, based on the concept of wild ocean reserves. [Report 1992]

31. It has been recommended that the guidelines for Special Areas under MARPOL 73/78 and for PSSAs be covered by separate instruments. Several procedural improvements for IMO consideration of PSSAs are contained in IMO: MEPC/36/21/4.

32. See IMO: MEPC 36/21/4 for suggestions of a range of protective measures that might be applied or adapted to PSSAs.

33. In relation to protection from dumping, Annex III to the London Convention, and the Guidelines for the implementation of Annex III, set forth the relevant criteria.
The regional marine programs call for the development of common guidelines, standards, or criteria for selecting and establishing protected areas and species. They offer a useful vehicle for integrating protections from land-based activities, dumping, transboundary movement of wastes, offshore seabed activities, and, as approved by the IMO, EEZ maritime activities. Common criteria—which include specific criteria for assessing the risk of pollution from ships—would help ensure that agreed values are protected, and facilitate the development and application of accepted methods to identify areas for protection and determine priorities. Harmonized methods could expedite national designations. Such criteria and methods would clearly support integrated coastal management as a tool for ecosystem planning and management. As the criteria are refined and elaborated, account could be taken of the criteria used in designating protected areas and species under international instruments that do not focus solely on the marine environment, including the Biodiversity Convention. Moreover, as protected marine areas are identified in land maps and marine charts, they are more likely to be considered in environmental assessment and development planning, in national and regional contingency planning, and in emergency response actions. As the regional programs evolve, they will be in a position to help determine the adequacy of protective measures and, if more stringent measures are required, how the different legal agreements may be utilized.

IUCN has contributed to the development of the PSSA concept since the mid-1980s, in part through criteria developed for identifying and selecting coastal and marine protected areas. It plays a key role as the designated Bureau (secretariat) under the Ramsar Convention, and serves in an advisory capacity to the WHC committee responsible for criteria and site selection, as specified in the treaty. The Biosphere Reserve program is administered by UNESCO, in cooperation with FAO, UNEP, and IUCN, through the Ecosystem Conservation Group. Through these and other mechanisms, IUCN could usefully examine the criteria, protective measures, approaches, and procedures for protected area and species designations pursuant to different international instruments:

- to determine to what extent they might benefit from greater harmonization;
- to consider where specific criteria, measures, and approaches adopted pursuant to one agreement might usefully be incorporated into another; and
- to organize expert groups to refine these tools, for use pursuant to different international agreements and as a basis for development planning by national governments and international development agencies.

It would be useful to examine the extent of overlap between listings of threatened and endangered species and protected areas and determine:

- which legal agreement or agreements are most appropriate for pursuing protection of particular species or areas;
- how to coordinate protective measures pursuant to different agreements, including vital habitat for migratory marine species; and
- how to use the different agreements to strengthen the representative global network of marine and coastal protected areas promoted by the IUCN.

34. It is reported that within the European Union, work is being undertaken on a list of common criteria for the definition of environmentally sensitive marine and coastal areas. It includes consideration of the PSSA criteria as well as EU Council directives on birds and habitat. [Peet 1994].

It would be useful to determine which of the more specific criteria, protective measures, approaches, and research and monitoring arrangements pursuant to the marine agreements on protected areas and species would contribute to implementation of the Biodiversity Convention. Consideration should be given to utilizing the regional marine agreements as implementing vehicles for the Biodiversity Convention in relation to marine and coastal species/ecosystems.

Consideration might be given to developing a joint regime on biotechnology derived from living resources beyond national jurisdiction, pursuant to the LOS and Biodiversity Conventions.

IUCN could play a useful role in promoting a coordinated strategy for the development of criteria, approaches, and designations pursuant to different international treaties. Where multiple designations are warranted, they may be supported; otherwise, it would be appropriate to distinguish which protective arrangements are most suited to which areas, in view of limited resources.

Specifically in view of its position as host to the Ramsar Bureau, it would be appropriate for IUCN to promote a coordinated approach between Ramsar and the regional arrangements on protected marine areas and species, in particular as criteria are currently being developed to take into account wetlands of importance as fish habitat. These criteria might serve as an important bridging mechanism between the regional marine agreements and fisheries treaties.

At regional and sub-regional levels, IUCN members and commission members could play a vital role in evaluating and improving criteria, protective measures, and approaches and in identifying sensitive marine and coastal areas warranting some form of protection.

At the global level, IUCN's role in data collection and management, and in monitoring areas and species under threat and in protected status — serving various conventions — will continue to be important.

IUCN has stressed the importance of bringing to the attention of all governments the need for rapid development and application of policies and tools specifically for the conservation of marine areas, and advocated that a global evaluation of these policies and tools be undertaken within available resources, leading to a workshop at the 20th General Assembly (Resolution 19.46).

C. Integrated River Basin and Coastal and Marine Area Management

The major problems of marine environmental quality, not surprisingly, reflect the major problems of freshwater quality. In the developing nations, freshwater quality is most seriously affected by the direct discharge of domestic sewage and industrial effluent into watercourses, often without treatment. The use of fertilizers and pesticides in agriculture has led to eutrophication of water bodies and dangerous levels of chemical residues. In addition to adverse consequences on human health and marine species, changes in sediment flow or excessive freshwater extraction may modify coastal processes and coastal/marine ecosystems. This, in turn, may alter human patterns of use or the habitat of marine species and migratory birds.

36. In decreasing order of severity, freshwater quality in developing nations is increasingly affected by bacteriological pollution, organic wastes, suspended solids, organic micro-pollutants, nitrates, eutrophication, and salination. [CSD 1994].

37. For example, the reduced flow of the Ganges during the dry season for the purpose of irrigation (primarily in India) has damaged 10,000 sq. mi. in Bangladesh due to saline intrusion from the Bay of Bengal. [Kahn].
Marine pollution borne through freshwatercourses may result from two situations: (1) a river may be shared by two or more countries, either flowing from one country into another or forming the border between them, and combined pollutants from these countries may adversely affect the country at the mouth of the river, neighboring countries, or areas beyond national jurisdiction; or (2) even if a river originates and discharges into the sea within one country, ocean currents may circulate pollutants or sediments with discernible effect in neighboring countries or beyond national jurisdiction.

It has been estimated that 47 percent of the area of the world (excluding Antarctica) falls within shared river and lake basins. For 44 countries, at least 80 percent of their total area falls within a shared basin. Of these, twenty are in Africa, seven in Asia, thirteen in Europe, and four in Latin America. In addition to the magnitude of land area covered, 214 river and lake basins are shared by two or more countries. [Biswas] These figures give an indication of the potential scope of international agreements on freshwatercourses.

Legal Developments

There are a number of international river and boundary water agreements that address problems in shared watercourses. Figure 12. Traditionally, they have emphasized maintaining navigable waterways and allocation among upstream and downstream nations. Allocation has involved pollution to the extent that extraction or diversion affects the quality of water available to downstream users. For the most part, however, the river basin agreements have rarely explored linkages with marine ecosystems: how water quality requirements for agricultural, industrial, and municipal freshwater uses relate to the effects of river outflow in coastal areas; how allocation decisions affect flow, salinity, and sedimentation in coastal and nearshore areas; and consequent impacts on human uses of coastal and marine areas; marine species, seabirds, and their habitat; and marine ecosystems.38

The emphasis today on sustainable, ecologically-sound use of freshwatercourses has prompted a new look at existing international river basin agreements and a call for new agreements where they do not exist. Improved assessment and monitoring of riverborne impacts on coastal and marine areas will help identify priorities for action.

In 1994, draft articles on the non-navigational uses of international watercourses were adopted by the U.N. International Law Commission. [UN: Report of the ILC 1994] This non-binding instrument is meant to guide states in their national practice and as they agree on a bilateral, sub-regional, or regional basis. The articles require that nations take all measures with respect to an international watercourse that are necessary to protect and preserve the marine environment, including estuaries. They must also take into account generally accepted international rules and standards. (Article 23)

The primary legal expression of the interface between freshwatercourses and the marine environment is found in national laws and international agreements governing land-based sources of marine pollution. Section IV.C. Yet the extent to which direct linkages have developed between international agreements on freshwatercourses and the regional seas agreements is not readily apparent. Both the Mediterranean and Kuwait LBSMP protocols expressly provide that where discharges from a watercourse flowing through more than one country are likely to cause marine pollution, those countries should cooperate to ensure the full application of the protocol. The Baltic Sea agreement and the Black Sea LBSMP protocol contain similar provisions, calling on interested states to cooperate in preventing and eliminating pollution through shared watercourses. It appears that such linkages have been most effective in the case of the triennial North Sea Ministerial Conference, and, more recently, in relation to the Black Sea agreement to pollution through the Danube River. At a recent experts meeting examining 38 Albert E. Utton argues that were the 1994 Colorado River Treaty re-negotiated today, it would allocate a quantity of water to Mexico and the United States and reserve a quantity to protect and maintain the delta and estuarine zone. [Utton].
Figure 12
Selected Freshwater Agreements

Convention Concerning the Equitable Distribution of the Waters of the Rio Grande for Irrigation (1906), and related agreements.

Boundary Waters Treaty concluded between Great Britain (on behalf of Canada) and the United States, (1909), and related agreements.


Indus Waters Treaty concluded between India and Pakistan, Karachi (1960).


Convention and Statute relating to the Development of the Lake Chad Basin, N'Djamena (1964), and related agreements.

Treaty on the Rio de la Plata Basin, Brasilia (1969), and related agreements.

Conventions concerning the Status of the Senegal River, and Establishing the Senegal River Development Organization, Nouakchott (1972).

Convention for the Protection of the Rhine River Against Chemical Pollution, Bonn (1976), and related instruments.

Agreement for the Establishment of an Organization to Manage and Develop the Kagera River Basin, Rusumo (1977).


Section Six

Soft Law:

WHO: *Guidelines for Drinking Water Quality.*


ILA: Rules on Water Pollution in an International Drainage Basin (1982).


approaches to an LBSMP protocol for the Caribbean, the meeting recommended that the protocol provide that riparian nations cooperate to ensure the full application of the protocol in shared watercourses. [UNEP: Report 1993] Similar concerns were expressed in a preliminary evaluation of the regional seas agreements. [UNEP: Report 1993]

International efforts to control land-based sources of marine pollution may serve as a wedge to stimulate broad-based pollution controls and ecosystem management in river basins. Where individual pollutants or issues of water allocation may lead to narrowly focused national laws or international agreements, the cumulative effects of nutrients, contaminants, and sediments manifested in coastal areas may offer a handle for stronger upstream controls covering the watershed as a whole.

IUCN could be helpful in developing criteria and procedures to assess the linkages and impacts between freshwater and marine ecosystems, and how to integrate these into planning documents and legal instruments.

D. Environmental Assessment: Impacts in Marine and Coastal Areas

The LOS Convention’s provisions on environmental impact assessment (EIA) are reflected in nearly all of the regional agreements, but procedures for putting them into effect are not well articulated. Sections III.C. and III.D. Without further development of the tools for environmental assessment, with a specific focus on activities that may degrade marine and coastal environments/habitat and impact marine species, these provisions will remain difficult to implement.39

Legal Developments

Under the regional marine agreements, requirements to consult with potentially affected or neighboring states regarding EIA are further developed than in the LOS Convention. The most expansive of these is the 1992 Northeast Atlantic agreement, which provides that when pollution originating in one state is likely to prejudice the interests of others, the states concerned, at the request of any party, are to seek to negotiate a cooperation agreement.

39. A 1990 UNEP publication outlines streamlined EIA procedures for four types of projects affecting the marine and coastal environment: a marina, a tourist complex, sewage treatment plants for cities of different size, and a submarine sewage outfall for a city of up to 100,000 inhabitants. [UNEP: *An Approach* (1990)].
**Figure 13**

Agreements on Environmental Impact Assessment Related to Protection of the Marine Environment


**Soft Law:**

- UNEP: Environmental Law Guidelines and Principles No. 2: Principles of conduct in the field of the environment for the guidance of states in the conservation and harmonious utilization of natural resources shared by two or more states (1982).

*The 1991 Convention on Environmental Impact Assessment in a Transboundary Context,* by identifying offshore and other activities that may cause significant adverse transboundary effects, offers more substantive context. It requires consideration of impacts in offshore zones under national jurisdiction, and calls for advance notification and opportunities for potentially affected parties to participate in EIA procedures. It is reinforced in respect of the marine area by more detailed provisions on consultation and cooperation in the 1992 Northeast Atlantic and Baltic Sea agreements. The U.N. International Law Commission's 1994 articles on non-navigational uses of fresh watercourses also contain useful provisions on notification and consultation concerning planned measures that may have adverse effects on other states.

The most sophisticated and binding international system for EIA is found in the 1991 Antarctic Protocol. It builds on concepts found in the 1988 Antarctic minerals agreement (CRAMRA). For a proposed activity likely to have more than a minor or transitory impact, a collective review by the advisory Committee for Environmental Protection (established by the Protocol) is required before final decisions are taken by national authorities. The draft EIA is to be circulated to all parties and made publicly available for comment.

Practical criteria and procedures for assessing activities that may have significant impacts on marine and coastal environments and for monitoring approved activities are urgently needed. These should be tailored to the needs of the regional seas agreements and other agreements aimed at protecting marine

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40. Of the listed activities in Appendix I, those likely to impact the marine environment and marine species are: large industrial facilities such as oil refineries, thermal power stations, nuclear facilities, chemical installations, large-diameter oil and gas pipelines, waste disposal installations and landfills, major storage facilities for petroleum and chemical products, and offshore hydrocarbon production, as well as trading ports, large dams, substantial groundwater abstraction activities, and deforestation of large areas.
areas, species, and ecosystems, including the Biodiversity Convention. Criteria should foster a harmonized approach to defining “risks” and “impacts”. Clear guidance should be developed, related to particular sectors and types of activities.

As noted in Section III.C., the content of EIAs and procedures regarding circulation and release of EIA and monitoring reports to potentially affected nations, international organizations, and the public would benefit from further elaboration. Efforts to agree on indicators for monitoring the health of marine/coastal environments/resources, to harmonize assessment and monitoring procedures, and to assist developing nations with cost-effective assessment and monitoring programs would be useful.

IUCN has called for further work to achieve agreement on important indicators of the marine environment and marine resources (Res. 17.37). These would be helpful in the elaboration of assessment and monitoring programs tailored to coastal/marine concerns.

*The practical expression of EIA criteria and procedures is likely to be incorporated into planning mechanisms for integrated coastal management and integrated watershed management. LBSMP provides the legal context for these management concepts. IUCN has already made substantial contributions to integrated coastal planning and management (Pernetta and Elder [IUCN 1993]) and should continue to refine these approaches, drawing on its members' worldwide experience and expertise. IUCN has urged governments to develop global networks to enhance management capacity and training to maximize sharing between nations and regions regarding experience, research, and technical information on integrated management of coastal, shallow sea, and marine environments and resources (Resolution 19.46).*

**E. Regional Ecosystem Management: Legal and Institutional Developments**

The Special Areas — large sea areas where more stringent pollution discharge standards apply pursuant to MARPOL 73/78 — were identified in *Section VI.A*, together with the qualifying criteria. They respond to the need to protect vulnerable areas from shipping activities.

**Enclosed or Semi-enclosed Seas:** Where a gulf, basin or sea is surrounded by two or more countries and has a narrow outlet, or where it consists primarily of the territorial seas and EEZs of those countries, the LOS Convention requires that states bordering the area endeavor to coordinate their efforts regarding marine living resources management and conservation, protection and preservation of the marine environment, and scientific research policies, encouraging joint research programs. Countries may cooperate directly or through regional organizations, and invite other interested states or international organizations to join them. (Article 123)

**Large Marine Ecosystems (LMEs):** LMEs are ocean areas of more than 200,000 sq.km. (e.g., the Bering Sea, Caribbean Sea and Gulf of Mexico, Bay of Bengal, Yellow Sea). They are characterized by distinctive physical and hydrographic features, to which particular populations of marine species have adapted. Their size normally requires international cooperation. [Belsky; Laughlin] Since the late 1970s, the LME concept has been promoted and refined as a means for ensuring that environmental factors affecting marine species and habitat are considered together with conservation measures, which themselves must take account of interactions among dependent and related species. It requires an effective monitoring and assessment program encompassing natural variability and the causes and effects of changing human activities (including marine pollution, habitat degradation, and fisheries practices), designed to support management decisions. The negotiation of CCAMLR served as the initial vehicle for the concept's development and application in international law. The implementation of CCAMLR has further shaped it. *Section V.B.* IUCN has been a promoter of the concept.
Of the regional marine agreements, some expressly support the protection of marine and coastal ecosystems. The East African agreement calls for appropriate measures to prevent, reduce and combat, in particular, the destruction of marine and coastal ecosystems caused by such actions as land reclamation and dredging. The Northeast Atlantic agreement incorporates an obligation to conserve marine ecosystems and, where practicable, to restore marine areas which have been adversely affected. As noted in Section VI.A., the Caribbean protocol on protected areas and species, by protecting all species of vulnerable coral reefs, seagrasses, and mangroves, establishes a useful basis for sustainable use of these systems.

Both geographic configurations like semi-enclosed seas, and shared ecological systems, ideally foster cooperative research and management arrangements. The countries bordering the Baltic and North seas have long-standing cooperative arrangements, recently upgraded, while those around the Bering Sea, the Black Sea, and the Arctic Ocean have launched new cooperative initiatives during the 1990s. Figure 3. The 1992 Baltic Sea agreement obligates states to take all appropriate measures with respect to the Baltic Sea and its coastal ecosystems to conserve natural habitats and biological diversity, and to protect ecological processes and ensure the sustainable use of natural resources. It recognizes explicitly the desirability of enhancing cooperation with regional fisheries organizations. The Black Sea agreement and its LBSMP protocol recognize the need, in designing pollution control measures, to avoid adverse effects on marine life and living resources by changing their habitats. The 1991 Arctic Strategy contemplates cooperation in both pollution control and the conservation of flora and fauna.

Short of regional arrangements, the 200-mile extension of national jurisdiction has produced numerous maritime boundary delimitation agreements, where shared resources promote joint development and management schemes. These agreements, which may offer either interim or definitive solutions, often include measures for environmental protection and marine resources conservation.

The growth in human activities and impacts on marine and coastal areas increasingly requires cooperative monitoring, research, and assessment programs, keyed to geographic and ecological systems that form a logical unit. By taking account of all sources of impacts and their cumulative effects on such units, these programs provide a well-founded basis for national and regional management and for the identification of priorities. Such regional assessment programs have been effectively developed in the context of the North Sea Ministerial Conferences and the Baltic Convention (including linkages with the monitoring program under the Convention on Long-Range Transboundary Air Pollution). They are emerging also under the 1991 Arctic Strategy. Sections IV.C. and IV.E.

Harmonized regional approaches to managing land-based and offshore activities, including fisheries, and to protecting marine areas and species, lay a solid foundation for effective coastal/marine ecosystem management. Cooperation regarding shared watersheds affecting the coastal/marine areaa is also essential. See Footnote 21.

IUCN has encouraged the Arctic governments to develop new international instruments to address the full range of environmental problems facing the Arctic, and to implement within the Arctic region other international instruments (Res. 19.97).

Moving from marine agreements to broader regional agreements for the conservation of nature, wildlife, and natural resources, Figure 10, the latter are interesting from the oceans perspective to the extent that they lay a basis for a more integrated approach to protecting marine environments and coastal habitat, including watershed management. They variously promote measures:
to combat erosion, especially as it may affect coastal or freshwater ecosystems or lead to siltation of downstream areas or vulnerable ecosystems such as coral reefs (ASEAN);

to improve agricultural practices to ensure long-term productivity of the land, including controlling the application of pesticides, fertilizer, and other chemical products;

to ensure due regard for protecting critical habitat in development schemes for wetland drainage or forest clearance (ASEAN); and

to coordinate and plan projects to conserve and develop underground and surface water and control water pollution, including any deleterious effects of water use practices that might adversely affect aquatic habitats, whether fresh, brackish, or coastal; and to consult and develop joint measures for water resources shared by more than one State.

To take the example of the Association of South East Asian Nations (ASEAN), their Strategic Plan of Action, adopted in 1994, recognizes the marine environment as truly an ASEAN regional heritage. It states that:

"The Southeast Asian seas are natural habitat for about 2500 species ... [which] provide 11% of the world's supply of marine products and are a source of livelihood for many of the region's fishermen. All ASEAN countries have extensive fishing industries. Yet, many of the major near-shore fishing areas in the region are over-fished and polluted from land-based sources and oil spills. ... There has been a notable increase in the occurrence of red tides which is attributed to domestic sources of pollution. This incidence poses not only a health hazard but also affects export earnings. Similarly, many mangroves are disappearing to make room for brackish water prawn farming, housing and industrial development. Coral reefs are also being degraded and require rehabilitation. Accordingly, there is an urgent need for a more coordinated, pro-active and collective action to protect ASEAN's coastal zones and marine resources." [ASEAN]

This statement encapsulates the inter-related aspects of coastal and marine environments, including fisheries. Actions called for are improved regional marine and coastal environmental coordination and the development of a framework for the integrated management of regional coastal zones. In addition, the Plan calls for a regional framework to protect and conserve heritage areas and endangered species, recognizing the cumulative effects of threats posed by continued habitat destruction, overharvesting, pollution, and the introduction of exotic species. It also calls for strengthened institutional and legal capacities to implement international agreements on the environment, and it calls for a regional guide for the safe management of toxic chemicals and hazardous waste and a regional system to promote environmentally sound technologies.

Inter-Regional Initiatives: The Programme of Action of the 1994 U.N. Global Conference on the Sustainable Development of Small Island Developing States (SIDS) offers a multi-dimensional agenda for dealing with coastal and marine resources, wastes management, freshwater resources, the impacts of climate change and sea level rise, natural and environmental disasters, and biodiversity, land, energy, and tourism resources. Reflecting Agenda 21, it includes also sections on scientific and technical support, institutional arrangements, and human resources development, as well as on implementation, monitoring, and review. Significantly, conference participants identified marine and coastal resources as their major assets. The natural unity between terrestrial and marine environments for small island nations compels an integrated approach to their sustainable use.
At the regional level, questions arise as to how to harmonize the existing marine agreements, including fisheries agreements, and ensure that they are integrated with broader agreements on area/species protection, including coastal habitat and watersheds that impact coastal/marine ecosystems:

- with respect to the criteria for assessing problems and priorities;
- with respect to coordinated research and monitoring programs; and
- with respect to management.

These efforts ideally should draw on comparative advantages and avoid duplication. Coordination with relevant programs under the Biodiversity Convention, the FCCC, and the ozone agreements would be beneficial, particularly in relation to research, assessment, and monitoring. Efforts are needed to ensure that management measures under the different agreements reinforce each other.

The agreements on land-based activities that degrade marine and coastal environments are in a position to integrate river basin agreements with regional marine programs. The approach to land-based activities taken in the 1995 UNEP conference on LBSMP has the potential to shape a coherent approach to protecting the marine/coastal environment from further degradation, including marine species and their habitat.

The framework regional seas agreements offer a vehicle for integrating criteria and management measures related to land-based and ocean-based activities that affect marine environments and species (e.g., offshore installations and structures, dumping). They may also facilitate a coordinated approach among the many species and area protection regimes as they affect marine and coastal issues. This, however, will take more effort on the part of those engaged in area and species protection. Where marine and coastal resources have been identified as major assets of the countries concerned, the potential of the regional marine agreements to focus and channel sustainable development priorities may be even more substantial.

IUCN, with its regional members and networks, may harbor substantial and multidisciplinary expertise in particular regions and sub-regions to advance an integrated, ecosystem-oriented approach.
Section Seven. Capacity-Building

A. The Marine Environment

Previous sections outline the general obligations of all states to protect and preserve the marine environment, without qualification. They note the implicit and explicit trade-offs and balances inherent in the LOS Convention, where it was recognized that if international obligations were to be met, international assistance would be necessary: for sea-based activities, international rules and standards constitute minimum standards; whereas for land-based (and airborne) sources of marine pollution, assistance would be necessary to upgrade the means available to developing nations. Sections I.D. and II.A. Specific obligations to assist developing countries are found in relation to environmental assessment, environmental monitoring, and emergency response, below and Section III.C. Obligations to promote the capacity of states requesting assistance in marine research and technological capabilities in relation to protection and preservation of the marine environment are also specified, below.

Regarding technical assistance to protect and preserve the marine environment, the Convention specifies that developing states shall be granted preference by international organizations in the allocation of appropriate funds and technical assistance and in utilizing their specialized services. In elaborates on the responsibilities to be undertaken by states, directly or through competent international organizations, as follows:

“(a) promote programmes of scientific, educational, technical and other assistance to developing states for the protection and preservation of the marine environment and the prevention, reduction and control of marine pollution. Such assistance shall include, inter alia,

(i) training of their scientific and technical personnel;
(ii) facilitating their participation in relevant international programmes;
(iii) supplying them with necessary equipment and facilities;
(iv) enhancing their capacity to manufacture such equipment;
(v) advice on and developing facilities for research, monitoring, educational and other programmes;

(b) provide appropriate assistance, especially to developing states, for the minimization of the effects of major incidents which may cause serious pollution of the marine environment;

(c) provide appropriate assistance, especially to developing states, concerning the preparation of environmental assessments.” (Article 202)

In relation to deep seabed mining, states are obliged to promote international cooperation and programs for scientific and technical training, technical assistance, and research in marine science and technology and marine environmental protection (1994 Agreement, Annex, Section 5, Article 1.c.).

More generally, states are to cooperate and exchange results, directly and through competent international organizations, in rule-making, emergency response, and research and studies related to marine pollution and its remedies; marine pollution monitoring; and establishing scientific criteria as a basis for rule-making (Articles 197-201, 204.1). Regarding the results of marine scientific research, every state is obliged to provide other states with a reasonable opportunity to obtain information necessary to prevent and control damage to human health and safety and to the marine environment (Article 242).
B. Marine Living Resources

In the context of the conserving marine living resources, both within the EEZ and on the high seas, the regular exchange of scientific information and catch and effort statistics is required through competent international organizations (Articles 61.5, 119.2). The Convention is also explicit regarding terms and conditions that coastal states may establish for access by other states’ nationals to fish in the EEZ. These include the conduct of fisheries research programs, requirements for personnel training, transfer of technology, and enhancing research skills related to fisheries (Article 62.4).

C. Marine Research and the Transfer of Technology

To promote collaboration in scientific research, states and international organizations must make available information on proposed major research programs and the knowledge resulting. They must cooperate to promote the flow of scientific data and information and the transfer of knowledge, especially to developing states, and to strengthen marine research capabilities in developing states (Article 244). With respect to coastal state rights regarding research by foreign states or international organizations in its EEZ and continental shelf, it may participate in research projects and receive data, results, samples, and assistance in interpreting them (Article 249).

Collaboration to promote the development of marine science and technology and its transfer on fair and reasonable terms and conditions is to be undertaken directly by states and through competent international organizations. This includes the acquisition, evaluation, and dissemination of information, data, and knowledge on marine technologies as well as the development of appropriate marine technologies (Articles 266, 268, 269). States are also to promote the development of marine scientific and technological capacity of states which may need and request technical assistance — for resource activities, marine scientific research, and the protection and preservation of the marine environment (Article 266). Anticipating later international agreements and Agenda 21, states are encouraged to foster economic and legal conditions favorable for the transfer of marine technology, and for the benefit of all parties concerned, with due regard for the rights and duties of holders, suppliers, and recipients of marine technology (Articles 266,c, 267, 269). Acting directly or through international organizations, they are to promote the development of the necessary technological infrastructure and human resources to facilitate marine technology transfer (Articles 268, 269).

The Convention calls for states, acting directly or through international organizations, to promote and support the establishment of national and regional centers for marine scientific and technological research, particularly in developing coastal states. The functions of regional facilities include study programs related to the protection and preservation of the marine environment and the acquisition, processing, and dissemination of information on marine research and technologies, as well as systematic information systems on technology acquisition and marketing (Articles 275-277).

D. Funding and Coordination

Other articles encourage bilateral, regional, and multilateral cooperative programs to facilitate appropriate international funding for ocean research and development. They urge that the efforts of competent international organizations be coordinated in the field of marine technology transfer (Articles 270-274). Moreover, the competent international organizations dealing with marine science and marine technology are themselves obliged to “take all appropriate measures to ensure, either directly or in close cooperation among themselves, the effective discharge of their functions and responsibilities” (Article 278).
Institutional and Legal Developments

A review of the many international programs that provide support for capacity-building related to use and protection of marine and coastal areas and marine living resources would be voluminous. These have developed to support the implementation of specific legal agreements — for example, IMO’s Integrated Technical Cooperation Programme, trust funds established pursuant to the UNEP regional seas programs, or FAO support for fisheries agreements — and to enhance capabilities more generally with respect to marine research and marine management, with significant programs in FAO and IOC. Virtually all of the marine agreements contain language promoting international cooperation, directly and through competent international organizations. Numerous international agencies are involved, as well as bilateral donors. Section II.C.

More concerted support for implementation of the regional marine programs has begun to develop in the Mediterranean and Black Seas. The Environmental Program for the Mediterranean, launched in 1988, and the Mediterranean Environmental Technical Assistance Program, have been supported by the World Bank, UNDP, European Investment Bank, and Commission of the European Communities. The Black Sea program is supported by UNDP and the Global Environment Facility (GEF). The former built upon the UNEP regional seas program but was not directly linked to it; the latter subsumes the regional agreement initiated by UNEP. The GEF has also supported efforts furthering the implementation of the Baltic Sea Convention.

The GEF — a tripartite arrangement among UNEP, UNDP, and the World Bank — focuses on marine and freshwater initiatives through its “international waters” component. In addition to the two regional agreements noted above, it has funded projects that contribute to the implementation of MARPOL 73/78 in the Wider Caribbean and in China. Its role regarding the other regional marine agreements remains to be defined. Two recent documents, the Programme of Action of the SIDS Conference and the draft implementation agreement from the U.N. Fisheries Conference, explicitly name the GEF, in addition to other traditional funders, as potential sources of assistance for developing states.

In the Final Act of UNCLOS III, the call for national development plans to strengthen capabilities in marine science, technology, and ocean services, and better coordination among international agencies in support of these initiatives, Section I.C., warrants renewed attention. As with every other aspect of the environment/development web, the marine/coastal sector cannot be dealt with in isolation. It should be merged with sustainable development assessment, planning, and management at local, national, and regional levels. From a sectoral standpoint, national (and regional) plans for biodiversity and species conservation, freshwater management, forests management, and airborne pollution control need to take into account, explicitly, causes and effects related to the marine/coastal sector. From these specialized plans, a coordinated national strategy needs to be forged, which can focus external assistance on national concerns and priorities. IUCN experts are in a position to shape and influence national assessment and planning at all levels of governance, and to help formulate criteria for determining priorities. They can bring to bear expertise in marine and coastal issues, wetlands, biodiversity and other areas and deal constructively with interactions and synergies.

*International cooperation to strengthen research, assessment, and monitoring capabilities as a basis for improved management is essential. The transfer of management skills within and among regions is vital. The IUCN network of experts already contributes to such capacity-building and is ideally suited to promote information exchange among regions.*

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IUCN has urged governments to develop global networks to enhance management capacity and training to maximize sharing between nations and regions regarding experience, research, and technical information on integrated management of coastal, shallow sea, and marine environments and resources (Resolution 19.46).

In relation to the transfer of technology and other management skills and practices, the LOS Convention’s call for states to foster economic and legal conditions favorable to transfer and that benefit all those involved, resonate in light of Agenda 21 and other emphases on the constructive role that may be played by the private sector.

Specifically, pursuant to the LOS and Biodiversity Conventions, the guidelines for granting access to foreign researchers in the EEZ, developed pursuant to the LOS Convention, should be drawn upon as cooperative arrangements are developed for research and shared benefits relating to genetic resources in marine areas under national jurisdiction. [UN: A Guide (1989)]

The institutional implications of funding and coordination for capacity-building are considered in Section VIII.
Section Eight. The Global Framework Revisited: Institutional Arrangements

The comprehensive approach of the Law of the Sea Convention offers a unique vehicle for promoting sustainable use of the oceans. It provides the international legal basis for managing multiple human activities from the perspective of their effects on marine and coastal ecosystems, and it establishes a legal foundation for integrating different specialized regimes and protection measures. Its broad conceptual framework is substantially reinforced by Agenda 21.

The Convention covers activities undertaken both in the oceans and on land. By outlining objectives, obligations, and principles, and linking them to an increasing number of more specific international agreements for marine environmental protection and the conservation and management of marine species, it represents a dynamic vehicle for upgrading ocean laws. The references in the LOS Convention to protecting rare or fragile ecosystems and the habitat of threatened or endangered species provide a hook for ensuring that activities governed by the LOS Convention respect designations pursuant to numerous agreements on species and area protection, both terrestrial and marine. When it comes to settling disputes, the Convention’s flexible system permits framework LOS Convention obligations to be interpreted and applied drawing on this wide range of evolving, more specific legal obligations.

The Convention’s obligations lay the foundation for management actions that integrate marine environmental protection with marine living resources conservation. They also promote approaches to marine and coastal management that are based on natural systems and the geographic scales that reflect them. Without the forcing factor of international legal obligations, it is unlikely that many of these objectives would be tackled, let alone realized, except in the face of major disasters. Without a clear strategy, and clearly-focused international institutional support arrangements, they may never be achieved.

Institutional Implications

If the entry into force of the LOS Convention gives legal and conceptual impetus to sound ocean management, the ability to realize that objective will require a re-examination of the existing international institutional support structure. The many intergovernmental fora presently involved are noted in Section II.C. What is lacking is a clear assessment of the functions that must be performed and the strengths and weaknesses of existing mechanisms for carrying them out. That assessment must realistically take into account available financial resources. Non-governmental organizations like IUCN may play a considerable role in such an evaluation process and help ensure that the results are capable of drawing on the most reliable, respected, and representative expertise. Part of that exercise would explore appropriate roles and functions for IUCN and its worldwide membership and commission networks.

The 1995 UNEP meeting on land-based activities, to be held in November/December in Washington DC, and the review by the Commission on Sustainable Development of Agenda 21’s chapter on oceans and coasts in 1996, present a logical sequence for re-examination of the international institutional support structure for sustainable ocean use. That re-examination may influence other fora considering related questions. The meeting on land-based activities, because of the broad scope of the problem, will inevitably have to address many aspects of institutional follow-up. Its conclusions could set the stage
for the Commission to consider support arrangements related to the whole of Agenda 21’s oceans concerns. Commission recommendations through ECOSOC to the U.N. General Assembly could set in motion reforms throughout the U.N. system, if not a meeting of the contracting parties to the LOS Convention to agree on clearly defined functions and competent support arrangements.

Functions

International institutions operate as enabling mechanisms. They may catalyze, organize, synthesize, promote, facilitate, and coordinate programs focused on common priorities, and provide technical and financial assistance to help implement them. Their role is to help countries with national and regional strategies and priorities, consistent with the implementation of each nation’s international legal obligations. Their policies and programs are approved by governments, as members of the institution’s decision-making body. In the case of an international convention, the decision-making body is the conference of parties.

For purposes of analysis, these two basic functions of international institutions—inter-governmental decision-making regarding common policies and priorities, and support programs to implement them—may be broken down into a number of components. Figure 14 outlines these components in five general categories. By distinguishing decision-making from the analysis and preparations that ideally inform decisions, it attempts to outline opportunities for support by numerous institutions—governmental and non-governmental, national as well as international. By stressing analysis—the definition of problems and the definition of solutions—it attempts to highlight opportunities to influence national and international decision-making. By distinguishing synthesis and coordination from decision-making, it attempts to emphasize the comparative advantages of convention secretariats and related international organizations. Clearly, the synthesis and coordination functions require appropriate technical and managerial expertise.

The LOS Convention’s entry into force will substantially reinforce the need to refine scientific and technical criteria used in the further development of national and international rules and standards, and recommended practices and procedures. Those criteria and standards will in turn inform international decision-making, the progressive development of international ocean law, and related dispute settlement proceedings. In order to acquire the knowledge necessary to refine the criteria, it will be essential to improve tools for assessment and monitoring, based on recognized scientific methods, and to improve cooperative research programs to better define the problems and solutions of sustainable ocean use. The body of specialized oceans expertise that may be drawn upon is vast. It may reside in specialized inter-governmental organizations, including convention secretariats, the international financial institutions, and non-governmental communities, including private industry, research institutes, and institutions of higher learning. These institutions may be global, regional, sub-regional, or national.

The functions outlined in Figure 14 raise questions about which international institutions, particularly inter-governmental institutions, should be responsible for these functions, and what are the comparative advantages of regional versus global bodies. Several possible lines of inquiry are discussed below, but a thorough assessment is beyond the scope of this report.

Data management at regional and global levels is cost-effective and provides a resource for governmental and non-governmental users. Data needs in relation to sustainable ocean use are several, and different institutions may serve different specialized functions. A global database may be most appropriate for information on particular contaminants (e.g., toxic and hazardous substances), on best forestry or agricultural practices, on clean production technologies related to oil production and
processing facilities, or on expertise available for response to a particular type of marine pollution emergency. On the other hand, information on marine environmental conditions and trends may be most logically concentrated at the regional level, and, similarly, databases on national laws that implement international oceans agreements and national management institutions responsible for implementation. It may be appropriate to interpret and supplement global databases at the regional level with information on relevant regional circumstances and experiences.

**Analysis and Synthesis:** It makes sense to base assessments of the health of marine and coastal areas on geographic and ecological systems that form a logical unit. By taking account of all sources of impacts and their cumulative effects on such units, such assessments would provide a well-founded basis for management actions and for the identification of priorities. Logical coastal/ocean units are likely to be defined at sub-regional and regional levels. Regional assessments may be synthesized periodically to produce a global assessment, like those produced by GESAMP.

Analysis of best management practices and technologies is already undertaken by specialized international institutions and international development banks. But there is no systematic process for synthesizing lessons learned and making that information widely available, nor is the experience of many local stakeholders taken into account. In some cases, lessons learned may require a focal point within the region to ensure that they are retained in a manner that serves regional needs.

The coordination of research and monitoring to ensure cost-effective programs and timely dissemination of results is vital in the face of limited resources. The vast network of private and government institutions involved in these activities makes it essential to maintain an overview. This may be manageable at the regional level, but a means of inter-regional exchange should also be assured. In some cases, global programs require means to ensure that the results are made available to researchers and managers at the regional level. The effective dissemination of proven criteria and methods of analysis is an important aspect.

The synthesis of problems, issues, and circumstances emerging from national plans for sustainable ocean use is most appropriately undertaken at the regional level, so that common concerns and priorities may be identified. While these may be further synthesized at the global level, it is at the regional (and sub-regional) level that meaningful responses tailored to needs are developed, and where oceans concerns may be most effectively integrated with related regional concerns.

**Networks:** It is clear that databases are insufficient to ensure that information, expertise, and lessons learned are adequately transferred. Face-to-face interaction is vital. While this may be less difficult and costly to pursue at the regional level, institutional mechanisms for inter-regional exchange are also required.

IUCN has urged governments to develop global networks to enhance management capacity and training to maximize sharing between nations and regions regarding experience, research, and technical information on integrated management of coastal, shallow sea, and marine environments and resources (Resolution 19.46).

**Review Mechanisms:** A means must be found for inter-governmental review of progress made in implementing the full range of oceans agreements vis-a-vis the assessments of regional and global ocean health; that is, have the regimes together been effective in improving the health of the oceans, or at least slowed its deterioration. (This differs from review by the conference of parties of each international agreement regarding compliance with the treaty and the effectiveness of the measures adopted.) The North Sea Ministerial Conference has been cited as an example of such a review at the regional level.

Figure 14
Disaggregating the Functions of International Institutional Support

(1) To Define the Problems:
- define common criteria and methods for monitoring, assessment, and analysis;
- monitor environmental conditions and trends in order to determine and predict the health of marine and coastal ecosystems and give early warning of emerging issues; - identify contaminants that degrade marine environments/resources, and their risks, pathways, and effects;
- assess the scope and magnitude of the problems caused by particular sources, sectors, and activities, including the costs of deterioration and how social and economic structures and policies contribute;
- track new research findings (scientific and socio-economic), and verify and correct initial assessments; and
- develop a research agenda and priorities to resolve unanswered questions, including use of case studies to analyze past endeavors and pilot projects to test new approaches.

(2) To Define the Solutions:
- define appropriate criteria and methods of analysis and evaluation (scientific as well as methods for policy and economic analysis);
- determine which management practices, techniques, and technologies can prevent and mitigate degradation, on a sector-, industry-, or activity-specific basis, as well as the circumstances in which they are appropriate and their availability and cost;
- determine the effectiveness of particular policies, laws, regulations, and other measures for addressing specific problems, including the use of economic instruments and incentives;
- identify the national institutional processes and structures that foster sound solutions, and determine why;
- translate agreed policy measures and regulations into practical guidance for managers and specific end-users;
- identify lessons learned worldwide from successful or unsuccessful approaches to problems and from operational experience with specific control measures, including the results of case studies and pilot projects; and
- identify sources of specialized technical expertise available to help define problems and solutions, provide technical or emergency assistance, or help resolve disputes, whether located in inter-governmental or non-governmental organizations or private industry.

(3) Intergovernmental Decision-Making.
Based on the preparatory work carried out under (1) and (2) above:
- agree on criteria to be used in defining common problems and solutions;
- agree on common policies and implementing measures and on necessary revisions in light of (1) and (2);
- agree on new initiatives to progressively develop international ocean law, consistent with other international legal obligations; and
- agree on priorities for future common initiatives in research and monitoring, policy development, and cooperative implementation, which should be reflected clearly and transparently in approved program and budget documents.
(4) To Synthesize and Coordinate Implementation Initiatives, at Regional or Global Levels:

- synthesize the results of (1), (2), and (5) to inform (3).
- extract from national implementation programs shared issues and problems, where economies of scale may result from common support (e.g., data collection and management, public education and awareness, training and technical assistance, research and assessment);
- promote exchange of information among nations and regions of the type noted under (1) and (2) above, through databases, clearinghouses, and face-to-face interaction;
- mobilize and coordinate specialized technical expertise available to help define problems and solutions, provide technical or emergency assistance, or help resolve disputes;
- identify and coordinate relevant international programs in monitoring, research, and assessment;
- identify, mobilize, and coordinate sources of financial assistance;
- ensure that governments interpret and apply convention legal obligations consistently, and that inter-governmental organizations' programs reinforce international legal obligations; and
- ensure coordination and consistency among international legal agreements that have a bearing on protection and preservation of marine and coastal ecosystems.

(5) To Review Progress:

- Evaluate the achievements of the convention against the periodic synthesis of conditions and trends in marine and coastal ecosystems, as a measure of its overall success or failure, and determine the need for new measures;
- review regularly national programs pursuant to the ocean law agreements, their success in arresting deteriorating national conditions and trends, and the problems encountered, in order both to review achievements and as a planning mechanism to help identify national priorities and shared problems, and focus external support on them;
- evaluate the effectiveness of international institutions' programs that contribute to the implementation of international oceans agreements.

Another type of review is necessary for considering the extent to which different specialized assistance programs and the international development agencies contribute to the implementation of international agreements. That review should be based on a synthesis of such programs and serve also as a planning mechanism for future international collaboration, so that planned activities make the best use of available resources and talent and help meet agreed objectives and priorities.

Coordination: The different international agreements that affect sustainable ocean use, be they oceans-specific or not, require greater coordination and integration — among research, monitoring, and assessment, so that cost-effective programs are designed to serve more than one agreement; among the scientific criteria and methods of analysis applied; and among the response measures articulated pursuant to each. Well-defined and well-coordinated programs are more likely to attract international financial support.

In some cases, one agreement may serve as an implementation vehicle for another. Where the regional seas agreements are intended to implement the LOS Convention, the relationships among the regional marine agreements and other global and regional agreements would benefit from further consideration; for example, the use of the regional marine agreements to implement aspects of the Biodiversity Convention.
## List of Acronyms

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<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
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<tbody>
<tr>
<td>ASEAN</td>
<td>Association of South East Asian Nations</td>
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<tr>
<td>CCAMLR</td>
<td>Convention on the Conservation of Antarctic Marine Living Resources</td>
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<tr>
<td>CITES</td>
<td>Convention on International Trade in Endangered Species of Wild Fauna and Flora</td>
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<tr>
<td>COLREG</td>
<td>Convention on the International Regulations for Preventing Collisions at Sea</td>
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<td>CMS</td>
<td>Convention on the Conservation of Migratory Species of Wild Animals</td>
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<td>CSD</td>
<td>Commission on Sustainable Development (UN)</td>
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<tr>
<td>CRAMRA</td>
<td>Convention on the Regulation of Antarctic Mineral Resource Activities</td>
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<td>DOALOS</td>
<td>Division for Ocean Affairs and the Law of the Sea (UN)</td>
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<td>ECE</td>
<td>Economic Commission for Europe (UN)</td>
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<td>ECOSOC</td>
<td>Economic and Social Commission (UN)</td>
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<td>EEZ</td>
<td>Exclusive Economic Zone</td>
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<td>FAO</td>
<td>Food and Agriculture Organization</td>
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<td>FCCC</td>
<td>Framework Convention on Climate Change</td>
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<td>GEF</td>
<td>Global Environment Facility (UNDP, UNEP, World Bank)</td>
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<tr>
<td>GESAMP</td>
<td>Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection (formerly, on the Scientific Aspects of Marine Pollution) - UN system</td>
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<td>HNS</td>
<td>International Convention on Liability and Compensation in Connection with the Carriage of Hazardous and Noxious Substances by Sea (draft)</td>
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<td>IACSD</td>
<td>Inter-Agency Committee on Sustainable Development (UN system)</td>
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<td>IAEA</td>
<td>International Atomic Energy Agency</td>
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<td>ICAO</td>
<td>International Civil Aviation Organization</td>
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<td>ILO</td>
<td>International Labour Organization</td>
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<td>IMO</td>
<td>International Maritime Organization</td>
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<tr>
<td>IOC</td>
<td>Intergovernmental Oceanographic Commission</td>
</tr>
<tr>
<td>IUCN</td>
<td>World Conservation Union (International Union for the Conservation of Nature and Natural Resources)</td>
</tr>
<tr>
<td>IWC</td>
<td>International Whaling Commission</td>
</tr>
<tr>
<td>LBSMP</td>
<td>Land-Based Sources of Marine Pollution</td>
</tr>
<tr>
<td>LME</td>
<td>Large Marine Ecosystem</td>
</tr>
<tr>
<td>n.m.</td>
<td>nautical mile</td>
</tr>
<tr>
<td>OPRC</td>
<td>International Convention on Oil Pollution Preparedness, Response and Cooperation</td>
</tr>
<tr>
<td>SIDS</td>
<td>U.N. Global Conference on the Sustainable Development of Small Island Developing States</td>
</tr>
<tr>
<td>STCW</td>
<td>International Convention in Standards of Training, Certification and Watchkeeping for Seafarers</td>
</tr>
<tr>
<td>UN</td>
<td>United Nations</td>
</tr>
<tr>
<td>UNCCLOS III</td>
<td>Third U.N. Conference on the Law of the Sea</td>
</tr>
<tr>
<td>UNDP</td>
<td>U.N. Development Programme</td>
</tr>
<tr>
<td>UNEP</td>
<td>U.N. Environment Programme</td>
</tr>
<tr>
<td>UNESCO</td>
<td>U.N. Educational, Scientific and Cultural Organization</td>
</tr>
<tr>
<td>UNGA</td>
<td>U.N. General Assembly</td>
</tr>
<tr>
<td>UNIDO</td>
<td>U.N. Industrial Development Organization</td>
</tr>
<tr>
<td>WHC</td>
<td>Convention Concerning the Protection of the World Cultural and Natural Heritage</td>
</tr>
<tr>
<td>WHO</td>
<td>World Health Organization</td>
</tr>
<tr>
<td>WMO</td>
<td>World Meteorological Organization</td>
</tr>
</tbody>
</table>
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Part II.
Conservation and Management
of the Marine Environment

Required Initiatives and Responsibilities
under the 1982 United Nations
Convention on the Law of the Sea

Douglas M. Johnston and Phillip M. Saunders
1995
originally prepared in 1984 and updated
with the assistance of Professor Peter Payayo
# Table of Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foreword</td>
<td>124</td>
</tr>
<tr>
<td>Introductory Note</td>
<td>125</td>
</tr>
<tr>
<td>Table of Abbreviations</td>
<td>127</td>
</tr>
<tr>
<td>Notes on Chart Organization</td>
<td>129</td>
</tr>
<tr>
<td>I. Conservation and Management of Living Resources</td>
<td>131</td>
</tr>
<tr>
<td>1. Prescribing Behaviour</td>
<td>131</td>
</tr>
<tr>
<td>2. Establishing/Affirming Jurisdiction</td>
<td>133</td>
</tr>
<tr>
<td>3. Establishing Criteria and Standards</td>
<td>134</td>
</tr>
<tr>
<td>4. Establishing Mechanisms</td>
<td>135</td>
</tr>
<tr>
<td>II. Pollution Prevention, Reduction and Control — General Measures</td>
<td>138</td>
</tr>
<tr>
<td>1. Prescribing Behaviour</td>
<td>138</td>
</tr>
<tr>
<td>2. Establishing/Affirming Jurisdiction</td>
<td>140</td>
</tr>
<tr>
<td>3. Establishing Criteria and Standards</td>
<td>140</td>
</tr>
<tr>
<td>4. Establishing Mechanisms</td>
<td>142</td>
</tr>
<tr>
<td>III. Transit Management</td>
<td>144</td>
</tr>
<tr>
<td>1. Prescribing Behaviour</td>
<td>144</td>
</tr>
<tr>
<td>2. Establishing/Affirming Jurisdiction</td>
<td>146</td>
</tr>
<tr>
<td>3. Establishing Criteria and Standards</td>
<td>147</td>
</tr>
<tr>
<td>4. Establishing Mechanisms</td>
<td>149</td>
</tr>
<tr>
<td>IV. Environmental Management of Other Activities</td>
<td>150</td>
</tr>
<tr>
<td>1. Prescribing Behaviour</td>
<td>150</td>
</tr>
<tr>
<td>2. Establishing/Affirming Jurisdiction</td>
<td>152</td>
</tr>
<tr>
<td>3. Establishing Criteria and Standards</td>
<td>152</td>
</tr>
<tr>
<td>4. Establishing Mechanisms</td>
<td>153</td>
</tr>
<tr>
<td>V. General Provisions</td>
<td>155</td>
</tr>
<tr>
<td>1. Coastal State Jurisdiction Over Protection and Preservation of the</td>
<td>155</td>
</tr>
<tr>
<td>Marine Environment in the EEZ</td>
<td></td>
</tr>
<tr>
<td>2. Rights and Duties of Other States in the EEZ</td>
<td>155</td>
</tr>
<tr>
<td>3. Protection of the Marine Environment and Activities in the Area</td>
<td>155</td>
</tr>
<tr>
<td>4. General Obligation to Protect and Preserve the Marine Environment</td>
<td>155</td>
</tr>
<tr>
<td>5. Cooperation in the Protection and Preservation of the Marine Environment</td>
<td>155</td>
</tr>
<tr>
<td>6. Obligations Under Other Conventions on Protection and Preservation of the Marine Environment</td>
<td>155</td>
</tr>
<tr>
<td>7. Principles for the Conduct of Marine Scientific Research</td>
<td>155</td>
</tr>
</tbody>
</table>
Foreword

Legal history was made when the 1982 UN Convention on the Law of the Sea entered into force on 16 November 1994. Not only is it an achievement that so many important principles of customary international law relating to the use of the seas have been codified in this single instrument, but also momentous are innovations and improvements of that law as well as the creation of viable international institutions. For those who were involved in the years of the negotiations leading up to adoption in December 1982 at Montego Bay, this will be an occasion of deep personal gratification.

But in a sense, the real work is just beginning. Effective implementation of the Convention, through its sheer breadth, presents a considerable legal challenge. Many of its provisions are not self-executing, and therefore, their implementation will require specific initiatives on the part of States and/or relevant international organizations.

This is especially the case for those provisions of the Convention which have environmental significance. Unanswered in the text of the Convention is the question of who specifically is responsible for carrying out many of its required initiatives.

It is for this reason that as early as 1984, the IUCN Commission on Environmental Law (CEL) published a chart of required initiatives and responsibilities arising out of those provisions of the Convention relating to the conservation and management of the marine environment. Drawing attention to the number of follow-up actions needed, accompanied by a first proposal of assignees, seemed a particularly suitable endeavour for CEL, which had taken an active role in the negotiation of the Convention but which is independent of its future implementation.

Important developments have taken place in the last ten years since the Chart was first prepared. An update was therefore considered necessary; as the Convention has just entered into force, it is also timely.

We were fortunate that the CEL member who had taken the lead in preparing the original Chart, Professor Douglas M. Johnston, currently of the University of Victoria, again agreed to develop its revision with Professor Phillip Saunders of Dalhousie University, this time with the assistance of Professor Peter Payoyo from the Philippines.

On behalf of CEL, I wish to thank them for their contribution and expertise. CEL is also most grateful to Dr. Wolfgang Burhne, who initiated and oversaw the project, and to Noel Brown, Director of the UNEP Regional Office for North America, from whom support was obtained for carrying out the necessary research. Finally, my thanks to the staff of the IUCN Environmental Law and Marine programmes who have discharged the technical tasks necessary to put together this publication.

CEL sincerely hopes that this Chart will assist governments, inter-governmental and non-governmental organizations to tackle the many tasks needed to make the implementation of the environmental aspects of the 1982 UN Convention on the Law of the Sea a success.

Dr. Parvez Hassan
Chair, IUCN Commission on Environmental Law

1 March 1995
Introductory Note

This Chart surveys the various tasks which arise now, in the 1990s, in fulfilment of the environmental provisions of the 1982 U.N. Convention on the Law of the Sea. Of the 320 articles and eight annexes which make up the Convention, at least fifty-nine articles and three annexes (I, III and VIII) might be characterized as having an environmental significance — almost one-fifth of the text of the Convention. These provisions vary from the widely general to the highly particular. Taken together, they form the principal treaty framework for the effective conservation and management of the marine environment. The consensus achieved on environmental issues — particularly on the substance of Part XII — has resulted in the implementation of many of these parts of the Convention, in state practice, and the entry into force of the Convention in November 1994 is expected to underline their foundational importance in the environmental law of the sea.

Since the Chart's original completion in 1984, significant ocean-related developments at national, regional and global levels have taken place calling for a fresh perspective on the environmental provisions of the 1982 Convention. At the global level, there is no doubt that the most profound development affecting all aspects of marine environmental management was the 1992 Earth Summit. Agenda 21 articulates a comprehensive action plan for world-wide sustainable development and outlines the fundamental elements of environmental governance for the 21st century. Mainly through its Chapter 17, entitled "Protection of the oceans, all kinds of seas, including enclosed and semi-enclosed seas, and coastal areas and the protection, rational use and development of their living resources", Agenda 21 provides a broader and more sophisticated perspective on the marine environmental regime than that developed at UNCLOS III. Although the details, nuances, and practical implications of the linkage are still emerging, it seems certain that sustainable development of the seas will henceforth proceed on the basis of the harmonization of the principles and strategies embodied in the environmental provisions of the 1982 Convention and the ocean-related provisions of Agenda 21.

The notion of "sustainable development" is not alien to the 1982 Convention, even if the term has only gained widespread currency after the 1987 Report of the World Commission on Environment and Development (Our Common Future). In fact, specific concepts of sustainable development in the Convention (e.g., in fisheries), are echoed in Agenda 21, where they are accorded "constitutional" recognition, or given further substantive and institutional expression. But not all areas of sustainability in the Convention are reflected in Agenda 21 (e.g., sustainable development of the deep sea-bed), and not all programme areas in Chapter 17 of Agenda 21 find a counterpart in the Convention (e.g., ocean-related activities to address climate change and sea level rise). The combined effect of Agenda 21 and the Convention is to facilitate the application of the concept of sustainable development to the ocean environment. The revised Chart offers some comments which assume the feasibility and desirability of convergence between the ocean-related outcome of UNCED and the environmental outcome of UNCLOS III.

In updating the Chart, the framework used in the 1984 version has been retained: the environmental provisions of the 1982 Convention are clustered around five sectoral concerns, viz., living resources; general pollution regime; transit management; management of other activities; and general marine environmental policy. Generally, each of these sectors is divided into functional sections that define (1) prescribed behaviour, (2) allocation of jurisdiction, (3) criteria or standards, and (4) institutional mechanisms. Moreover, for each provision identified, analysis is provided across a range of reference points: purpose or effect of provision; level; assignees; appropriate international organization; required initiative/follow-up; and recommendations with additional comments.
A few caveats must be noted. First, under the column “appropriate international organization”, there has been no attempt to make an exhaustive list of actual organizations. When called for, however, the “competent international organization” specified in the 1982 Convention, and identified by the UN DOALOS (25 May 1994 Document) is almost always named under this column. Second, items under “required initiative/follow-up” and “comments/recommendations” will state, among others, relevant portions of Agenda 21. When reference is made to Chapter 17 of Agenda 21, specific paragraphs are cited; outside Chapter 17 references only indicate appropriate chapter topics. This assumes that Chapter 17 of Agenda 21 is central to the current interpretation of the environmental regime of the 1982 Convention. Third, the updated Chart does not purport to be “current” in relation to every outstanding development arising from Chapter 17 of Agenda 21. For instance, the results of international conferences called for under Agenda 21 (e.g., on straddling and highly migratory fish stocks; on small-island developing states; and on land-based pollution), are not entered into the Chart. What the Chart does is simply point out the interface between specific provisions in the Convention and specific items under Agenda 21, with particular focus on Chapter 17. Occasionally, however, mention is made of salient Agenda 21 developments related to a particular UNCLOS III provision.

Last, the entry into force of the 1982 Convention on 16 November 1994 may not only reinforce but also expand the evolving initiatives undertaken pursuant to Agenda 21, and may even introduce new elements into the concept of sustainability applied to the oceans. It is, therefore, difficult to provide a definitive account of the “required initiatives/follow-up” respecting certain Convention provisions (e.g. in marine scientific research). At best, the Chart is a preliminary “map” that needs to be constantly enhanced as the environmental law of the sea evolves.

The environmental provisions of the Convention are spread over several different parts of the text: two in Part II (“Territorial Sea and Contiguous Zone”), two in Part V (“Exclusive Economic Zone”), four in Part VII (“High Seas”), one in Part IX (“Enclosed or Semi-Enclosed Seas”), two in Part XI (“The Area”), thirty-eight in Part XII (“Protection and Preservation of the Marine Environment”), and one in Part XIII (“Marine Scientific Research”). The logistics of the Conference made it virtually impossible for a totally comprehensive and internally coherent marine environmental regime to be formulated, but as a result of the collective efforts of the three Main Committees — and especially the synthesis provided by the Third Committee — the five main elements of such a regime have been established and, in varying degrees, developed. Of the fifty-nine provisions of environmental significance, seven are so generally worded as to encompass the entire range of activities contributing to the conservation and management of the ocean environment: namely, Articles 56, 58, 145, 192, 197, 237, and 240. Thirteen are addressed specifically to the conservation and management of living resources, including such activities as species conservation, habitat protection and living resource management: namely Articles 61, 62, 63, 64, 65, 66, 67, 117, 118, 119, 120, 123, and 234. Fourteen articles deal generally with the prevention, reduction, and control of marine pollution: namely Articles 194, 195, 196, 198, 199, 200, 201, 202, 203, 204, 205, 206, 235, and 236. Fourteen articles are designed to cover the specific problems of transit management (i.e., vessel-source pollution): namely Articles 22, 23, 42, 43, 211, 217, 218, 219, 220, 221, 225, 226, 227 and 233. The remaining eleven articles focus on the environmental management of other activities which may have an adverse effect on the marine environment: namely Articles 150, 207, 208, 209, 210, 212, 213, 214, 215, 216, and 222. In view of the variety of these fifty-nine environmental provisions and their variance from the widely general to the narrowly specific, the tasks of “implementation” and “follow-up initiative” must be broadly defined.

In this Chart the primary emphasis is placed on specific (or sectoral) responsibilities and required initiatives: that is, on the implementation tasks or follow-up initiatives which arise under the four more specific sectors. Accordingly, the Chart merely identifies the seven most generally worded provisions. But it should be emphasized that the commentaries and recommendations in the final two columns are to be understood and interpreted in light of the principles of the new environmental law of the sea contained in these seven general provisions.

Douglas Johnston, Philip Saunders and Peter Payayo

126
<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACMRR</td>
<td>Advisory Committee of Experts on Marine Resources Research (FAO Advisory Committee)</td>
</tr>
<tr>
<td>ANACAT</td>
<td>see ICES below</td>
</tr>
<tr>
<td>ASFIS</td>
<td>Aquatic Sciences and Fisheries Information System (FAO/IOC joint panel of experts)</td>
</tr>
<tr>
<td>CCAMLR</td>
<td>Commission for the Conservation of Antarctic Marine Living Resources</td>
</tr>
<tr>
<td>CECAF</td>
<td>Fishery Committee for the Eastern Central Atlantic</td>
</tr>
<tr>
<td>COLREG</td>
<td>International Regulations for Preventing Collisions at Sea 1972 (as amended)</td>
</tr>
<tr>
<td>CSD</td>
<td>United Nations Commission on Sustainable Development</td>
</tr>
<tr>
<td>DOALOS</td>
<td>Division of Ocean Affairs and The Law of the Sea (United Nations)</td>
</tr>
<tr>
<td>EC</td>
<td>European Communities</td>
</tr>
<tr>
<td>ECE</td>
<td>Economic Commission for Europe (United Nations)</td>
</tr>
<tr>
<td>EEZ</td>
<td>Exclusive Economic Zone</td>
</tr>
<tr>
<td>EIA</td>
<td>Environmental Impact Assessment</td>
</tr>
<tr>
<td>EU</td>
<td>European Union</td>
</tr>
<tr>
<td>EUROCEAN</td>
<td>European Oceanic Association</td>
</tr>
<tr>
<td>FAO</td>
<td>Food and Agriculture Organization of the United Nations</td>
</tr>
<tr>
<td>FFA</td>
<td>South Pacific Forum Fisheries Agency</td>
</tr>
<tr>
<td>GEF</td>
<td>Global Environment Facility (IBRD/UNDP/UNEP)</td>
</tr>
<tr>
<td>GESAMP</td>
<td>Group of Experts on Scientific Aspects of Marine Environmental Protection (Group of Experts for the UN and UN Specialized Agencies)</td>
</tr>
<tr>
<td>GFCM</td>
<td>General Fisheries Council for the Mediterranean</td>
</tr>
<tr>
<td>GIPME</td>
<td>Global Investigation of Pollution in the Marine Environment (IOC Working Committee)</td>
</tr>
<tr>
<td>HELMEPA</td>
<td>Hellenic Marine Environment Protection Association</td>
</tr>
<tr>
<td>HMS</td>
<td>Highly Migratory Species</td>
</tr>
<tr>
<td>HNS</td>
<td>Hazardous and Noxious Substances</td>
</tr>
<tr>
<td>IABO</td>
<td>International Association for Biological Oceanography (part of IUBS which is, in turn, part of ICSU)</td>
</tr>
<tr>
<td>IACS</td>
<td>International Association of Classification Societies</td>
</tr>
<tr>
<td>IAEA</td>
<td>International Atomic Energy Agency</td>
</tr>
<tr>
<td>IAPSO</td>
<td>International Association for the Physical Sciences of the Ocean</td>
</tr>
<tr>
<td>IATTC</td>
<td>Inter-American Tropical Tuna Commission</td>
</tr>
<tr>
<td>IBFC</td>
<td>International Baltic Sea Fishery Commission</td>
</tr>
<tr>
<td>IBRD</td>
<td>International Bank for Reconstruction and Development (the World Bank)</td>
</tr>
<tr>
<td>ICAO</td>
<td>International Civil Aviation Organization</td>
</tr>
<tr>
<td>ICCAT</td>
<td>International Commission for the Conservation of Atlantic Tunas</td>
</tr>
<tr>
<td>ICES</td>
<td>International Council for the Exploration of the Sea, ICES: ANACAT: The Anadromous and Catadromous Fish Committee; The Baltic Fish Committee; Publications Committee; Statistics Committee; MMC: The Marine Mammals Committee</td>
</tr>
<tr>
<td>ICS</td>
<td>International Chamber of Shipping</td>
</tr>
<tr>
<td>ICSU</td>
<td>International Council of Scientific Unions</td>
</tr>
<tr>
<td>ICSEAF</td>
<td>International Commission for the Southeast Atlantic Fisheries</td>
</tr>
<tr>
<td>ICSEM</td>
<td>International Commission for Scientific Exploration of the Mediterranean</td>
</tr>
<tr>
<td>IHO</td>
<td>International Hydrographic Organization</td>
</tr>
<tr>
<td>ILO</td>
<td>International Labour Organization</td>
</tr>
<tr>
<td>IMA</td>
<td>Institute of Marine Affairs</td>
</tr>
<tr>
<td>IMC</td>
<td>Intergovernmental Maritime Committee</td>
</tr>
<tr>
<td>IMDG</td>
<td>International Maritime Dangerous Goods Code</td>
</tr>
<tr>
<td>IMO</td>
<td>International Maritime Organization (up until 1975 IMCO: Intergovernmental Maritime Consultative Organization)</td>
</tr>
<tr>
<td>INSA</td>
<td>International Shipowners’ Association</td>
</tr>
<tr>
<td>INTERTANKO</td>
<td>International Association of Independent Tanker Owners</td>
</tr>
</tbody>
</table>
Conservation and Management of the Marine Environment: Required Initiatives and Responsibilities

IOC  Intergovernmental Oceanographic Commission. Committee:
MARPOLMON - Marine Pollution Monitoring

IOI  International Ocean Institute

IOTC  Indian Ocean Tuna Commission

IPFC  Indo-Pacific Fishery Commission

IPIECA  International Petroleum Industry Environment Conservation Association

IPSFC  International Pacific Salmon Fisheries Commission

IPTP  Indo-Pacific Tuna Development and Management Programme

ISA  International Sea-bed Authority

ITOPF  International Tanker Owners Pollution Federation Ltd.

IUBS  International Union of Biological Sciences

IUCN  The World Conservation Union

IUMI  International Union of Marine Insurance

IWC  International Whaling Commission

IWCSC  International Whaling Commission Scientific Committee

JCFBS  Joint Commission on the Fisheries in the Black Sea


LRTAP  Convention on Long-Range Transboundary Air Pollution, 1979 (ECE).

MARPOL 73/78  International Convention for the Prevention of Pollution from Ships, 1973 (as amended)

MCS  Monitoring, Control and Surveillance

MOU  Memorandum of Understanding

MMC  see ICES above

MSY  Maximum Sustainable Yield

NAFO  Northwest Atlantic Fisheries Organization (Formerly ICNAF: International Commission for the Northwest Atlantic Fisheries)

NASCO  North Atlantic Salmon Conservation Organization

NEAFC  Northeast Atlantic Fisheries Commission

NPAFC  North Pacific Anadromous Fish Commission

NPFSC  North Pacific Fur Seal Commission

OCIMF  Oil Companies International Marine Forum

OILPOL  International Convention for the Prevention of Pollution of the Sea by Oil, 1954 (as amended)

OPPRC  Convention on Oil Pollution Preparedness, Response and Cooperation, 1990.

Paris MOU  Memorandum of Understanding on Port State Control in Implementing Agreements on Marine Safety and the Protection of the Marine Environment, 1982

PIANC  Permanent International Association on Navigational Congresses

PSA  Pacific Science Association

SCOPE  Scientific Committee on Problems of the Environment (created by ICSU)

SCOR  Scientific Committee on Oceanic Research (created by ICSU)

SEAFDEC  South-East Asian Fisheries Development Centre

SOLAS  Safety of Life at Sea 1974; and 1978,1988 Protocols (as amended)

SPC  South Pacific Commission

STCW  Standards of Training, Certification and Watchkeeping for Seafarers 1978

TAC  Total Allowable Catch

TOVALOP  Tanker Owners' Voluntary Agreement Concerning Liability for Oil Pollution, 1969.

TSS  Traffic Separation Scheme

UNCED  United Nations Conference on Environment and Development


UNESCO  United Nations Educational, Scientific and Cultural Organization

UNIDO  United Nations Industrial Development Organization

WDCs  World Data Centres

WHO  World Health Organization

WIOTO  Western Indian Ocean Tuna Organization

WMO  World Meteorological Organization

WTO  World Trade Organization

128
Notes on Chart Organization

1. Sectors

The Chart is divided into five parts, based on the sectors discussed in the introduction:

I. Conservation and Management of Living Resources
II. Pollution Prevention, Reduction and Control — General Measures
III. Transit Management
IV. Environmental Management of Other Activities
V. General Provisions

Each part is divided into four sections, based on the different types of activity or problem addressed by the articles. Under Prescribing Behaviour those articles which dictate or recommend specific or general responsibilities of states are included. In the second section, Establishing/Affirming Jurisdiction, articles which create or affirm the jurisdiction of a state or organization over a particular matter are analyzed. The third division, Establishing Criteria and Standards, considers those articles which either prescribe a standard for state and organizational actions or provide the general criteria upon which more specific standards should be based. Finally, in Establishing Mechanisms, articles which promote or require the creation of international mechanisms of cooperation and management are discussed. Because many articles are multi-purpose in nature, most are included in two or more sections.

2. Columns

The Chart includes seven columns, briefly described below.

Column 1, “Purpose/Effect of Provision”: This column briefly describes the purpose of the articles under consideration, but no attempt is made to precisely define the legal effect of the provision.

Column 2, “Level”: The possible levels at which the suggested activity would occur are noted in column 2. These include the national, sub-regional, regional and global levels.

Column 3, “Assignee(s)”: The assignees for the purpose of follow-up may be either states or international organizations. The terms “primary”, “secondary” and “tertiary” are used to describe the types of assignment which are possible under the convention. A primary assignee, usually but not always a state, is that charged with the responsibility for fulfilment of an obligation under an article. Secondary assignees, always international organizations, are those which are necessary to the completion of an assigned activity, even though not primarily responsible. For example, where states are required to work “through the competent international organization”, that organization would be designated as a secondary assignee. The final category, the tertiary assignees, includes those instances in which the assistance of an international organization will be required in the fulfilment of individual state obligations at the national rather than the international level. (In a number of the secondary and most of the tertiary assignments the obligation or necessity for participation is inferred from the general effect of the article.)

Column 4, “Reference”: Column 4 lists the articles referred to each entry.
Column 5, "Appropriate International Organization": The listings in column 5 are by no means exhaustive, particularly insofar as regional organizations are concerned. However, the organizations listed do provide examples of the types of organizations which might be considered as assignees under the various articles.

Column 6, "Required Initiative/Follow-up": Column 6 suggests initiatives and activities which may be required of both states and international organizations in the implementation of the provisions of the Convention. These suggestions range from the very general to the specific, depending upon the terms of the article considered.

Column 7, "Comments/Recommendations": The Comments and Recommendations column includes references to existing activities in certain sectors and in some cases notes as to difficulties in the articles themselves. Suggestions as to present initiatives in states and organizations would be particularly helpful, as such activities are often not widely publicized.
## 1. CONSERVATION AND MANAGEMENT OF LIVING RESOURCES

<table>
<thead>
<tr>
<th>Purpose/Effect of Provision</th>
<th>Level</th>
<th>Assignee(s)</th>
<th>Reference</th>
<th>Appropriate International Organization (IO)</th>
<th>Required Initiative/Follow-up</th>
<th>Comments/Recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) Determination of total allowable catch (TAC) in EEZ</td>
<td>national</td>
<td>primary-states tertiary-IO</td>
<td>Art. 61(1)</td>
<td>global-FAO regional-e.g., FFA, IATTC, ICCAT, NAFO, NPAFC, GFCM, CECAF, EU, WIOTO</td>
<td>States-</td>
<td>By Art. 61 TAC is to be set at national level, but it is possible for this to be done regionally, as in the EU.</td>
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<td>Para. 17.78 of Agenda 21 directs that the management of living resources under national jurisdiction be in accordance with the Convention.</td>
</tr>
<tr>
<td>(b) Duty to ensure no over-exploitation of EEZ living resources</td>
<td>national</td>
<td>primary-states tertiary-IO</td>
<td>Art. 61(2)</td>
<td>&quot;Competent international organizations&quot; refers to the FAO (global) and regional fisheries bodies, e.g., GFCM, CECAF, IPFC, FFA, IBFSC, IATT, ICCAT, ICES, IPTP, NAFO, SPC, NPAFC, SEAFDEC, WIOTO</td>
<td>States-</td>
<td>The role of IO, both regional and global, is crucial for developing states. Role of major groups (Chaps. 24-32, Agenda 21) like NGOs, women, local authorities, is also pivotal; see 1984 FAO Strategy for Fisheries Management and Development; 1992 Cancun Declaration on Responsible Fishing.</td>
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<td>Agenda 21 calls for a commitment to conservation and sustainable use of marine living resources, the maintenance of biological diversity and productivity including limitations on use of critical habitat areas and protected areas, cooperation on information and data requirements, and support for the developing countries (Para. 17.46).</td>
</tr>
<tr>
<td>(c) Determination of harvest capacity, grants of access to surplus</td>
<td>national</td>
<td>primary-states secondary-IO</td>
<td>Art. 62(2)</td>
<td>As above, I.1(b)</td>
<td>States-</td>
<td>Special preference for developing states in access arrangements (e.g., Arts. 69 and 70) should be monitored by FAO.</td>
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<td>Respecting decisions on giving foreign access, para. 17.83 of Agenda 21 prescribes that states take into consideration the interests of local communities and indigenous peoples.</td>
</tr>
<tr>
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<tr>
<td>(d) Duty to ensure conservation of anadromous species within EEZ</td>
<td>national</td>
<td>primary-states secondary-IO</td>
<td>Art. 66(2)</td>
<td>E.g., ICES (ANACAT), NASCO, FAO, NPAFC</td>
<td>States- i) enact national legislation/ regulations on anadromous conservation; ii) establish TAC in consultation with other states.</td>
<td>E.g., ICES (ANACAT) provides information, conducts research on salmon stocks within its region; NASCO has regional mandate in research, conservation and facilitation of international agreement on salmon management. FAO legal assistance programme provides expertise in drafting national regulations. See the Feb. 1992 Convention for the Conservation of Anadromous Stocks in the North Pacific Ocean (Canada, Japan, USA, Russia).</td>
</tr>
<tr>
<td>(e) Fishing for anadromous species to be within EEZ</td>
<td>national, regional</td>
<td>primary-states</td>
<td>Art. 66(3) (a)</td>
<td>As above, I.1(d)</td>
<td>States- enact legislation to control fishing fleets under their flag</td>
<td>Applies except where economic dislocation results to states other than state of origin. See I.4(g), below. The 1992 Convention for the Conservation of Anadromous Stocks in the North Pacific Ocean prohibits high seas salmon fisheries.</td>
</tr>
<tr>
<td>(f) Catadromous harvesting only within EEZ</td>
<td>national</td>
<td>primary-states</td>
<td>Art. 67(2)</td>
<td>States- enact legislation to control EEZ and their own distant-water fleets</td>
<td>See below, I.3(g), for role of IOs in specific catadromous measures.</td>
<td></td>
</tr>
<tr>
<td>(g) Duty to take measures respecting nationals and high seas resource exploitation</td>
<td>national, regional</td>
<td>primary-states secondary-IO</td>
<td>Art. 117</td>
<td>global-e.g., FAO, ICES regional-e.g., NEAFC, FFA, ICES, IPTP, IOTC, CCAMLR, WIOTO</td>
<td>States- i) impose restrictions on nationals; ii) seek agreement with other states. IO- global: facilitate agreement, monitor exploitation, exchange data; regional: facilitate agreement, propose regulations. An entire programme area (D) in Chapter 17 of Agenda 21 is devoted to the measures that need to be undertaken for the sustainable use and conservation of marine living resources of the high seas.</td>
<td></td>
</tr>
<tr>
<td>(i) Duty of cooperation in semi-enclosed seas</td>
<td>national, regional</td>
<td>primary-states secondary-IO</td>
<td>Art. 123</td>
<td>UNEP and relevant regional bodies, e.g., UNEP Regional Seas Programmes, GFCM.</td>
<td>States- seek regional agreements on conservation/management of semi-enclosed seas. IO- facilitate agreements, initiate regional studies and diplomatic conferences, funding of regional programmes. Paras. 17.59 and 17.89 of Agenda 21 reiterate the need for cooperation and coordination in enclosed and semi-enclosed seas.</td>
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<tr>
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<td>2. Establishing/Affirming Jurisdiction</td>
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<tr>
<td>(a) Jurisdiction of coastal state over EEZ fishing</td>
<td>national</td>
<td>primary-states</td>
<td>Art. 62(4)</td>
<td>global-e.g., FAO, IOI</td>
<td>States- i) ensure nationals comply with measures of coastal states; ii) establish EEZ jurisdiction and enact regulations.</td>
<td>Article indicates acceptable range of EEZ conservation measures. See, e.g., ICSEAF role in recommendations to member states respecting technical fishing requirements. See also the 1988 FAO Legislative Study No. 21, rev. 3 on state practice regarding coastal state requirements for foreign fishing.</td>
</tr>
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<td></td>
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<td>tertiary-IO</td>
<td></td>
<td>regional-e.g., ICSEAF, NAFO, GFCM</td>
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<tr>
<td>(b) Coastal state and IO authority to regulate marine mammal exploitation in EEZ not reduced by Convention</td>
<td>national, regional, global</td>
<td>primary-states primary-IO</td>
<td>Art. 65</td>
<td>The competent international organization is the IWC. See also FAO, UNEP, ICES (MMC) regional - e.g., IATTC</td>
<td>Paras. 17.63 &amp; 17.91 of Agenda 21 call for cooperation in the conservation, management and study of cetaceans.</td>
<td>Reference to “competence of an international organization,” seems to invoke present role of IWC. Require global plan of action for the conservation and management of marine mammals. In paras. 17.62 &amp; 17.90 of Agenda 21, states acknowledge responsibility of IWC, work of IWSCC, work of other organizations such as IATTC, and under the Bonn Convention. See also I.2(e) below.</td>
</tr>
<tr>
<td>(c) Jurisdiction over anadromous stocks vested in state of origin</td>
<td>national</td>
<td>primary-states</td>
<td>Art. 66(1)</td>
<td></td>
<td>States- confirm or establish such jurisdiction through adoption of legislation and regulations.</td>
<td></td>
</tr>
<tr>
<td>(d) Jurisdiction over catadromous species vested in coastal states where majority of life-cycle spent</td>
<td>national</td>
<td>primary-states</td>
<td>Art. 67(1)</td>
<td></td>
<td>States- confirm or establish jurisdiction by national legislation.</td>
<td>For detailed provisions, see below, I.3(g), 4(k).</td>
</tr>
<tr>
<td>(e) Flag state and IO authority to regulate marine mammal exploitation on high seas not reduced by Convention</td>
<td>national, regional, global</td>
<td>primary-states primary-IO</td>
<td>Art. 120</td>
<td>See above, I.2(b)</td>
<td>See above, I.2(b)</td>
<td>Art. 120 applies to Art. 65 provisions respecting high seas.</td>
</tr>
<tr>
<td>(f) Special environmental jurisdiction over ice-covered areas of EEZ (and territorial sea) vested in coastal state</td>
<td>national</td>
<td>primary-states</td>
<td>Art. 234</td>
<td></td>
<td>States- establish jurisdiction through adoption, legislation and regulations.</td>
<td>See below, I.3(1), respecting criteria to be applied. See additional interest of CCAMLR in Antarctic.</td>
</tr>
<tr>
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</table>
| 3. Establishing Criteria and Standards                                                      | national | primary-states    | Art. 61(2)| The competent international organizations are the FAO and regional fisheries bodies, e.g., FFA, SPC, WIOTO | States- obtain and apply best available scientific evidence  
IO- cooperate in providing relevant scientific data to states, especially to developing states  
Financial, scientific and technological support for developing countries and cooperation for the collection and exchange of data and information are advocated in Agenda 21 (paras. 17.77, 17.87, 17.93, 17.121). | Notice the important and expanding role of the Coordinating Working Party on Atlantic Fishery Statistics (established by FAO) in the definition, classification and standards for the collection of fishery statistics. |
| (a) Use of "best scientific evidence available" in conservation and management of EEZ living resources | national | primary-states/primary-IO | Art. 61(2)| Global-7AO, regional-e.g., NAFO, GFCM, IPFC, ICES (Baltic Fish Ctte.), NEAFC, EU | States- establish and apply standards in accordance with Article  
IO- define and assist in application of minimum international standards |                                                                                                                                                                                                 |
|                                                                                          | national | primary-states    | Art. 62(1) | Primarily regional, e.g., NAFO, IPFC, GFCM, FFA | States- ensure legislation in harmony with general objective of optimum utilization  
Agenda 21 (para. 17.74) requires obtaining the full social and economic benefits from fisheries. This entails adoption of a wide array of coastal state management measures spelled out in paras. 17.80-82. | Most regional fisheries organizations engage in this activity. EU role extends further, see 1.1(a), above. Para. 17.75 reiterates a qualified MSY as a valid conservation/management objective of fisheries. |
| (b) Criteria for definition of maximum sustainable yield                                 | national | secondary-states  | Art. 62(3) | The competent international organizations are FAO and the different regional fisheries bodies | States- negotiate access agreements in accordance with criteria  
IO- facilitate and promote agreements in accordance with criteria | Criteria should include significance of resource to coastal state, involvement of land-locked states, requirements of developing states in region, economic dislocation to fishing states.  
The objective of full social and economic benefits serves as a guide on Agenda 21 under para. 17.79 in relation to para. 17.74 when a coastal state makes decisions on access to surplus. |
| (c) Promotion of optimum utilization objective                                             | national | primary-states    | Art. 64   | The competent international organizations are FAO and the different regional fisheries bodies | States- adoption of regional, and possibly subregional, agreements on optimum utilization of affected species  
IO- facilitate agreement | The results of the 1993/94 UN Conference on Straddling and Highly Migratory Fish Stocks will spell out the modalities and specifics of cooperation respecting HMS and straddling stocks. |
| (d) Criteria for access of other states to EEZ living resources                            | national | secondary-states  | Art. 64   | The competent international organizations are FAO and the different regional fisheries bodies | States- adoption of regional, and possibly subregional, agreements on optimum utilization of affected species  
IO- facilitate agreement |                                                                                                                                                                                                 |
| (e) Cooperation in promoting optimum utilization of highly migratory species               | subregional | primary-states    | Art. 64   | The competent international organizations are FAO and the different regional fisheries bodies | States- adoption of regional, and possibly subregional, agreements on optimum utilization of affected species  
IO- facilitate agreement | Para. 17.49 of Agenda 21 directs states to acknowledge the regime set under the Convention.                                                                                                                                 |
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<tr>
<th>Purpose/Effect of Provision</th>
<th>Level</th>
<th>Assignee(s)</th>
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<th>Required Initiative/Follow-up</th>
<th>Comments/Recommendations</th>
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<tbody>
<tr>
<td>(f) Criteria for anadromous species conservation and management</td>
<td>national, regional, global</td>
<td>primary-states secondary-IO</td>
<td>Art. 66(3), (a), (b), (c)</td>
<td>E.g., ICES (ANACAT), NASCO, NPAFC</td>
<td>States- i) seek agreement; ii) enact legislation in accordance with criteria.</td>
<td>Criteria should include minimization of economic dislocation, normal catch of fishing state, mode of operations of fishing state.</td>
</tr>
<tr>
<td>(g) Criteria for agreement on catadromous species conservation and management</td>
<td>subregional, regional</td>
<td>primary-states secondary-IO</td>
<td>Art. 67(3)</td>
<td>global-FAO, ICES (ANACAT) regional-e.g., NAFO, GFCM, IFPC</td>
<td>States- pursue conservation and management agreements; incorporating criteria</td>
<td>Criteria to include rational management and responsibilities of coastal states.</td>
</tr>
<tr>
<td>(h) Criteria for allowable catches, other conservation measures on high seas</td>
<td>national, global</td>
<td>primary-states tertiary-IO</td>
<td>Art. 119(1), (a), (b)</td>
<td>global-FAO, IOC, WDC regional-NAFO, etc.</td>
<td>States- incorporate criteria in national regulations IO- i) assist where necessary in harmonization of national legislation; ii) participate in establishing international criteria.</td>
<td>i) Possible IOC role in basic research preparatory to establishing standards; ii) Possible WDC, ASPIS role in disseminating information; iii) Criteria should include use of &quot;best scientific evidence,&quot; goal of maximum sustainable yield, fishing patterns, needs of developing states; iv) The UN Conference on Straddling and Highly Migratory stocks has emphasized the pivotal role of regional fisheries organizations and arrangements in the determination of allowable catches. See also 1993 Convention to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas. Para. 17.46 of Agenda 21 defines the objectives to which states commit themselves for the sustainable use and conservation of fisheries on the high seas.</td>
</tr>
<tr>
<td>(i) Criteria for regulations respecting ice-covered waters of EEZ</td>
<td>national</td>
<td>primary-states</td>
<td>Art. 234</td>
<td>global-CCAMLR, WDC, IMO</td>
<td>States- apply criteria in national legislation/ regulations IO- i) provide scientific data; ii) clarify definition of standards, especially for navigation.</td>
<td>i) Criteria should include: due regard for navigation, protection and preservation of marine environment, use of best scientific evidence; ii) WDC, ASPIS have a potential role in distribution of data. IMO should be consulted on navigational requirements. See e.g., Arctic Monitoring and Assessment Program under the 1991 Arctic Environment Protection Strategy.</td>
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<td>4. Establishing Mechanisms</td>
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<tr>
<td>(a) Duty to cooperate to ensure proper conservation and management measures</td>
<td>subregional, regional,</td>
<td>primary-states</td>
<td>Art. 61(2)</td>
<td>global-e.g., FAO and various regional bodies regional-e.g., NAFO, EU, NEAPC</td>
<td>States- cooperate with IOs in pursuance of conservation and management measures IO- i) provide training facilities, technical assistance; ii) facilitate research and data exchange activities.</td>
<td>i) IO role especially important with respect to developing states for training (e.g., IOI), funding (e.g., UNDP). Paras. 17.88 and 17.89 of Agenda 21 outline modalities for international and regional cooperation and coordination.</td>
</tr>
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<td>(b) Exchange of fish stock data</td>
<td>subregional, regional, global</td>
<td>primary-states primary-IO</td>
<td>Art. 61(5)</td>
<td>global—ASFIS, WDC, ICES (Stats. Ctee.), regional—e.g., IPFC, NAFO, etc.</td>
<td>States— contribute data to competent IO; IO— disseminate and, where appropriate, collect data</td>
<td>i) Central part of FAO mandate respecting fisheries; ii) Most IOs have some form of dissemination/publication function.</td>
</tr>
<tr>
<td>(c) Due notice of conservation and management regulations</td>
<td>national</td>
<td>primary-states tertiary-IO</td>
<td>Art. 62(5)</td>
<td>E.g., FAO, UNEP, IMO</td>
<td>States— publish, distribute notices; IO— assist in distribution</td>
<td>Para. 12.121 of Agenda 21 directs states to cooperate on the matter of data and information.</td>
</tr>
<tr>
<td>(d) Cooperation in the conservation and management of straddling stocks</td>
<td>subregional, regional</td>
<td>primary-states secondary-IO</td>
<td>Art. 63(1), (2)</td>
<td>The competent IOs are regional and sub-regional fisheries bodies, e.g., NAFO, IPFC, GFCM, NEAFC, SEAFDEC.</td>
<td>States— seek agreement on coordinated conservation and development measures; IO— facilitate agreements</td>
<td>i) Possible IO role in setting up pilot projects in developing states (UNDP); ii) Although article omits global level, the 1993/1994 UN Conference on straddling and highly migratory fish stocks addresses the question of stocks extending beyond EEZ; iii) Para. 17.49a and 17.50 of Agenda 21 outline the plan of action for these stocks.</td>
</tr>
<tr>
<td>(e) Establishment of international organizations for conservation management of highly migratory species (if necessary)</td>
<td>regional, global</td>
<td>primary-states secondary-IO</td>
<td>Art. 64(1)</td>
<td>The competent IOs are FAO and regional fisheries bodies, e.g., IOTC</td>
<td>States— cooperate to establish such organizations where necessary; IO— assist where required/requested</td>
<td>i) Significant role of FAO and the 1993/94 UN Conference on straddling and highly migratory fish stocks in the creation and evolution of regional organizations and arrangements (paras. 17.49 and 17.50 of Agenda 21); ii) Some organizations and arrangements already exist, e.g., IATTC, ICCAT, IPIR, the Tuna and Billfish Assessment Programme of SPC.</td>
</tr>
<tr>
<td>(f) Cooperation in the conservation and management of marine mammals</td>
<td>regional, global</td>
<td>primary-states secondary-IO</td>
<td>Art. 65</td>
<td>Competent international organization: the IWC. See also ICES (MMC), FAO, UNEP, IUCN. regional—e.g., NPFSC</td>
<td>States— cooperate in research, management of marine mammals; IO— i) facilitate cooperation, agreement; ii) participate in research, management activities.</td>
<td>See Art. 120 for application of Art. 65 to high seas. See above, I.2(b), for comment on global action plan. See also 1993 Ministerial Declaration on a sanctuary for the protection of marine mammals in the Mediterranean.</td>
</tr>
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<tr>
<td>(g) International consultation on anadromous fishing beyond EEZ</td>
<td>regional, global</td>
<td>primary-states secondary-IO</td>
<td>Art. 66(3) (a)</td>
<td>E.g., ICES (ANACAT), NASCO, NPAFC</td>
<td>States- consult and agree on anadromous fishing beyond EEZ</td>
<td>Para. 17.78 of Agenda 21 recognizes the Convention as framework in developing the international management regime for these stocks.</td>
</tr>
<tr>
<td>(h) Cooperation in the minimization of economic dislocation for states fishing anadromous stocks</td>
<td>regional, global</td>
<td>primary-states secondary-IO</td>
<td>Art. 66(3) (b)</td>
<td>As above, I-4(g)</td>
<td>States- (of origin) cooperate with fishing states</td>
<td>IO- facilitate cooperation and agreements</td>
</tr>
<tr>
<td>(i) Enforcement of anadromous regulations to be by agreement</td>
<td>subregional, regional, global</td>
<td>primary-states secondary-IO</td>
<td>Art. 66(3) (d), 66(5)</td>
<td>As above, I-4(g)</td>
<td>States- seek agreement on implementation, enforcement of national regulations</td>
<td>IO- facilitate agreements</td>
</tr>
<tr>
<td>(j) Cooperation in the conservation, management of anadromous stocks crossing EEZ</td>
<td>subregional, regional</td>
<td>primary-states secondary-IO</td>
<td>Art. 66(4), (5)</td>
<td>As above, I-4(g)</td>
<td>States- cooperate, seek agreement on conservation and management of stocks</td>
<td>IO-</td>
</tr>
<tr>
<td>(k) Management of migrating catadromous stocks to be by agreement</td>
<td>subregional, regional</td>
<td>primary-states secondary-IO</td>
<td>Art. 67(3)</td>
<td>E.g., ICES (ANACAT)</td>
<td>States- negotiate agreements on catadromous species conservation and management</td>
<td>IO-</td>
</tr>
<tr>
<td>(l) Establishment of international organizations for the conservation and management of high seas resources</td>
<td>subregional, regional</td>
<td>primary-states secondary-IO</td>
<td>Art. 118</td>
<td>E.g., FAO, UNEP, IOC</td>
<td>States- cooperate in establishing subregional, regional organizations for high seas resource management</td>
<td>i) Role for global IOs in setting up regional, subregional bodies, see, e.g., UNEP Reg. Seas Prog.; ii) Role of the UN Conference on Straddling and Highly Migratory Fish Stock; paras. 17.58-17.61 of Agenda 21 reiterate the importance of international and regional cooperation and coordination.</td>
</tr>
<tr>
<td>(m) Distribution of relevant conservation and management data</td>
<td>subregional, regional global</td>
<td>primary-states secondary-IO</td>
<td>Art. 119(2)</td>
<td>global-WDC, FAO, UNEP, IOC, ICES (Stats. Ctte., Publications Ctte.,), ASPIS (Joint IOC-FAO) The competent IOs are the FAO, IOC, and regional and sub-regional fisheries bodies.</td>
<td>States- collect, contribute and exchange data on conservation of fish stocks</td>
<td>IO- arrange distribution of data from states and IOs</td>
</tr>
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</table>
### II. POLLUTION PREVENTION, REDUCTION AND CONTROL - GENERAL MEASURES

#### 1. Prescribing Behaviour

**a) Duty to harmonize policies on pollution prevention, reduction and control**
- **Level**: subregional, regional
- **Organizations**: IMO, IMC, IOC, UNEP
- **Article**: 194(1)
- **States' Actions**:
  - States cooperate in harmonization of policies on pollution prevention, reduction and control.
  - IO: initiate and assist in harmonization of policies.

**b) Duty not to allow extra-jurisdictional damage from pollution arising within jurisdiction**
- **Level**: national
- **Organizations**: UNEP, IOC, IMO
- **Article**: 194(2)
- **States' Actions**:
  - States enact national legislation for monitoring and damage prevention schemes.
  - IO: provide technical assistance in legislative drafting and monitoring/damage prevention schemes.

**c) Duty to refrain from unjustifiable interference with permissible activities of other states**
- **Level**: national
- **Organizations**: IMO, FAO, UNEP
- **Article**: 194(4)
- **States' Actions**:
  - States reconcile national legislation with the goal of preventing interference.
  - IO: promote agreement on definition of "interference"; assist in dispute settlement.

### Comments/Recommendations

1. See activities of UNEP Regional Seas Programme including regional umbrella conventions (e.g., Barcelona Convention).
2. Cooperative activities may include harmonization of national legislation where appropriate.
<table>
<thead>
<tr>
<th>Purpose/Effect of Provision</th>
<th>Level</th>
<th>Assignee(s)</th>
<th>Reference</th>
<th>Appropriate International Organization (IO)</th>
<th>Required Initiative/Follow-up</th>
<th>Comments/Recommendations</th>
</tr>
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<tbody>
<tr>
<td>(d) Duty not to transfer or hazards</td>
<td>national</td>
<td>primary-states tertiary-IO</td>
<td>Art. 195</td>
<td>E.g., UNEP, SCOPE, GESAMP (GIPME), IMO</td>
<td>States- ensure that national pollution measures do not result in transference or transformation of damage or hazard.</td>
<td>IMO (under the LDC) and the Oslo transform damage or Commission/Paris Commission, and the Helsinki Commission deal with this issue through regulation of waste incineration. Repeated in Principle 14 of the Rio Declaration.</td>
</tr>
<tr>
<td>(e) Duty to control pollution resulting from use of technologies or introduction of new species</td>
<td>national</td>
<td>primary-states tertiary-IO</td>
<td>Art. 196</td>
<td>E.g., UNEP, IOC, SCOPE, GESAMP (GIPME), FAO</td>
<td>States- enact appropriate regulations.</td>
<td>See IMO Res A.774(18) on international guidelines for preventing the introduction of unwanted aquatic organisms and pathogens from ships' ballast water and sediment discharges.</td>
</tr>
<tr>
<td>(f) Duty to notify states, IOs, of damage or threat of damage to the marine environment</td>
<td>national</td>
<td>primary-states tertiary-IO</td>
<td>Art. 198</td>
<td>The competent IOs are IAEA, IMO, ISA, and UNEP.</td>
<td>States- establish notification systems.</td>
<td>&quot;Competent international organizations&quot; must be informed. This may include regional organizations. Duty also emphasized in Principles 18 and 19, Rio Declaration.</td>
</tr>
<tr>
<td>(g) Duty to grant preference to developing states in IO services, funding respecting pollution control</td>
<td>subregional, regional, global</td>
<td>primary-IO</td>
<td>Art. 203</td>
<td>Competent IOs are IAEA, IMO, IOC, UNDP, and IBRD.</td>
<td>IO- grant preference as required by Article 17 of Agenda 21 urges support for developing countries in areas like development of coastal and marine areas; collection, analysis and use of data and information; capacity building; and development of small island states (paras. 17.14, 17.22, 17.35(6), 17.128, 17.131, 17.132).</td>
<td>Some IOs are presently mandated to grant such preference, e.g., UNEP, WHO, IMA, IABO, ACMRR (FAO), GFCM. The significance of the GEF in financing post-UNCED initiatives should be noted.</td>
</tr>
<tr>
<td>(h) Duty to monitor effects of activities likely to pollute marine environment</td>
<td>national</td>
<td>primary-states tertiary-IO</td>
<td>Art. 204(2)</td>
<td>E.g., UNEP, IMO, GESAMP (GIPME), ICES, IOC (MARPOLMON), and regional organizations</td>
<td>States- establish surveillance systems.</td>
<td>i) Although duty is national, some IOs carry out monitoring, e.g., IMO, Oslo Comm/Paris Comm, Helsinki Comm. (all through ICES). Bonn Agreement monitors oil, chemical pollution in North Sea. ii) Example of possible regional role, see IPFC 1976 report on Preliminary Outline of the Pollution of Seawater of East Asia. iii) 1991 Dakar Convention, 1992 Helsinki Convention on the Baltic Sea, 1992 Bucharest Convention on the Black Sea, 1992 Paris Convention for the North East Atlantic.</td>
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<tr>
<td>(i) Duty to publish and distribute results of monitoring</td>
<td>national, regional</td>
<td>primary-states, primary-IO</td>
<td>Art. 205</td>
<td>global - e.g., ICES (Publications Cttee.), GESAMP, UNEP, IAPSO, WDC, IOC regiona - e.g., GFCM, PSA Competent international organizations are IAEA, IMO and UNEP.</td>
<td>States- publish reports and provide to IOs IO- reproduce and distribute reports Paras. 17.35(b)(e) and 17.121 of Agenda 21 provide for the necessity of cooperation in data and information exchange.</td>
<td>Distribution and publication of reports is a priority of most IOs.</td>
</tr>
<tr>
<td>(j) Duty to assess potential effects of planned activities in the marine environment</td>
<td>national</td>
<td>primary-states, primary-IO, tertiary-IO</td>
<td>Art. 206</td>
<td>As above, and IABO, SCOPE. Competent IOs are FAO, IMO and UNEP.</td>
<td>States- establish marine environmental assessment systems and publish results IO- i) primary duty to distribute published results; ii) tertiary duty to assist in establishment of assessment systems. Paras. 17.8 and 17.35(b) of Agenda 21 seek to promote cooperation in data and information exchange.</td>
<td>i) Read with Article 205; ii) IO assistance of critical importance to developing states; iii) See comment at II.1(b) respecting direct role for some IOs; iv) Principle 17 of Rio Declaration and para. 17.28 advocate environmental impact assessments.</td>
</tr>
<tr>
<td>(k) Duty to ensure that domestic recourse is available for prompt and adequate compensation or other relief for damage to the marine environment caused by nationals</td>
<td>national</td>
<td>primary-states</td>
<td>Art. 235(2)</td>
<td></td>
<td>States- reconcile national legislation with the objective of enabling legal recourse for damage to the marine environment. See Art. 235(1) for the general responsibility of states in international law to fulfill obligations to preserve and protect the marine environment. The rule is reiterated in Principles 10 and 13, Rio Declaration.</td>
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<td>(l) Duty to ensure that warships and government vessels and aircraft act in a manner consistent with the Convention</td>
<td>national</td>
<td>primary-states</td>
<td>Art. 236</td>
<td></td>
<td>States- take measures to ensure such vessels and aircraft act &quot;so far as is reasonable and practicable&quot; in a manner consistent with the Convention.</td>
<td>The general purpose of the Article is to exempt such vessels and aircraft from the effect of the marine environmental provisions of the Convention. See Principle 24 of Rio Declaration on environmental protection in times of armed conflict.</td>
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2. Establishing/Affirming Jurisdiction

N.A.

3. Establishing Criteria and Standards

(a) Duty to prevent, reduce and control pollution | national | primary-states, tertiary-IO | Art. 194(1) | E.g., UNEP, FAO, IOC, UNDP, IMO | States- utilize "best practicable means... in accordance with their capabilities" in pursuing the general duty IO- assist in improving capabilities of states where necessary Para. 17.22 of Agenda 21 enumerates measures to comply with basic commitment. | i) Establishes a criterion based on relative abilities of states to fulfill the general duty; ii) Duty is national, but regional IOs do take part at present; e.g., Oslo Comm./Paris Comm., Helsinki Comm., UNEP Reg. Seas Prog.; iii) Para. 17.21 advocates precautionary/anticipatory approaches. |

See "Transit Management", infra.
<table>
<thead>
<tr>
<th>Purpose/Effect of Provision</th>
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</tr>
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<tbody>
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<td>(b) Duty to ensure that national measures deal with all sources of marine pollution</td>
<td>national</td>
<td>primary-states</td>
<td>Art. 194(3)</td>
<td>As above</td>
<td>States—reconcile national legislation with the general objective of comprehensiveness</td>
<td>Requires measures which are designed to &quot;minimize&quot; a number of specific forms of marine pollution.</td>
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<td>ISO—provide technical assistance and funding as necessary</td>
<td>Para. 17.22 of Agenda 21 outlines various relevant measures.</td>
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<td>(c) Duty to take measures respecting fragile eco-systems and certain habitats</td>
<td>national</td>
<td>primary-states</td>
<td>Art. 194(5)</td>
<td>E.g., UNEP, IOC, FAO, IMO, IUCN</td>
<td>States—incorporate measures in national regulations. See state obligations touching on biological diversity, special areas including critical habitat areas, and small island developing states under Chap. 17 of Agenda 21, paras. 17.7, 17.30(d)(i), 17.86, 17.87, 17.101(e), 17.129(a)(c).</td>
<td>i) Article appears to neglect potential importance of subregional, regional level; ii) Possible connection to IMO through &quot;special areas&quot; provisions in OILPOL and MARPOL Conventions; iii) IMO has so far designated one particularly sensitive area (Great Barrier Reef); see IMO Res. A.720(17) Guidelines on Designation of Special Areas and Particularly Sensitive Areas.</td>
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<td>ISO—conduct scientific research, technical assistance in preparation of regulations.</td>
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<td>(d) Duty to establish criteria for the formulation of rules and standards for pollution control</td>
<td>national, regional, global</td>
<td>primary-states</td>
<td>Art. 201</td>
<td>Competent IOs are IAEA, IOC, UNEP, UNESCO, WHO, and WMO.</td>
<td>States—cooperate in establishing criteria</td>
<td>See comment (ii) at II.3(a) above on existing regional IO activity.</td>
</tr>
<tr>
<td>ISO—i) provide technical assistance in establishing draft criteria, guidelines</td>
<td>Paras. 17.13 and 14 of Agenda 21, as well as 17.93(e), recommend intensive scientific cooperation to achieve sustainable development of coastal and marine areas and living resources.</td>
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<td>(e) Duty to observe, measure and evaluate effects of pollution in the marine environment</td>
<td>national, regional</td>
<td>primary-states</td>
<td>Art. 204(1)</td>
<td>Competent IOs are IAEA, IMO, IOC, UNEP, WHO, and WMO.</td>
<td>States—cooperate in observation, measurement and evaluation</td>
<td>i) States are under a duty to apply &quot;recognized scientific methods&quot;; ii) See comment (ii) at II.3(a), above on existing regional IO activity.</td>
</tr>
<tr>
<td>ISO—i) facilitate cooperation; ii) disseminate information; iii) provide technical assistance in the development of monitoring, evaluating systems.</td>
<td>Para. 17.35 of Agenda 21 invites states to cooperate in developing systematic observation programme, including exchange of data and information.</td>
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<td>4. Establishing Mechanisms</td>
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<td>(a) Duty to notify of imminent or actual damage to the marine environment</td>
<td>regional, global</td>
<td>primary-states secondary-IO</td>
<td>Art. 198</td>
<td>Competent IOs are IAEA, IMO, ISA and UNEP. States- notify other states and competent IOs of imminent or actual damage</td>
<td>IO- distribute information received</td>
<td>Bona Agreement is an example of international mechanism for monitoring. See II.1(b), above. Principles 18 and 19 of Rio Declaration emphasize the importance of this role.</td>
</tr>
<tr>
<td>(b) Duty to establish contingency plans for marine pollution incidents</td>
<td>regional, global</td>
<td>primary-states primary-IO</td>
<td>Art. 199</td>
<td>global-competent global international organizations are IAEA, IMO, IOC, UNEP, UNESCO, WHO, and WMO. regional-e.g., GFCM, IPFC</td>
<td>States- cooperate in the development of contingency plans IO- same Para. 17.33 of Agenda 21 calls upon states to ratify the OPPRC Convention; para. 17.34 encourages more intense cooperation to deal with oil/chemical spills; and para. 17.37(d) addresses cooperation for pollution emergencies in developing countries.</td>
<td>Possible role for private associations, e.g., INTERTANKO, ICS, IUMI, INSA. Note role of IMO's Marine Pollution Emergency Response Support System, as well as regional oil spill contingency plans.</td>
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<tr>
<td>(c) Duty to conduct research, exchange data on marine pollution</td>
<td>national, regional, global</td>
<td>primary-states secondary-IO</td>
<td>Art. 200</td>
<td>global-competent IOs are IAEA, IOC, UNEP, UNESCO, WHO, WMO; role of GESAMP, IAPSO, and ICES should also be noted. regional-e.g., PSA, ICSEM,IMA</td>
<td>States- cooperate in research and data exchange IO- i) perform and promote research; ii) facilitate data exchange. Paras. 17.8 and 17.35 of Agenda 21 sanction cooperation for data and information requirements.</td>
<td>IOs may be called upon to fund programmes in developing states. Oslo Commission/Paris Commission and the Helsinki Commission are involved in this function.</td>
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<tr>
<td>(d) Duty to develop international criteria and standards</td>
<td>national, regional, global</td>
<td>primary-states secondary-IO</td>
<td>Art. 201</td>
<td>Competent IOs are IAEA, IOC, UNEP, UNESCO, WHO, WMO. States- participate and cooperate in development of international criteria IO- i) promote and develop criteria; ii) facilitate cooperation among states. Para. 17.13 of Agenda 21 provides for the need to develop observation, research and management systems.</td>
<td>i) Possible regional role were unique conditions exist; ii) See above II.3(d).</td>
<td></td>
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<tr>
<td>(e) Duty to promote programmes of marine environmental assistance to developing states</td>
<td>regional, subregional, global</td>
<td>primary-states secondary-IO</td>
<td>Art. 202</td>
<td>Competent IOs are IAEA, IMO, IOC, UNEP, UNESCO, NGOs like the IOI (training) also have special roles; UNIDO's marine sector program is significant; role of UN regional commissions also crucial. States- fund and cooperate in programmes of assistance to developing states IO- funding and programme development Chap. 17 of Agenda 21 is replete with provisions aimed to promote assistance to developing countries in areas like human resource development and capacity-building, financial and technological support, trade and environmental policy, and development of small island developing states.</td>
<td>Article is directed at a broad range of training, equipment supply and advisory functions related to marine environmental capabilities. Note role of the GEF now important.</td>
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<td>(f) Duty to monitor risks and effects of pollution</td>
<td>regional, global</td>
<td>primary-states</td>
<td>Art. 204(1)</td>
<td>Competent IOs are IAEA, IMO, IOC, UNEP, WHO, and WMO. The GESAMP, GIPME, or ICES also have relevant roles.</td>
<td>States- act directly or through IOs to improve monitoring; IO- i) facilitate state cooperative efforts; ii) perform research and provide technical assistance. Para. 17.35 of Agenda 21 defines parameters for data and information exchange.</td>
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<tr>
<td>(g) Duty to publish and distribute report</td>
<td>regional, global</td>
<td>primary-states</td>
<td>Art. 205, 206</td>
<td>Competent IOs are IAEA, IMO, UNEP (for Art. 205) and FAO, IMO, UNEP (for Art. 206).</td>
<td>States- prepare reports and provide to IOs; IO- maintain collections and distribute reports. Duty is related to data and information exchange mandates of Chap. 17 of Agenda 21, paras. 17.8, 17.35(b) (c), 17.121.</td>
<td>Most organizations make publication and distribution of reports a priority. Provision for EIAs is noteworthy (Principle 17 of Rio Declaration and para. 17.26 of Agenda 21).</td>
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<td>(h) Duty to cooperate in the implementation and development of international law respecting responsibility for damage to the marine environment by pollution</td>
<td>national, regional, global</td>
<td>primary-states</td>
<td>Art. 235(3)</td>
<td>IMO, UNEP</td>
<td>States- i) implement international standards in domestic legislation; ii) cooperate in the further development of international law in this area. IO- facilitate agreement on international standards. Agenda 21 contains various direct and indirect references for state action on the international law of responsibility: strengthening Montreal Guidelines for land-based pollution (17.24 and 17.25(a)); the code of safety for nuclear merchant ships (17.30A(xi)); air pollution from ships (17.30A(xii)); HNS (17.30A(xii)); London Dumping Convention (17.30B(i),(ii)); 1988 IMO Guidelines for the removal of offshore platforms; IMO duty to assess situations for compliance with standards (17.31); and pollution from organotin compounds (17.32).</td>
<td>i) See e.g., Convention on Civil Liability for Oil Pollution Damage Resulting from Exploration and Exploitation of Seabed Mineral Resources, 1977 (not in force). ii) Possible role for private associations, e.g., TOVALOP; ICS; IPIECA; ITOPF; and HELMEPA. iii) See e.g., the International Convention on Civil Liability for Oil Pollution Damage, 1969 and the Convention on the Establishment of an International Fund for Oil Pollution Damage, 1971. See also, IUMI Edinburgh Conference on Liability for Marine Pollution (1979); 1971 Convention on Civil Liability in the Field of Maritime Carriage of Nuclear Material, Annex V of MARPOL 73/78 on shipboard incinerators for garbage disposal, forthcoming IMO Conference in 1996 for a civil liability convention on HNS; decisions taken by the 16th Consultative Meeting of Contracting Parties to the LDC, and the recommendations of the 1990 International Organotin Symposium. iv) UNEP Working Group (“Senior Government Officials Expert in Environmental Law”). v) See also Principle 13 of Rio Declaration.</td>
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<td>III. TRANSIT MANAGEMENT</td>
<td>Purpose/Effect of Provision</td>
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</table>
| 1. Prescribing Behaviour| (a) Flag state duty to regulate nuclear-powered ships and ships carrying nuclear or other inherently dangerous substances | national | primary-states secondary-IO | Art. 23 | UNEP, IAEA, IMO | States-  
  i) ensure that such vessels flying their flag carry documents and observe any special precautionary measures while in innocent passage through the territorial seas of other states;  
  ii) seek agreement on international standards respecting such vessels.  
  IO- facilitate agreement on international standards for the regulation of such vessels  
  Para. 17.30(a)(ii) of Agenda 21 calls on the IAEA and IMO to work together to complete a code on the carriage of irradiated nuclear fuel in flasks on board ship, and para. 17.30(a)(x) urges the review of the 1981 IMO Code of safety for nuclear merchant ships. See also Chaps. 19 and 20 of Agenda 21 on hazardous wastes and toxic chemicals. | i) See 1993 IMO Code for the safe carriage of irradiated nuclear fuel, plutonium, and high-level radioactive wastes in flasks on board ship; the IMDG Code; IAEA Regulations for the safe transport of radioactive materials; 1992 IMO MSC circular encouraging member governments to inform IMO of constructions of non-military nuclear ships so that IAEA may be consulted; and the 1989 (Basel) Convention on control of transboundary movement of hazardous wastes and their disposal.  
 ii) See also SOLAS 1974, Chap. VII on carriage of dangerous goods, and 1993 decision of Consultative Meeting of Contracting Parties to the LDC banning the dumping of low level radioactive wastes. |
| (b) Flag state duty to regulate pollution from vessels | national | primary-states secondary-IO | Art. 211(2) | Competent IO is the IMO. The ILO and the UNEP also have roles to play. | States- adopt regulations controlling vessel source pollution  
 IO- promote and assist in creation of international standards. See below | Possible role for private associations, e.g., INTERTANKO, ICS, OCIMF and IACS in development of higher standards.  
 Conventions like MARPOL 73/78 and SOLAS 1974 III.3(d) define flag state obligations relevant to the of the marine environment. |
| (c) Flag state duty to ensure vessel compliance with cooperative pollution control schemes | national | primary-states | Art. 211(3) | States- adopt regulations requiring vessels to comply with cooperative pollution control schemes of other states respecting port entry requirements. |  | States should provide directories of national port entry requirements to ships flying their flags. |
| (d) Duty to determine whether "special circumstances" exist to justify mandatory pollution control measures | global | primary-IO | Art. 211(6) (a) | UNEP, IMO, IOC | IO- establish procedures for evaluation of national conditions and special measures | IO to determine whether conditions justify extraordinary control measures.  
 See IMO 1991 Guidelines for the designation special areas and particularly sensitive areas, e.g., Great Barrier Reef; see also MARPOL provisions, Annexes I, II and V on "special areas". |
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<td>(e) Duty to publish limits of &quot;special control&quot; areas</td>
<td>national</td>
<td>primary-states</td>
<td>Art. 211(6)(b)</td>
<td>UNEP, IMO</td>
<td>States- publish limits</td>
<td>See above comments under III.1(c).</td>
</tr>
<tr>
<td>(f) Flag state enforcement of applicable international rules</td>
<td>national</td>
<td>primary-states</td>
<td>Art. 217</td>
<td>IMO is the competent IO, although IMC, UNDP, UNESCO and the ILO have special roles to play.</td>
<td>States- ensure vessel compliance with international standards</td>
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<td>tertiary-IO</td>
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<td>IO- i) provide technical assistance in legislative drafting; ii) participate in creation of international minimum standards.</td>
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<td>(g) Port state duty of compliance with investigation requests</td>
<td>national</td>
<td>primary-states</td>
<td>Art. 218</td>
<td>IMO is the competent IO</td>
<td>States- comply with requests of other states to investigate pollution incidents relating to vessels in port</td>
<td>Port state must also transmit records of investigation upon request.</td>
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<td>Art. 6 (5) MARPOL 73/78 provides for the conduct of a permissive inspection upon request, but Sec. 5 of the Paris MOU in contrast mandates for an obligatory inspection to comply with a request.</td>
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<td>(h) Port state duty to take measures relating to seaworthiness</td>
<td>national, global</td>
<td>primary-states</td>
<td>Art. 219</td>
<td>IMO</td>
<td>States- take measures to prevent vessels sailing where unsaeworthiness threatens damage to the marine environment</td>
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<td>secondary-IO</td>
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<td>IO- promote, assist in development of international minimum standards relating to seaworthiness</td>
<td>i) Conventions that provide for this authority include MARPOL 73/78; SOLAS 1974; STCW 1978, ILO Convention 147, and 1966 LOADLINES Convention, and the 1993 Protocol to the Torremolinos International Convention for the Safety of Fishing Vessels 1977 (not in force) ii) The 1982 Paris MOU, The 1993 Vina del Mar Agreement on Port State Control, the 1993 Asia Pacific (Tokyo) MOU on port state control, and similar regional port state control agreements require mandatory inspections for seaworthiness.</td>
</tr>
<tr>
<td>(i) Flag state duty to ensure vessel compliance with information requests from coastal states</td>
<td>national</td>
<td>primary-states</td>
<td>Art. 220(4)</td>
<td></td>
<td>States- enact regulations requiring vessel compliance with information requests</td>
<td>Refers to requests under Art. 220(3) respecting pollution incidents in territorial sea, EEZ.</td>
</tr>
</tbody>
</table>
| (j) Duty of non-discrimination respecting foreign vessels | national | primary-states | Art. 227 | | States- reconcile national regulations with non-discrimination goal | The Paris MOU, Vina Del Mar Agreement and Tokyo MOU above provide for the observance of this duty. See also 1923 Convention and Statute on the International Regime of Maritime Ports.
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<td>2. Establishing/Affirming Jurisdiction</td>
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<tr>
<td>(a) Coastal state jurisdiction to require use of sea lanes and traffic separation schemes</td>
<td>national</td>
<td>primary-states</td>
<td>Art. 22(1), (2)</td>
<td>The IMO is the competent IO</td>
<td>States— assert jurisdiction in accordance with provisions of Article</td>
<td>See below, III.3(a) re standards to be applied</td>
</tr>
</tbody>
</table>
| (b) Jurisdiction of states bordering straits used for international navigation to regulate respecting pollution control | national       | primary-states | Art. 42(1) (b) | IMO is the competent IO. | States— assert jurisdiction over the prevention, reduction and control of pollution in such straits | i) Art. 233 applies the enforcement measures in Arts. 223-232 to any regulations enacted under this Article.  
ii) Art. 43 requires cooperation of states bordering straits in the pursuance of this objective. |
| (c) Coastal state jurisdiction over pollution control in territorial sea, EEZ | national       | primary-states | Art. 211(4), (5) | | States— adopt regulations for prevention, reduction and control of pollution in territorial sea, EEZ | See below III.3(b)(e), respecting standards to be applied. |
| (d) Coastal state jurisdiction to exceed international rules and standards where "special circumstances" exist | national       | primary-states | Art. 211(6) | | States— act where "reasonable grounds" exist to exceed international standards | See III.2(b) above. |
| (e) Flag state jurisdiction to enforce applicable international rules and standards | national       | primary-states | Art. 217 | IMO is the competent IO | States— no follow-up required; affirmation of existing jurisdiction | See below III.3(g), respecting standards of application. |
| (f) Port state jurisdiction for pollution control purposes and respecting seaworthiness | national       | primary-states | Art. 218, 219 | IMO | States— assert pollution control, seaworthiness jurisdiction over foreign vessels voluntarily in port | See above III.1(h). |
| (g) Port and coastal state jurisdiction to inspect and institute proceedings against vessels in port or navigating in territorial sea, EEZ | national       | primary-states | Art. 220 | IMO | States— assume jurisdiction in instances of pollution in territorial sea, EEZ | i) Permits physical inspection.  
ii) Jurisdiction limited by requirement that "international standards" be met. |
| (h) Coastal state jurisdiction in cases of maritime casualties | national       | primary-states secondary-IO | Art. 221 | IMO is the competent IO. Role of PIANC may be important. | IO— facilitate and promote international conventions on procedures and rules respecting maritime casualties | i) Affirmation of coastal state jurisdiction. See 1969 Intervention Convention and 1973 Protocol.  
ii) See below III.3(k), re standards to be applied.  
iii) Regional facilities managed by coastal states may be useful, particularly for developing states. |
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<tr>
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<tbody>
<tr>
<td>3. Establishing Criteria and Standards</td>
<td>national</td>
<td>primary-states</td>
<td>Art. 22(3)</td>
<td>IMO, PIANC</td>
<td>States- incorporate criteria in national sea-lane and traffic separation schemes</td>
<td>States must &quot;take into account&quot;: IO recommendations; customary use of channels for navigation; special characteristics of ships and channels; density of traffic. See 3(c) below.</td>
</tr>
<tr>
<td>(a) Criteria for the establishment of sea-lanes and traffic separation schemes</td>
<td>secondary-IO</td>
<td></td>
<td></td>
<td>IMO is relevant IO; role of PIANC also important.</td>
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</table>
| (b) Establishment of international rules and standards on pollution prevention, reduction and control (vessel-source) | regional, global | primary-states | Art. 211(1) | IMO | States- cooperate through the "competent" IO to develop international rules and standards | i) See MARPOL Convention, 1973/1978 on present standards.  
ii) Possible subsidiary role for private associations, see e.g., ICS Voluntary Draft Code on Prevention of Pollution from Oil Tankers.  
iii) See also EC Common Policy on Safe Seas and the IMO International Safety Management (ISM) Code for the safe operation of ships and for pollution prevention. |
<p>| (c) Promotion of routing systems | national, regional | primary-states | Art. 211(1) | IMO | States- promote adoption of routing systems &quot;designed to minimize&quot; threat of accidents causing pollution | Possible role for regional organizations respecting international routing systems within a region. Mandatory routing system by IMO under COLREG 1972; more than 100 mandatory TSS, as well as deep-water routes, and areas to be avoided have been adopted. IHO has also responsibility over charts. |
| (d) Minimum standards for national laws and regulations respecting vessel-source pollution | national | primary-states | Art. 211(2) | IMO | States- reconcile national legislation with &quot;generally accepted&quot; international rules and standards | Possible role for regional harmonization of standards, e.g., EC. See IMO Res. A.739(18) and A.740(18) on programme of assistance for more effective flag state implementation. |
| (e) Criterias for coastal state pollution control laws and regulations (vessel-source) | national | primary-states | Art. 211(5) | IMO | States- reconcile national laws and regulations with generally accepted international rules and standards | | |
| (f) Criterias for establishment of regulations respecting &quot;special circumstances&quot; | national | primary-states | Art. 211(6) | IMO is competent IO; role of UNEP and IOC also noted. | States- establish special mandatory regulations only where there are &quot;reasonable grounds&quot; relating to oceanographic and ecological conditions and resource utilization patterns | Article allows states to exceed normal international standards in &quot;special circumstances&quot;. Such measures may relate to navigational practices and discharges, but not to design, construction, manning or equipment of foreign vessels. See 1991 IMO guidelines on designation of special areas and particularly sensitive areas; provisions on &quot;special areas&quot; under MARPOL 73/78. |</p>
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<tr>
<td>(g) Standards for flag state enforcement procedures</td>
<td>national</td>
<td>primary-states</td>
<td>Art. 217</td>
<td></td>
<td>States- reconcile national enforcement procedures with requirements of Article</td>
<td>i) States to ensure periodic inspection of vessels. ii) States to provide for immediate investigation and institute proceedings where appropriate, regardless of place of violation. iii) Penalties are to be of &quot;adequate&quot; severity to discourage violations. See Art. 4 (1)(3)(4), MARPOL 73/78.</td>
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<tr>
<td>(h) Standards for port state enforcement of pollution regulations</td>
<td>national</td>
<td>primary-states</td>
<td>Art. 218</td>
<td>IMO</td>
<td>States- apply international rules and standards in cases of extra-jurisdictional pollution incidents</td>
<td>MARPOL 73/78 standards are enforced through port state control under regional PSC arrangements, e.g., the 1982 Paris MOU, 1992 (Chile) Vina del Mar Agreement, and 1993, Asia-Pacific MOU.</td>
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<tr>
<td>(i) Standards for port state enforcement respecting seaworthiness</td>
<td>national</td>
<td>primary-states</td>
<td>Art. 219</td>
<td>IMO</td>
<td>States- enforce seaworthiness regulations on vessels in port only when relating to pollution prevention, and where international standards are violated</td>
<td>Present international seaworthiness standards are found in SOLAS, STCW, LOADLINES, and ILO 147 enforced through port state control under the 1982 Paris MOU, 1992 Vina del Mar Agreement, and 1993 Asia-Pacific MOU.</td>
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<td>(j) Standards for coastal state enforcement of pollution regulations</td>
<td>national</td>
<td>primary-states</td>
<td>Art. 220</td>
<td>IMO</td>
<td>States- reconcile enforcement procedures with provisions of Article</td>
<td>i) Rules to be enforced must be in accordance with Convention or other international standards. ii) State must have &quot;clear grounds&quot; for believing a violation has occurred. iii) Physical inspection permissible only if &quot;clear, objective&quot; evidence of violation. iv) State must release vessel where international standard of surety is satisfied. See Art. 4 (2)(4), MARPOL 73/78.</td>
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<tr>
<td>(k) Standard of &quot;proportionality&quot; for intervention in cases of maritime casualties beyond the territorial sea</td>
<td>national</td>
<td>primary-states</td>
<td>Art. 221</td>
<td>IMO</td>
<td>States- establish national measures so that level of intervention is proportionate to threat posed by the casualty</td>
<td>See Intervention Convention, 1969, on current conventional standards. Art. 5, 1969 Intervention Convention.</td>
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<tr>
<td>(l) Duty to avoid adverse consequences in the exercise of powers of enforcement</td>
<td>national</td>
<td>primary-states</td>
<td>Art. 225</td>
<td></td>
<td>States- ensure that enforcement activities do not endanger navigation or the marine environment</td>
<td>E.g., Art. 7, MARPOL 73/78.</td>
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<td>(m) Standards for investigation of foreign vessels</td>
<td>national</td>
<td>primary-states</td>
<td>Art. 226</td>
<td></td>
<td>States- reconcile national procedures with applicable international law</td>
<td>Provides limitations on coastal and port state investigation and detention of foreign vessels. The prototype 1982 Paris MOU gives details of ship inspections on port. See also IMO Res. 738(18) on piracy counter measures.</td>
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<td>4. Establishing Mechanism</td>
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<tr>
<td>(a) Duty to specify and publicize sea lanes and traffic separation schemes</td>
<td>national</td>
<td>primary-states secondary-IO</td>
<td>Art. 22(4)</td>
<td>IMO</td>
<td>States- indicate sea lanes and separation schemes on charts, and give &quot;due publicity&quot; to charts</td>
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<td>IO- assist in publicizing charts</td>
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<tr>
<td>(b) Establishment of international rules and standards respecting vessel-source pollution control</td>
<td>global</td>
<td>primary-states secondary-IO</td>
<td>Art. 211(1)</td>
<td>IMO</td>
<td>States- act through the &quot;competent&quot; IO or general diplomatic conference to establish international rules and standards</td>
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<td>IO- promote and facilitate the development of international rules and standards</td>
<td>See 3(b) above; note the growing legitimacy of &quot;tacit acceptance&quot; procedures in IMO Conventions for early entry into force of amendments, e.g., in COLREG, MARPOL 73/78, SOLAS 1974, STCW LOADLINES Protocol 1988.</td>
</tr>
<tr>
<td>(c) Duty to publicize and communicate national requirements for pollution prevention, reduction and control</td>
<td>national</td>
<td>primary-states secondary-IO</td>
<td>Art. 211(3)</td>
<td>IMO</td>
<td>States- publicize requirements and provide to the &quot;competent&quot; IO</td>
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<td>IO- distribute notifications</td>
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<td>(d) Procedures for the establishment of regulations in &quot;special circumstances&quot;</td>
<td>regional, global</td>
<td>primary-states primary-IO</td>
<td>Art. 211(6)</td>
<td>IMO</td>
<td>States- conform to procedures established by Article prior to enacting any &quot;special circumstances&quot; measures participate in determination of &quot;special circumstances&quot; as required by Article</td>
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<td>IO-</td>
<td>Article requires prior notification of IO, a determination of justification by the IO, and a delay of 15 months after submission to IO. See 1991 IMO guidelines on designation of special areas and particularly sensitive areas.</td>
</tr>
<tr>
<td>(e) Duty to notify affected coastal states of incidents involving discharges</td>
<td>national, regional, global</td>
<td>primary-states secondary-IO</td>
<td>Art. 211(7)</td>
<td>IMO</td>
<td>States- ensure that the international rules and standards respecting vessel-source pollution include requirements for prompt notification of affected coastal states</td>
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<td>IO- promote and facilitate agreement on international rules and standards which include this requirement</td>
<td>See Regulation 7.1, Chap. VII, SOLAS 1974 on reporting of dangerous goods lost overboard to nearest coastal state, and Art. 8, MARPOL 73/78 on reporting of incidents involving harmful substances.</td>
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<tr>
<td>(f) Procedures respecting flag state enforcement</td>
<td>regional, global</td>
<td>primary-states secondary-IO</td>
<td>Art. 217(5)(6), (7)</td>
<td>IMO</td>
<td>States- i) cooperate in investigations upon request of flag state; ii) investigate at request of other states (duty of flag state); iii) inform requesting state, IO, of outcome of investigation.</td>
<td>Paris MOU, III.1(b), above, is e.g., of one approach to agreement on procedures. See also, for e.g., Art. 4, MARPOL 73/78.</td>
</tr>
<tr>
<td>(g) Procedures for port state enforcement</td>
<td>regional, global</td>
<td>primary-states secondary-IO</td>
<td>Art. 218</td>
<td>IMO</td>
<td>States- i) comply with investigation request from flag state or state affected by pollution incident; ii) transmit records of investigation to flag state and/or port state.</td>
<td>See the 1982 Paris MOU, 1993 Vina del Mar Agreement, and 1993 Asia-Pacific MOU.</td>
</tr>
<tr>
<td>(h) Procedures for avoidance of unnecessary physical inspection of vessels at sea</td>
<td>regional, global</td>
<td>primary-states secondary-IO</td>
<td>Art. 226(2)</td>
<td>IMO</td>
<td>States- cooperate in the development of procedures to avoid unnecessary physical inspection at sea.</td>
<td>IO- facilitate agreement on such procedures.</td>
</tr>
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### IV. ENVIRONMENTAL MANAGEMENT OF OTHER ACTIVITIES

#### 1. Prescribing Behaviour

| (a) Duty to ensure that activities in the Area be conducted in accordance with "sound principles of conservation" | global | primary-IO | Art. 150(b) | ISA, UNEP | IO- ensure that sound principles of conservation are applied in the management of the resources of the Area. | See Doc. A/48/950 (June 8, 1994) - Report of the UN Secretary General on the Consultations respecting Part XI: Annex, re Draft resolution and draft Agreement relating to the implementation of Part XI of UNCLOS sec. 1(5)(g),(h),(i),(k); Sec. 2(1)(b),(d) which provide functions for environmental management of the area. |
| (b) Duty to control pollution of the marine environment from land-based sources | national, regional | primary-states tertiary-IO | Art. 207(1), (2) | E.g., UNEP (including Reg. Seas Proc.) Oslo Commission/ Paris Commission | States- take necessary measures to control pollution from land-based sources. | i) See below IV.3(a) and 4(a), respecting standards and mechanisms. ii) For enforcement provisions, see Art. 213. iii) See Paris Convention, 1974/1992 and Helsinki Convention, 1974/1992. |

The outcome of the 1995 UNEP Conference on land-based pollution may be relevant.
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<tr>
<td>(c) Duty to control pollution resulting from sea-bed activities subject to national jurisdiction</td>
<td>national</td>
<td>primary-states</td>
<td>Art. 208</td>
<td>IMO and UNEP as the competent IOs</td>
<td>States—take necessary measures to control pollution from sea-bed activities, artificial islands and installations within the jurisdiction of the state. Para. 17.30(c) of Agenda 21 calls on the IMO specifically for assessment of regulatory measures concerning offshore oil and gas platforms.</td>
<td>See below IV.3(b), for specific standards and requirements. See e.g., Convention on Civil Liability for Oil Pollution Damage Resulting from Exploration and Exploitation of Sea-bed Mineral Resources, 1977 (not in force). Note applicability of IMO ISM Code to off-shore mobile craft.</td>
</tr>
<tr>
<td>(d) Duty to establish rules and procedures respecting activities in the Area</td>
<td>global</td>
<td>primary-IO</td>
<td>Art. 209(1)</td>
<td>ISA, UNEP</td>
<td>IO—establish rules, regulations and procedures to prevent, reduce and control pollution of the marine environment resulting from activities in the Area.</td>
<td>For enforcement provisions, see Art. 215. See Doc. A/48/950 (June 8, 1994) - Report of the Sec. Gen. re Consultations: Annex, Sec. 1(5)(g),(h),(l),(k); Sec. 2(1)(b),(d).</td>
</tr>
<tr>
<td>(e) Flag state duty to adopt laws and regulations respecting activities in the Area</td>
<td>national</td>
<td>primary-states tertiary-IO</td>
<td>Art. 209(2)</td>
<td>ISA, UNEP, IMO</td>
<td>States—adopt laws and regulations to control pollution from the marine environment from activities undertaken by vessels and installations in the Area. IO—provide assistance in drafting national regulations.</td>
<td>Regulations must be &quot;no less effective&quot; than the international standards under Art. 209(1). See e.g., US Deep Seabed Hard Mineral Resources Act, Sec. 109 - Protection of the marine environment; Sec. 110 - Conservation of Natural Resources: 30 U.S.C. Secs. 1419-1420.</td>
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<tr>
<td>(f) Duty to take all necessary measures to prevent, reduce and control pollution of the marine environment from dumping</td>
<td>national</td>
<td>primary-states tertiary-IO</td>
<td>Art. 210(1), (2)</td>
<td>E.g., UNEP, IOC, ICES, IMO, Oslo Commission/Paris Commission</td>
<td>States—take all necessary measures to control pollution from dumping. IO—advise on standards and assist in drafting regulations. Para. 17.30(b)(i), (ii) urges ratification and strengthening of the LDC.</td>
<td>i) See below IV.3(d), respecting standards. ii) For enforcement provisions, see Art. 216. Dumping control may be enforced by coastal states, flag states or states in which loading occurs.</td>
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<tr>
<td>(g) Duty to adopt laws and regulations to prevent, reduce and control pollution of the marine environment from or through the atmosphere</td>
<td>national</td>
<td>primary-states tertiary-IO</td>
<td>Art. 212</td>
<td>Competent IOs are the ICAO, IMO, and UNEP; role of IOC also important. Note also role of LRTAP Convention Executive Body (UNECE)</td>
<td>States—adopt laws and regulations applicable to sovereign air space and all vessels flying flag of the state. IO—provide technical assistance (e.g., research) and assist in drafting regulations. Para. 17.28 lists some measures to be undertaken regarding this kind of pollution. See also Chap. 19, Agenda 21 on atmospheric pollution.</td>
<td>i) National laws and regulations should take into account international rules and standards. See below IV.3(e), respecting standards. ii) For enforcement provisions, see Art. 222.</td>
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<td>(a) Coastal state jurisdiction over dumping in the territorial sea, EEZ</td>
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<tr>
<td>3. Establishing Criteria and Standards</td>
<td>national, regional, global</td>
<td>primary-states, secondary-IO</td>
<td>Art. 207(1), (4), (5)</td>
<td>E.g., UNEP, IOC, SCOR, GESAMP</td>
<td>States- i) cooperate in establishing global and regional rules, standards and procedures to control pollution from land-based sources; ii) enact national regulations &quot;taking into account&quot; international rules and standards.</td>
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<tr>
<td>(a) Criteria for the regulation of pollution from land-based sources</td>
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<td>i) Note significance of the outcome of the UNEP 1995 intergovernmental meeting on the protection of the marine environment from land based activities. ii) SCOR Project on Problems of River Inputs Into Ocean Systems (RIOS). iii) IOC project on Pollution of the Oceans Originating on Land (POOL). iv) GESAMP/UNEP work on land-based inputs to the Mediterranean is an example of a regional approach. v) There are now 13 UNEP Regional Seas Action Plans that play a role in addressing land-based pollution.</td>
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<tr>
<td>(b) Criteria for the regulation of pollution resulting from seabed activities within national jurisdiction</td>
<td>national, regional, global</td>
<td>primary-states, secondary-IO</td>
<td>Art. 208(3), (5)</td>
<td>IMO is competent IO; import a role also played by IMC and UNEP.</td>
<td>States- i) seek agreement on global and regional rules, standards and procedures; ii) ensure that national laws and regulations are &quot;no less effective&quot; than international rules.</td>
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<td>IO- i) facilitate agreement on international standards; ii) prepare and promote draft guidelines; iii) advise on national regulations.</td>
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<td>Para. 17.24-17.29 of Agenda 21 identify management related activities for land-based pollution.</td>
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<tr>
<td>(c) Criteria for flag state regulation of activities in the Area</td>
<td>national</td>
<td>primary-states tertiary-IO</td>
<td>Art. 209(2)</td>
<td>ISA, UNEP, IMO</td>
<td>States- adopt national regulations which are &quot;no less effective&quot; than the international rules and standards under Art. 209(1)</td>
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<td>IO- advise on content of national regulations</td>
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<td>No such international standards at present. But see Doc. A/48/950 (June 8, 1994) - Report of the UN Secretary General on the Consultations respecting Part XI: Annex, Sec. 1(5)(g),(h),(i),(k); Sec. 2(1)(b),(d) as new references for environmental standard setting in the Area; see also, e.g., US Deep Seabed Hard Mineral Resources Act, Sec. 109 - Protection of the marine environment; Sec. 110 - Conservation of Natural Resources : 30 U.S.C. Secs. 1419-1420.</td>
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<td>(d) Criteria for the regulation of pollution resulting from dumping</td>
<td>national, regional, global</td>
<td>primary-states secondary-IO</td>
<td>Art. 210(4), (5)</td>
<td>IMO and UNEP are competent IOs. See also work of WHO, IAEA and EUROCEAN.</td>
<td>States-&lt;br&gt; i) cooperate in establishing global and regional rules, standards and procedures to control pollution from dumping;&lt;br&gt; ii) ensure that national laws and regulations are &quot;no less effective&quot; than international standards.&lt;br&gt;&lt;br&gt; IO-&lt;br&gt; i) facilitate agreement on international standards;&lt;br&gt; ii) perform research and monitoring functions.</td>
<td>i) For present global standards, see the LDC 1972 and decisions of its Consultative Meeting of Contracting Parties.&lt;br&gt; ii) An example of regional standards is the Oslo Convention, 1972, to be merged with the 1992 Paris Convention.&lt;br&gt; iii) WHO, EUROCEAN and IAEA all have specialized interests in the management of waste disposal at sea.</td>
</tr>
<tr>
<td>(e) Criteria for the regulation of atmospheric pollution</td>
<td>national, regional, global</td>
<td>primary-states secondary-IO</td>
<td>Art. 212(1), (3)</td>
<td>IMO, UNEP and ICAO are the competent IOs; the WMO and the IOC also play useful roles. See also LRTAP Convention Executive Body (UN/ECE)</td>
<td>States-&lt;br&gt; i) cooperate in establishing global and regional rules, standards and procedures on the control of atmospheric pollution;&lt;br&gt; ii) adopt national laws and regulations &quot;taking into account&quot; international standards.&lt;br&gt;&lt;br&gt; IO-&lt;br&gt; i) facilitate agreement on international standards;&lt;br&gt; ii) advise on national regulations;&lt;br&gt; iii) perform research and monitoring functions.</td>
<td>i) See the MARPOL 73/78 annex on air pollution drafted in the IMO Marine Environment Protection Committee by a working group established in 1990. See also LRTAP Protocol to the Paris Convention dealing with air pollution, the work of expert groups on air pollution under the Oslo Commission/Paris Commission and Helsinki Commission, as well as the air pollution annex of the 1981 Athens Protocol for the Protection of the Mediterranean Sea against Pollution from Land-Based Sources.&lt;br&gt; ii) The possible role in monitoring and data collection of the IOC/WMO joint programmes - Integrated Global Ocean Services System (IGOSS) and Global Ocean Observing System (GOOS) coordinated with the Global Climate Observing System (GCOS). At the regional level, air pollution of the Baltic from land-based sources is monitored under the 1979 LRTAP Convention, pursuant to a 1989 MOU between the Helsinki Commission and the ECE.</td>
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4. Establishing Mechanisms

(a) Establishment of global and regional roles and standards respecting pollution from land-based sources.

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<tr>
<th>Level</th>
<th>Assignee(s)</th>
<th>Reference</th>
<th>Appropriate International Organization (IO)</th>
<th>Required Initiative/Follow-up</th>
<th>Comments/Recommendations</th>
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<tbody>
<tr>
<td>regional, global</td>
<td>primary-states secondary-IO</td>
<td>Art. 207(3), (4)</td>
<td>See above, IV.3(a)</td>
<td>States-&lt;br&gt; i) harmonize policies at the appropriate regional level;&lt;br&gt; ii) cooperate in establishing global and regional rules, standards and procedures respecting pollution from land-based sources.&lt;br&gt;&lt;br&gt; IO-&lt;br&gt; i) assist in harmonization at the regional level;&lt;br&gt; ii) facilitate agreement on global and regional rules, standards and procedures.</td>
<td>This is the essential role at the regional level for UNEP's Regional Seas Programme.</td>
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<td>Para. 17.26 of Agenda 21 looks forward to the UNEP inter-governmental meeting re land-based pollution, while 17.120(a) calls for the strengthening of UNEP's Reg. Seas Prog.</td>
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<tr>
<td>Purpose/Effect of Provision</td>
<td>Level</td>
<td>Assignee(s)</td>
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<td>Appropriate International Organization (IO)</td>
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<td>(b) Establishment of global and regional rules and standards respecting pollution from seabed activities subject to national jurisdiction</td>
<td>regional, global</td>
<td>primary-states secondary-IO</td>
<td>Art. 208(4), (5)</td>
<td>See above, IV.3(b)</td>
<td>States- i) harmonize policies at the &quot;appropriate regional level&quot;; ii) cooperate in establishing global and regional rules, standards and procedures respecting pollution from seabed activities subject to national jurisdiction.</td>
</tr>
<tr>
<td>(d) Establishment of global and regional rules, standards and procedures respecting pollution from or through the atmosphere</td>
<td>regional, global</td>
<td>primary-states secondary-IO</td>
<td>Art. 212(3)</td>
<td>See above, IV.3(e).</td>
<td>States- cooperate in establishing global and regional rules, standards and procedures respecting pollution from or through the atmosphere.</td>
</tr>
</tbody>
</table>
V. GENERAL PROVISIONS

1. Coastal State Jurisdiction Over Protection and Preservation of the Marine Environment in the EEZ

56. In the exclusive economic zone, the coastal State has:

(b) jurisdiction as provided for in the relevant provisions of this Convention with regard to:

(iii) the protection and preservation of the marine environment;

Commentary — The "sovereign rights" of a coastal state are broadly translated under paras. 17.6 and 17.7 of Chapter 17 as a set of management related activities which coastal states are invited to undertake.

2. Rights and Duties of Other States in the EEZ

58. In exercising their rights and performing their duties under this Convention in the exclusive economic zone, States shall have due regard to the rights and duties of the coastal State and shall comply with the laws and regulations adopted by the coastal State in accordance with the provisions of this Convention and other rules of international law so far as they are not incompatible with this Part.

Commentary — This Article would require other states to comply with laws and regulations for the protection and preservation of the marine environment imposed by the coastal state.

3. Protection of the Marine Environment and Activities in the Area

145. Necessary measures shall be taken in accordance with this Convention with respect to activities in the Area to ensure effective protection for the marine environment from harmful effects which may arise from such activities. To this end the Authority shall adopt appropriate rules, regulations and procedures for inter alia:

(a) the prevention, reduction and control of pollution and other hazards to the marine environment, including the coastline, and of interference with the ecological balance of the marine environment, particular attention being paid to the need for protection from harmful effects of such activities as drilling, dredging, excavation, disposal of waste, construction and operation or maintenance of installations, pipelines and other devices related to such activities; the protection and conservation of the natural resources of the Area and the protection of damage to the flora and fauna of the marine environment.

Commentary — The (draft) resolution and (draft) agreement relating to the implementation of Part XI of the 1982 Convention on the Law of the Sea (UN Doc. A/48/950 9 June 1994) provides for complementary provisions on environmental management in the Area.

4. General Obligation to Protect and Preserve the Marine Environment

192. States have the obligation to protect and preserve the marine environment.

Commentary — Para. 17.1 acknowledges that the marine environmental provisions of the Convention "provides for the international basis upon which to pursue the protection and sustainable development of the marine and coastal environment and its resources." Significantly, it is further stated that "This requires new approaches to marine and coastal management and development at the national, regional and global levels, approaches that are integrated in content and are precautionary and anticipatory in ambit..."

5. Cooperation in the Protection and Preservation of the Marine Environment

197. States shall cooperate on a global basis and, as appropriate, on a regional basis, directly or through competent international organizations, in formulating and elaborating international rules, standards, and recommended practices and procedures consistent with this Convention, for the protection and preservation of the marine environment, taking into account characteristic regional features.

Commentary — Programme area F of Chapter 17 is devoted to the subject of "strengthening international, including regional, cooperation and coordination." All the other programme areas have full sections that deal with "international and regional cooperation and coordination". Chapter 17 of Agenda 21 will be the subject of an in-depth review by the Commission for Sustainable Development (CSD) in 1996.

6. Obligations Under Other Conventions on Protection and Preservation of the Marine Environment

237. 1. The provisions of this Part are without prejudice to the specific obligations assumed by States under special conventions and agreements concluded previously which relate to the protection and preservation of the marine environment and to agreements which may be concluded in furtherance of the general principles set forth in this Convention.

2. Specific obligations assumed by States under special conventions, with respect to the protection and preservation of the marine environment, should be carried out in a manner consistent with the general principles and objectives of this Convention.

7. Principles for the Conduct of Marine Scientific Research

240. In the conduct of marine scientific research the following principles shall apply:

(d) marine scientific research shall be conducted in compliance with all relevant regulations adopted in conformity with this Convention including those for the protection and preservation of the marine environment.

Commentary — Each programme area under Chapter 17 has a section on "scientific and technological means" that forms part of a comprehensive strategy to realize the objectives of the Chapter. Marine scientific research, as an activity built into the modes of implementing, and a part of the implementation, of each of these programme areas, is uniformly defined in a setting of intense or intensified international cooperation.
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