

Managing the Marine and  
Coastal Environment of  
Sub-Saharan Africa  
*Strategic Directions for  
Sustainable Development*

Indu Hewawasam



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# Foreword

The United Nations Conference on Environment and Development (UNCED), held in Rio de Janeiro in 1992, set in motion a number of initiatives for the sustainable management of oceans and coasts. The past decade has seen the adoption of many new international agreements bearing on coastal and marine environmental issues, significant investment by donor agencies, the development of national and local coastal management programs, and extensive research and scientific activity aimed at deepening our understanding of coasts and oceans.

Despite these advances, an assessment of trends over the past 10 years reveals a general decline in the health of coastal and marine ecosystems throughout the world. As populations continue to expand and to cluster in coastal areas, the pressures on coastal and marine resources increase. Among the most threatened resources are coral reefs, sea grass habitats, marine mammal species, fisheries, and coastal ecosystems such as mangrove forests.

The trends toward social transformation and ecosystem degradation in coastal and marine areas around the world are echoed and in some respects magnified in Sub-Saharan Africa. Action by the global community is urgently needed. During the past decade, the World Bank has responded to many requests for assistance by client countries in the region as they strive to alleviate the acute impoverishment in coastal communities and to improve and maintain the integrity of the coastal ecosystems on which these populations depend. Nevertheless, still greater efforts by the Bank are needed, and larger and more coordinated investments are required to deal with the growing crisis.

Efforts are under way in the Bank to mainstream environmental issues into the overarching goal of sustainable development through lasting poverty reduction. The Africa Region's environmental strategy provides a framework for creating positive incentives and the enabling conditions for improved environmental management through policy reform and through capacity building in all sectors of society. Consistent with these strategic initiatives, this book outlines an agenda to guide investment and capacity-

building support for sustainable development in Sub-Saharan Africa's coastal and marine areas.

The World Summit on Sustainable Development in Johannesburg provides an important forum, 10 years after the Rio conference, for heightening global awareness of the threats facing coastal and marine areas. It also offers an opportunity to highlight the ways in which sustainable development and management of coastal resources can help alleviate poverty and increase food security in coastal communities. Much has been learned about the issues affecting coastal and marine areas worldwide, and about the resources and services that these areas provide. The time has now come to take urgent, concerted measures for ensuring the health and productivity of coastal and marine ecosystems and of the communities that depend on them.

JAMES P. BOND  
SECTOR DIRECTOR  
ENVIRONMENTAL, RURAL, AND SOCIAL DEVELOPMENT  
AFRICA REGION  
THE WORLD BANK

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# Preface

This report surveys the challenges facing coastal and marine environments in Sub-Saharan Africa and describes the World Bank's strategy for supporting sustainable development in the sector. It represents a contribution by the World Bank Group to the World Summit on Sustainable Development (Johannesburg, South Africa, August 26–September 4, 2002).

Social change and ecosystem degradation are affecting coastal and marine areas around the world, not least in Sub-Saharan Africa. The crisis affecting the region's coastal and marine areas requires an immediate and concerted response by the global community. There is significant scope for larger and more coordinated investments to address the serious inequities and impoverishment in coastal communities and to improve the long-term viability of the coastal ecosystems on which these communities depend.

The World Bank Group's response to client countries' call for action is continually evolving in the light of advances in information and lessons from experience. Environmental issues are increasingly being mainstreamed into the overall goal of achieving sustainable development through lasting poverty reduction.

The Bank's institutionwide environmental strategy provides overall guidance for promoting sustainable development in Bank-supported programs. The environmental strategy of the Bank's Africa Region is intended to supply a framework for creating positive incentives and the enabling conditions needed for improved environmental management by promoting policy reform and capacity building within the public and private sectors and across civil society. In line with these Bankwide and regional strategies, this report outlines an agenda for guiding investment and capacity building in support of sustainable development in the sensitive and threatened ecosystems of Sub-Saharan Africa's coastal and marine areas.

This strategy paper was prepared by Indu Hewawasam, senior environmental specialist, Africa Region Technical Department, Environmentally Sustainable Development Division (AFTES), with the assistance of comments and contributions from coastal management specialists within and outside the World Bank. The author is particularly grateful to the peer

reviewers: Marea Hatzios, senior coastal and marine resource management specialist, Environment Department (ENV), and Jack Ruitenbeek, consultant. Others who made valuable contributions include Francois Falloux, formerly of AFTES; Jan Bojo, lead environmental economist, ENV; Agi Kiss, lead ecologist, AFTES; Jean-Roger Mercier, lead environmental specialist, ENV; Gayatri Acharya, environmental economist, World Bank Institute; and consultants Miriam Balgos, Anders Ekbom, Olof Lindén, and Bernice McLean.

Special thanks go to the external coastal and marine resource management experts who reviewed the various drafts of the report: Biliana Cicin-Sain, director, Center for the Study of Marine Policy, University of Delaware; the late Robert Knecht, also of the Center for the Study of Marine Policy; Stephen Olsen and Mark Amaral, Coastal Resources Center, University of Rhode Island; Chua Thia-Eng, manager, Regional Program for the Prevention and Management of Marine Pollution in the East Asian Seas; and David Moffat, at the time senior adviser to the Secretariat for Eastern African Coastal Area Management (SEACAM).

Ella Hornsby, program assistant, AFTES, provided processing support and organized the seminars at which key themes were discussed. Working drafts of the report were presented and discussed in international forums, including the Global Conference on Oceans and Coasts at Rio+10, held in Paris in December 2001 in preparation for the World Summit on Sustainable Development. The comments and contributions received were drawn on in preparing this final version.

The report is being published under the leadership of Richard Scobey, sector manager, AFTES, Hans Binswanger, former sector director, and James P. Bond, sector director, Environment, Rural Development, and Social Development, World Bank.



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# Abbreviations

ACOPS	Advisory Committee on Protection of the Sea
CMBMP	Coastal and Marine Biodiversity Management Project
CMR	Coastal and marine resources
CORDIO	Coral Reef Degradation in the Indian Ocean
CSMP	Center for the Study of Marine Policy, University of Delaware, United States
DEAT	Department of Environmental Affairs and Tourism, South Africa
DLIST	Distance Learning Information Sharing Tool
FAO	Food and Agriculture Organization (of the United Nations)
GEF	Global Environment Facility
ICM	Integrated coastal management
IDA	International Development Association
IFC	International Finance Corporation
IOC	Intergovernmental Oceanographic Commission
IPCC	Intergovernmental Panel on Climate Change
IUCN	International Union for Conservation of Nature (World Conservation Union)
MPA	Marine protected area
NGO	Nongovernmental organization
PACSIKOM	Pan-African Conference on Sustainable Integrated Coastal Management
SEA	Strategic environmental assessment
SEACAM	Secretariat for Eastern African Coastal Area Management
UNCED	United Nations Conference on Environment and Development
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific, and Cultural Organization
WRI	World Resources Institute
WSSD	World Summit on Sustainable Development
WWF	World Wide Fund for Nature



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# 1

## The Looming Crisis in Sub-Saharan Africa's Coastal and Marine Environments

During the late 20th century, coastal areas worldwide underwent unprecedented economic and social transformation. More than 40 percent of the world's population now lives within 100 kilometers of the coast, in areas that occupy, in all, only about 20 percent of the planet's landmass (WRI 2001b). About 2.2 billion people rely on marine habitats and resources for their basic needs, including nutrition, living space, agriculture, and recreation. By 2025, coastal populations are expected to make up 75 percent of the total world population (United Nations 2001). More than 70 percent of the world's megacities (cities with more than 10 million inhabitants) are located in coastal areas. In Sub-Saharan Africa the metropolitan area of Lagos, Nigeria, has 13 million inhabitants and is projected to grow to more than 20 million by 2015 (United Nations 2001).

The 1999 Hangzhou Declaration on Sustainable Solutions for Resolving Problems Associated with Urbanization of Coastal Areas noted that massive migration to coastal areas and the emergence of coastal megacities as major centers of population and economic growth offer many opportunities but also pose serious challenges. The coastal megacities are focal points of economic, social, and cultural opportunity. Yet they are also often centers of high consumption and poverty, both of which exert increased pressure on the natural resource base. The strain that these megacities will place on existing infrastructure and on coastal and marine ecosystems could have serious impacts on local and national economies in the form of lost opportunities and wasted investments, poor health and productivity of urban populations, and increased vulnerability to natural disasters. Among the potential consequences are significant loss of mangrove forest, depletion of fisheries, degradation of habitat, intensified coastal erosion through shoreline modification, and damage from storm surges and flooding (see Box 1). Urbanization and the growth of megacities may spawn social problems: escalating poverty, as a result of competition for and loss of access to common-property resources; damage to public health; and increased conflict among resource users (United Nations 2001). Improper management of coastal and marine resources may lead to irreversible

damage to ecosystems and ecosystem services and to reduced development opportunities.

### **Economic and Environmental Benefits from Coastal and Marine Ecosystems**

According to the Food and Agriculture Organization (FAO), 90 percent of the world fish catch comes from the marine environment.<sup>1</sup> Coastal ecosystems account for about 25 percent of global biological productivity—the total amount of living matter, or biomass, produced over a given period. These ecosystems harbor the greatest biodiversity of the oceans; coral reefs alone house nearly a million species and are the Earth's largest biological structures (Reaka-Kudla 1997). Over 500 million people worldwide rely on coral reefs for food and income, and reefs contribute US\$375 billion to the world economy annually, with the bulk of this amount coming from tourism (Wilkinson 2001).

Travel and tourism is the largest industry in the world, yielding US\$3.5 trillion in revenues in 1999 (WRI 2001a). Coastal tourism is especially important for small island states. The U.S. National Oceanic and Atmospheric Administration estimates that the oceans and coasts provide 25 to 30 percent of world energy supplies and that 90 percent of international trade is carried by sea (Bernal and Cicin-Sain 2001)

All these benefits and opportunities depend on the proper functioning of coastal ecosystems. As multiple-use areas, coastal ecosystems are vulnerable to pollution, damage, and destruction by improperly managed human activities that may ultimately reduce their value. To realize and sustain the benefits and development opportunities provided by coastal areas, the true value of the goods and services they provide needs to be recognized and appreciated.

Apart from their direct benefits—including commercial and subsistence food production, raw materials, transportation, tourism, recreational opportunities, and waste disposal—coastal ecosystems yield a number of indirect benefits that have not been assigned a value or are undervalued. These services include erosion control; shoreline protection and buffering against storm surges; nutrient recycling; filtering and processing of wastes by coastal wetlands; climate regulation; and important life-support functions. Estimating the monetary value of the benefits provided by coastal ecosystems is a complex process. Undervaluation usually results in overexploitation because policymakers, users, and the general public are ill informed about the consequences of unsustainable use. The challenge, therefore, is to identify economic opportunities that will maintain the natural integrity of coastal areas and increase the benefits derived from them.

### Box 1. The World's Coastal Ecosystems under Siege

The many and diverse activities carried on in oceans and coastal areas are placing increasing pressure on the integrity of coastal and marine ecosystems worldwide. Many coastal and marine resources are threatened by overexploitation, as the following examples illustrate.

- *Fisheries.* Forty-seven percent of global fisheries are being fished to capacity, and 28 percent are overutilized. Urgent measures are required to freeze or reduce fishing capacity in 75 percent of the fisheries (FAO 2000).
- *Marine mammals.* Of 126 species of marine mammals, 88 are on the Red List of Threatened Species kept by the World Conservation Union (Marsh and others 2001).
- *Coral reefs.* Even before the 1998 El Niño climate disturbance, 11 percent of coral reefs had been completely destroyed. An additional 16 percent experienced severe damage as a result of the sea surface warming associated with this event, and another 20 to 30 percent will be under threat in the next 10 years because of stress related to local human activity and climate change. Current projections indicate possible losses of 50 to 60 percent within 30 years (Wilkinson 2001).
- *Mangroves.* It is estimated that worldwide, 50 percent of the mangrove forests that existed before people began to alter coastlines have been lost. Indeed, some countries, such as Thailand, have lost nearly 85 percent of the original extent of their mangroves (WRI 2001a).
- *Sea grass habitat.* Important sea grass habitats, covering more than 600,000 square kilometers, are rapidly being destroyed. In Southeast Asian countries, 20 to 60 percent of sea grass beds have been lost (Fortes 2001).
- *Invasive species.* Each year, 12 billion tons of ballast water containing, at any one time, 10,000 marine species are carried by ships around the globe, spreading alien and invasive species (Bax and Aguero 2001).
- *Flooding.* Projections by the Intergovernmental Panel on Climate Change (IPCC) note that continued use of fossil fuels will exacerbate global climate change, with severe consequences for oceanic and coastal ecosystems. Every year, 46 million people are threatened by flooding caused by storm surges. In Bangladesh a 1-meter sea level rise could displace tens of millions of people if adaptation measures are not taken (IPCC 2001).
- *Health of coastal ecosystems.* The ecological health of an estimated 51 percent of the world's coasts is under moderate or high threat from development-related effects, including habitat destruction, sewage and industrial pollution, species introductions, and overexploitation. An estimated 30 percent of the coastal land area has been altered or destroyed, and 70 percent of the beaches studied over a 10-year period had been eroded (WRI 2001a)

Source: Based on Bernal and Cicin-Sain (2001).

## **Threats to the Coastal and Marine Environment: From Micro Decisions to Global Climate Trends**

Rapid population growth, combined with industrial and urban development, causes formidable environmental stress and displacement of traditional livelihoods. Increased deforestation and land clearing, uncontrolled fishing, pollution from domestic and industrial sources, and conversion of wetlands and fragile ecosystems for development all result in degradation of coastal areas and their resources. Proper planning for growth in the coastal zone is critical for poverty reduction and sustainable development.

Competition for natural resources and living space by the increasing numbers of coastal communities, along with large-scale pollution from domestic and industrial waste, is exacerbating the strain placed on Sub-Saharan Africa's coastal and marine habitat by the rapid transformation of vast areas for economic growth. Many African coastal nations are pursuing aggressive industrial growth strategies. These efforts may encourage or permit the proliferation of improperly planned and managed settlements and of coastal tourism, leading not only to shoreline erosion and ecosystem degradation but also to forfeit of the economic gains that well-planned, socially and environmentally sustainable private investment could yield. The absence of appropriate policy, regulatory, and institutional frameworks for urbanization and of governance arrangements for coastal access and resource use; deficiencies in education on environment and hygiene; and inadequate incentives for conservation and environmental management—all these are root causes of coastal degradation and of negative socioeconomic impacts (World Bank 1996).

### *Urbanization and Population Growth*

Sub-Saharan Africa has the world's highest urban population growth rate, more than 5 percent (United Nations 1995). Rapidly expanding coastal cities such as Lagos, Nigeria; Accra, Ghana; Abidjan, Côte d'Ivoire; Dakar, Senegal; Mombasa, Kenya; and Dar es Salaam, Tanzania, have annual growth rates of 4 percent or higher. The population of Lagos grew from 3.3 million in 1975 to over 13 million in 2001 and now represents approximately 10 percent of the national total. Ghana's coastal districts, which make up about 6.5 percent of the total land area of the country, are home to 25 percent of the nation's population (World Bank 1997). In Moree—a typical coastal village in Ghana's Central Region—33,600 people live on a land area of 9.2 square kilometers (World Bank 1997).

Within Sub-Saharan Africa, West Africa is the farthest along in the urban transition; almost 40 percent of the population lives in coastal cities (see Map 1). The area between Accra and the Niger Delta is likely to become a

continuous urban megalopolis, with more than 50 million people inhabiting 500 kilometers of coastline (World Bank 1994).

Although population densities along the coasts of East and southern Africa are not as high as in West Africa, coastal cities in the east are also experiencing high growth rates. The shoreline of East Africa, including the island states, extends a total of 11,000 kilometers and is inhabited by 30 million to 35 million people (Lindén and Lundin 1997). (Table 1 presents estimates for representative East African countries.) Perceptions of economic opportunity act as a magnet for migration to the coast. In some East African states, at least 80 percent of the population is considered to be coastal. Dar es Salaam, the capital of Tanzania, on the Indian Ocean, has a very high population density of more than 1,210 people per square kilometer. Of Tanzania's estimated 1996 population of 30.5 million, 8 million lived in the coastal regions of Tanga, Dar es Salaam, Coast, Lindi, and Mtwara. Whereas the population growth rate for the country as a whole is 2.8 percent, the rate for these areas ranges from 2 to 6 percent (Ngoile and Daffa 2001). In South Africa's Western and Eastern Cape Provinces, approximately 80 percent of the population resides within a narrow coastal strip. Map 2 depicts the trends in population growth from 1960 to 1991 and projected growth for 2020. Estimates show that much of this growth is going to be concentrated on the coastal areas of Western and Eastern Africa.

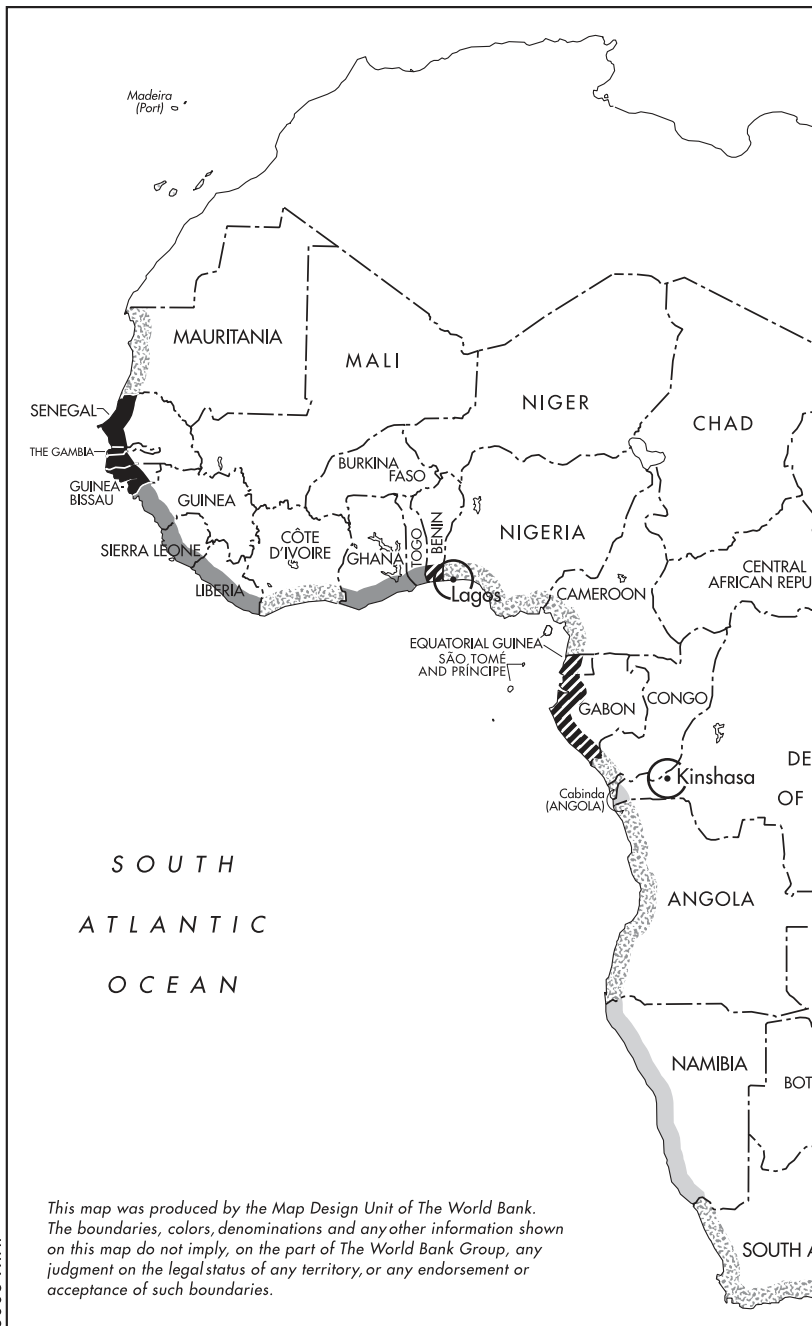
### *Pollution*

Urbanization along the West African coastline has increased pollution in coastal and marine ecosystems to alarming levels. Particularly in Côte d'Ivoire, Ghana, and Nigeria, these coastal areas are locations for an array of industrial activity ranging from textiles, leather, and food and beverage processing industries to extraction and processing of petroleum, natural gas, phosphates, and other minerals (World Bank 1996). Major watersheds encompassing river systems in The Gambia, Niger, and Senegal are seri-

**Table 1. Estimated Coastal Populations, Selected Countries of East Africa, 2001**

<i>Country</i>	<i>Total population (millions)</i>	<i>Estimated coastal population (millions)</i>	<i>Coastal population as percentage of total</i>
Kenya	30.0	2.7	9
Mozambique	19.6	6.6	34
Somalia	9.9	3.8	38
Tanzania	33.5	8.4	25

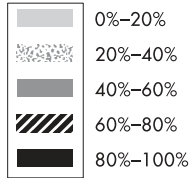
Source: WWF (2001).



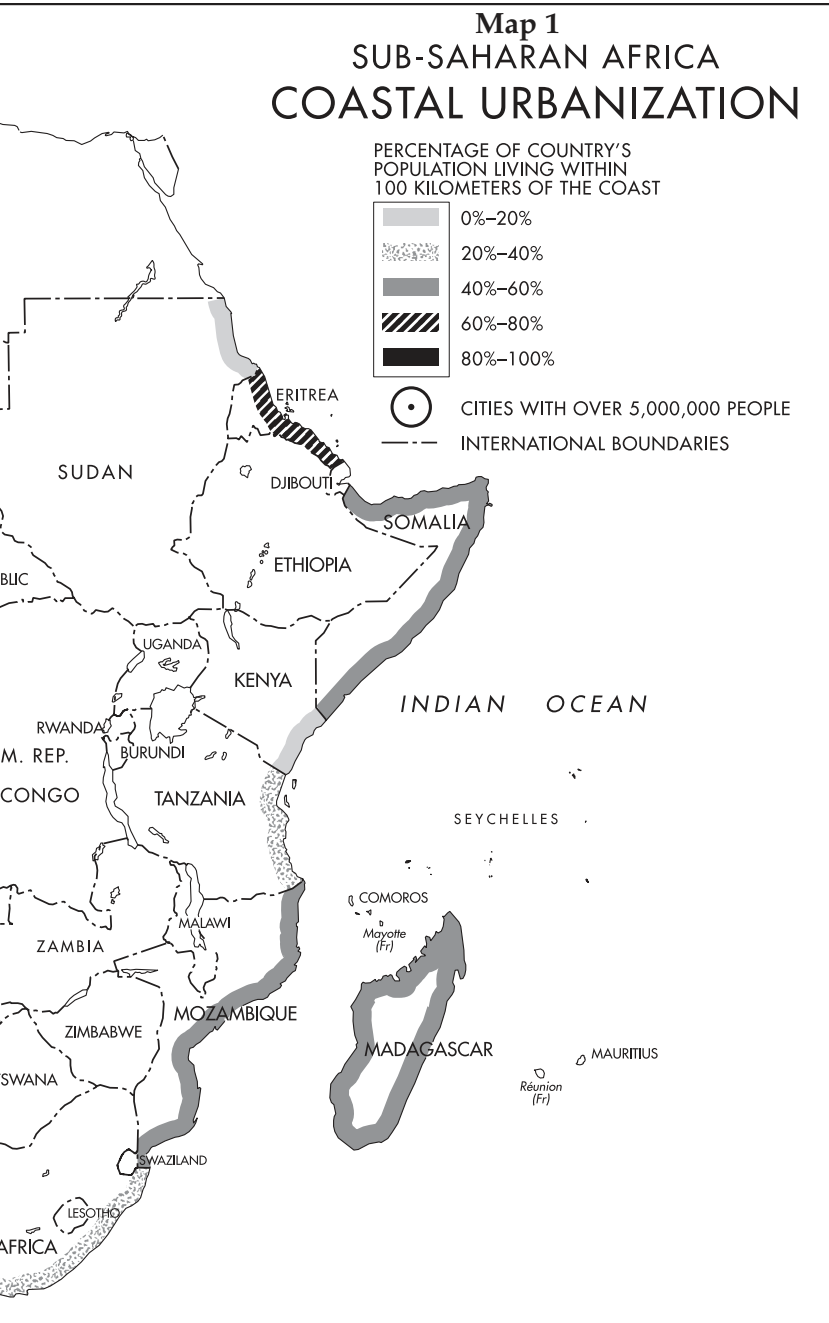


# Map 1 SUB-SAHARAN AFRICA COASTAL URBANIZATION

PERCENTAGE OF COUNTRY'S  
POPULATION LIVING WITHIN  
100 KILOMETERS OF THE COAST



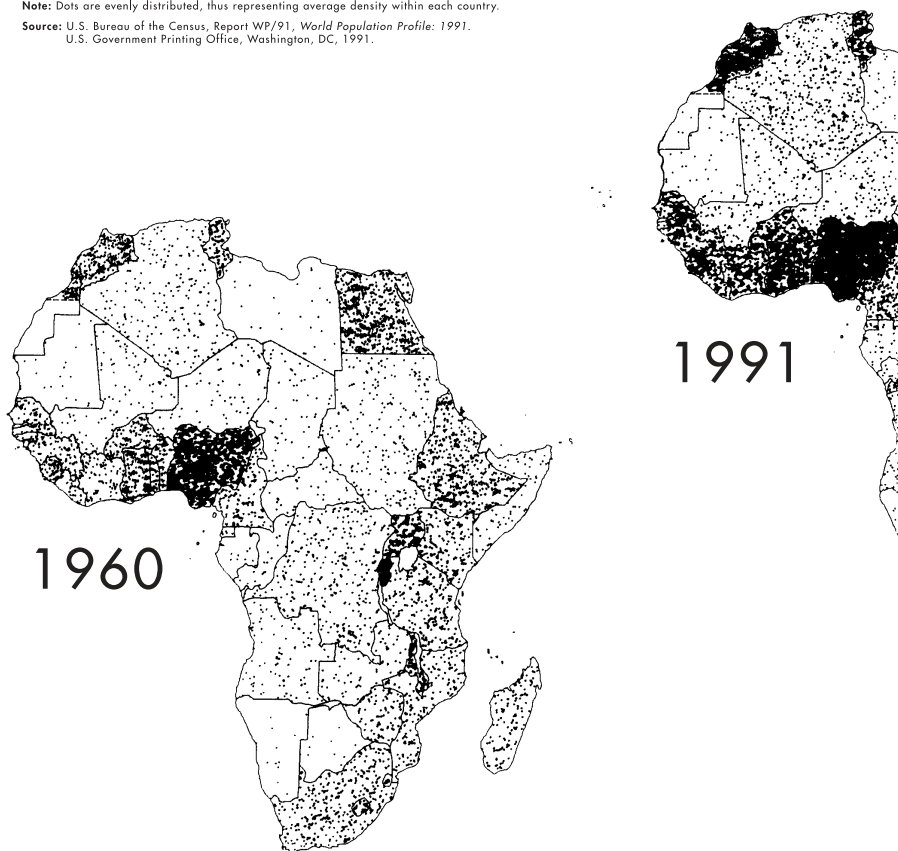
CITIES WITH OVER 5,000,000 PEOPLE  
INTERNATIONAL BOUNDARIES



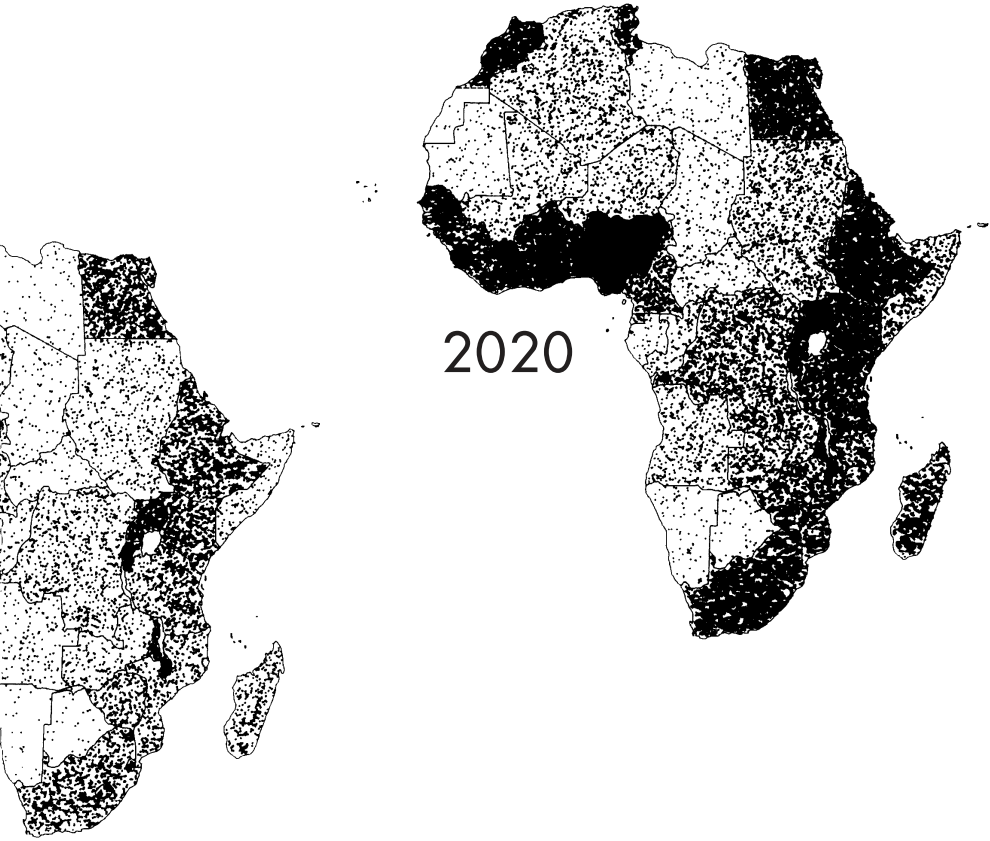
## Map 2 AFRICA POPULATION GROWTH

• 25,000 PERSONS  
— INTERNATIONAL BOUNDARIES

**Note:** Dots are evenly distributed, thus representing average density within each country.  
**Source:** U.S. Bureau of the Census, Report WP/91, *World Population Profile: 1991*.  
U.S. Government Printing Office, Washington, DC, 1991.



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ously threatened by ecosystem degradation, and globally significant biodiversity is at risk.

Most industries in East Africa are based on agriculture, and the organic, nutrient-rich wastes are commonly discharged to sewers or directly into the ocean or rivers. Msimbazi Creek in Dar es Salaam is heavily polluted by industrial effluents. Other areas of heavy pollution include Tudor and Kilindini Creeks in Mombasa, Kenya; Mogadishu Harbor in Somalia; the Matola River in Maputo, Mozambique; and St. Louis in Mauritius.

Oil pollution is significant in waters adjacent to oil refineries in Mombasa, Dar es Salaam, Maputo, and Tamatave (Madagascar). Increased oil tanker traffic off the East African coastline poses significant threats to the health of the coastal ecosystem. The same is true of diamond mining offshore and in the coastal areas of South Africa and Namibia; excavated sand, gravel, and debris are carried by waves and wind, causing serious damage to coastal estuaries and bays and disturbing the ecosystem services of important wetlands.

### *Degradation of Fisheries and Biodiversity*

In both West and East Africa, growing in-migration and the incidence of poverty in coastal communities are multiplying the “open access” situations that can result in overexploitation of common-property resources. Increased fishing effort, the introduction of modern fishing fleets, and the use of more efficient processing technologies are putting pressure on fishery resources. The FAO has warned that the evident overexploitation of important fish stocks, modifications of nursery and habitat, and international conflicts regarding fisheries management and the fish trade pose threats to the long-term sustainability of regional fisheries. FAO estimates indicate that fish catches in East Africa have declined to about 40 percent of the 1990 level and that around 50 percent of East African fishers may become unemployed over the next 10 to 20 years if present trends continue (WWF 2001). In Tanzania fish catches dropped 32 percent between 1990 and 1994 (WWF 2001). Box 2 highlights the alarming degradation of fisheries and biodiversity in East Africa and describes some of the principal causes.

### *Beyond National Borders*

Global issues such as climate change are projected to have devastating impacts on coastal resources and areas. Climate change is likely to affect coastal areas directly in four ways: through a rise in the sea level, leading to erosion and inundation; through more intense cyclones and storm surges; through possible shifts in ocean currents and upwellings, with significant

## Box 2. Threats to Fisheries and Biodiversity in East Africa

East Africa's coastal and marine resources are under mounting pressure from human activities and transboundary climate events. The effects on biodiversity and on the region's economic prospects are matters of intense concern. Some examples of the main threats are outlined here.

- *Significant reductions in fish catches* from coral reefs along the coasts of Kenya and Tanzania. Causes of the 30–40 percent decline include destructive fishing methods such as the use of dynamite and small-meshed nets, extraction of living and dead coral for producing lime, and by-catch of large quantities of juvenile fish by shrimp trawlers and other large fishing vessels.
- *Overfishing of many marine mammals, sharks, and other species* beyond their natural recovery rates. Dugongs may become extinct within the next 50 years. Only a few hundred dugongs are believed to exist in the entire region, and sea grass beds, their primary feeding grounds, are being depleted. Six of the world's seven species of marine turtle are considered endangered or critically endangered. Turtle eggs and meat are sold for consumption despite bans on such sales. Unplanned construction, sand mining, and beach erosion are leading to loss of turtle nesting sites.
- *Decline in offshore fisheries.* One reason for the decline in fisheries is the significant increase in fishing effort. In Mozambique alone, the industrial and semi-industrial fishing fleet exceeds 150 vessels.
- *Decline of mangroves* as a result of uncontrolled harvesting for timber and fuelwood, construction of salt pans, construction of hotels, and pollution from oil and industrial waste in and around major ports.
- *Degradation of coral reefs.* Among the causes of coral reef degradation are use of coral for construction purposes and pollution from untreated domestic sewage and from shipping and oil terminals. (A large proportion of oil exports from the Gulf region passes through the coastal seas of East Africa, and serious oil spills have occurred around Mombasa and Maputo.) On a global scale, increased sea surface temperatures resulting from El Niño climate disturbances are implicated in coral bleaching.

Source: WWF (2001).

impacts on fishery productivity; and through higher sea surface temperatures that harm coral reefs.

Global warming and the associated sea level rise could have significant implications for communities and establishments along the shoreline. In several countries along the Atlantic Coast, from Senegal to Nigeria, coastal

erosion is already severe (World Bank 1996). Most capitals, major towns, and industrial centers—and all ports—are situated near sea level and are vulnerable to the impacts of sea level rise. Lagos and Port Harcourt in Nigeria, Takoradi and Tema in Ghana, and Abidjan are in this category. IPCC data indicate that low-lying areas in West Africa, extending from Côte d'Ivoire to eastern Nigeria, would be threatened by inundation should the sea level rise as predicted (IPCC 2001). Coastal communities in low-lying areas are increasingly susceptible to natural hazards such as floods. Many such settlements in Mozambique were devastated by repeated flooding, cyclones, and land subsidence in 2000 and again in early 2001.

Research reports on East Africa and the islands of the western Indian Ocean point to threats to coral reefs as a result of higher surface water temperatures. Climate change models predict that the occurrence of El Niño-like cyclones, with the associated warming, will be more frequent in the future (Souter, Obura, and Lindén 2000).

### **New Approaches Needed**

There is increasing awareness of the interlinked issues described above—increased pollution of coastal and marine ecosystems, losses of globally significant biodiversity and ecosystem services, threats to infrastructure and to the productive capacity of coastal dwellers, and unplanned coastal development that undermines the productive potential of human and natural resources. Nevertheless, the policy and investment response to the development crisis is still inadequate.

Agenda 21, the global plan of action adopted by the 1992 United Nations Conference on Environment and Development (UNCED), acknowledged that established management approaches are not effective in achieving sustainable development of coastal and marine resources (Agenda 21, ch. 17.4). International, regional, and national environmental organizations and international conventions have reaffirmed that existing institutions and processes typically fail to address the management needs of coastal and marine areas.

The reasons for this failure include the complexity of oceanic and coastal processes, reliance on isolated sectoral approaches, lack of awareness of the problems and the potential solutions, and the perception that new management approaches may compete with and displace entrenched programs and methods. The next chapter deals with world and regional recognition of the crisis affecting coastal and marine areas and describes how international calls to action are growing in number and urgency.

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## 2

# The Need for Improved Coastal Management

## *A Call to Action*

The situation outlined in Chapter 1 calls for management options that take into account the interrelated environmental issues in the region and the underlying socioeconomic and political factors. Such strategic interventions can help stakeholders in coastal nations realize the full benefits of the resources and services offered by coastal and marine areas. One such approach is integrated coastal management (ICM), described in Box 3.

### **Box 3. What Is Integrated Coastal Management?**

Integrated coastal management (ICM) is defined by Cicin-Sain and Knecht (1998) as a continuous and dynamic process by which decisions are made for the sustainable use, development, and protection of coastal and marine areas and resources. The process is designed to overcome the fragmentation inherent in the sectoral management approach and the splits in government jurisdictions at the land-water interface. This is done by ensuring that decisions in all sectors (fisheries, oil and gas production, water quality, and so on) and at all levels of government are harmonized and are consistent with the country's coastal policies. A key element in ICM is the design of institutional processes to accomplish this harmonization in a politically acceptable manner.

ICM recognizes the distinctive character of the coastal area—itsself a valuable resource—and the importance of conserving it for current and future generations. The goals of ICM are to achieve sustainable development of coastal and marine areas, to reduce the vulnerability of coastal areas and their inhabitants to natural hazards, and to maintain essential ecological processes, life support systems, and biological diversity in coastal and marine areas.

ICM is multipurpose: it analyzes the implications of development, of conflicting uses, and of interrelationships among physical processes and human activities, and it promotes linkages and harmonization between sectoral coastal and oceanic activities.

*Source:* Adapted from Cicin-Sain and Knecht (1998): 39.

Interest in ICM strategies is demonstrated by the wave of recent conferences and agreements. These include the Arusha Conference on ICM in Eastern Africa, held in Tanzania in April 1993; the Seychelles Workshop on ICM in February 1995; the Abidjan and Nairobi Conventions on ICM; the Pan-African Conference on Sustainable Integrated Coastal Management (PACSIKOM), held in Maputo in July 1998; and the Conference on Cooperation for Development and Protection of the Marine and Coastal Environment in Sub-Saharan Africa, held in Cape Town, South Africa, in December 1998 under the sponsorship of the Advisory Committee on Protection of the Sea (ACOPS) and the United Nations Environment Programme (UNEP). At the last-named conference, 30 Sub-Saharan African countries were represented, 27 of them at the ministerial level.

Participants in the ACOPS/UNEP conference embarked on a pioneering initiative to identify the principal causes of degradation of Africa's coastal and marine resources and to determine the most effective environmental, institutional, and financial means of addressing them. The resulting initiative, the African Process for the Development and Protection of the Marine and Coastal Environment in Sub-Saharan Africa, is embodied in the Cape Town Declaration.<sup>2</sup> The initiative is receiving support from the Global Environment Facility (GEF) as a mechanism for addressing the main constraints on sustainable development along Africa's coastline. The African Process will contribute to the Environment Initiative of the New Partnership for Africa's Development (NEPAD), which is designed to chart a way forward toward sustainable development in Africa. The principal objectives of the African Process are outlined in Box 4.

Many coastal nations of Sub-Saharan Africa are signatories to important international and regional maritime agreements. These include the FAO Code for Responsible Fisheries; the 1995 United Nations Agreement on Straddling Fish Stocks and Highly Migratory Fish Stocks; the 1972 London Dumping Convention; the 1973 International Convention for the Prevention of Pollution from Ships (MARPOL, revised in 1978); the 1995 Global Program of Action for the Protection of the Marine Environment from Land-Based Activities; and the 1995 Jakarta Mandate for the Protection of Coastal and Marine Biodiversity, endorsed at a meeting convened under the Convention on Biological Diversity. But although significant progress has been made in the formulation and adoption of oceanic and coastal agreements, implementation of these agreements in coastal developing countries has been hampered by numerous problems, ranging from inadequate human resource capacity to financial constraints. Support from the development community is an obvious and pressing need.

In 2001, as part of the preparations for the 2002 World Summit on Sustainable Development (WSSD), the United Nations Educational, Scientific, and Cultural Organization (UNESCO) organized the Global Conference on



**Box 4. Key Objectives of the African Process for the Development and Protection of the Marine and Coastal Environment in Sub-Saharan Africa**

- Identify areas, sites, or living resources that are suffering measurable degradation (hot spots) or are threatened with future degradation (sensitive areas) and determine, through root-cause analysis, the leading causes of these impacts, taking into consideration scientific, technical, and socioeconomic factors.
- Design a program of interventions, including demonstration projects and preinvestment studies, to address problems of regional priority, which may be regional in scope or site specific.
- Strengthen existing regional institutions.
- Provide a framework for facilitating the mobilization of resources for the sustainable development of the marine and coastal environment, taking into account the scarcity of funds that are available for such projects.
- Produce a self-sustaining model that can be replicated in other regions or thematic areas in order to develop interventions that contribute to the goals of sustainable development.

*Source:* Based on ACOPS (2002).

Oceans and Coasts at Rio+10, held in Paris in December. Several delegations from Sub-Saharan African countries, including Mozambique, Nigeria, Senegal, and South Africa, attended the conference. Participants generally agreed that coastal and marine areas around the world are in a critical situation that requires immediate action by nations and governing bodies worldwide. This sense of urgency and priority was confirmed by ministerial statements, as well as in presentations by international experts and scientists, nongovernmental organizations (NGOs), government agencies, and representatives of commercial fishing and industrial bodies. The conference issued an urgent call to decisionmakers in the WSSD process to develop a detailed action plan for the sustainable development of the world's oceans and coasts, linking economic development, social welfare, and resource conservation. Appendix B contains a summary of the recommendations of the conference; key recommendations are shown in Box 5.

**Pioneering Applications of Integrated Coastal Management in Sub-Saharan Africa**

Despite growing awareness of the issues faced by coastal and marine areas in Sub-Saharan Africa, few coastal nations in the region have embarked on

### **Box 5. Main Recommendations from the 2001 Paris Conference on the Sustainable Development of Oceans and Coasts**

- Target donor aid more explicitly to achieve poverty reduction and improvements in public health in developing countries.
- Recognize sustainable aquaculture and responsible fisheries as parallel and essential elements of a common strategy for ensuring global seafood security and filling the supply gap forecast for the next decade.
- Develop a common Global Vision for Oceans, Seas, and Coasts to set goals and objectives for the governance of the oceans and coasts.
- Promote joint implementation of clusters of international legal instruments and programs.
- Support the implementation of the Global Program of Action for the Protection of the Marine Environment from Land-Based Activities.
- Avoid destruction, loss of human life, and other costs associated with ocean-related natural disasters through appropriate forecasting, early warning, prevention, preparedness, and mitigation measures.
- Promote transparency, participation, and accountability in decision-making at all levels regarding oceans and coasts.
- Involve both national and subnational levels of government in the development and implementation of integrated coastal management programs.
- Promote the scaling up of pilot projects.
- Encourage donors to create synergies among multiple single-issue projects (for example, dealing with biodiversity and coastal erosion), weaving them into a comprehensive coastal management effort.
- Incorporate marine protected areas into an overall integrated coastal and ocean management system, using the social sciences to enhance participatory processes and to evaluate and address impacts on local human communities.
- Advance scientific understanding of interactions among marine, terrestrial, and atmospheric systems and of how human activities influence these interactions.
- Increase the capacity of local governments and community-based groups to manage coastal and marine areas through appropriate scientific inputs and participatory processes.
- Promote good practice and performance measurement standards for donor-funded projects in integrated coastal management and encourage progress and accountability at all levels.
- Improve the interconnection between education and training in integrated coastal management to permit more systematic capacity building.
- Promote regional partnerships.
- Integrate economic, environmental, and social vulnerability factors into a vulnerability index, with special applicability to small-island developing countries.

*Source:* Bernal and Cicin-Sain (2001).

the preparation of national ICM plans or programs for implementing the recommendations identified in international and regional forums. South Africa is the most advanced in this respect, with its comprehensive Coastal Management Policy Process (CMPP) that covers the whole coastline and all the uses of coastal resources.

South Africa's Coastal Policy was drawn up after extensive consultation with the public and in light of numerous expert studies. A serious effort was made to estimate the value of the direct benefits from goods and services derived from coastal and marine areas. The White Paper for Sustainable Coastal Development in South Africa, issued in June 2000, estimates these direct benefits at about US\$25.8 billion a year, equivalent to 35 percent of South Africa's gross domestic product; the indirect benefits are valued at US\$20.6 billion a year (DEAT 2000). While many ongoing or proposed programs in coastal areas support key themes of the Coastal Policy, the institutional and regulatory framework for ICM has yet to be developed, at either the national level or the provincial level.

Although South Africa is the only country to have an all-encompassing ICM policy framework, several other countries are launching efforts to protect coastal and marine areas, even though these may be geographically restricted or in early stages.

In *Mozambique* several pilot programs supported by the donor community are providing inputs for the national coastal policy framework. Among these initiatives are the Coastal and Marine Biodiversity Management Project funded by the World Bank and GEF. In *Tanzania* various donors support ICM programs in strategic locations, including Mafia Island, Tanga and Pemba, Lindi, Mtwara, the Rufiji Delta, and Kinondoni.<sup>3</sup> In neither country have the enabling policy and regulatory frameworks for sustainable coastal and marine resource management been put in place. Nevertheless, experience from these local management programs will be valuable inputs for the preparation of national ICM plans. The U.S. Agency for International Development (USAID) and the University of Rhode Island are supporting the Tanzania Coastal Management Partnership (TCMP), which spearheads the ICM policy and strategic process. As of mid-2002, the government was reviewing a draft ICM strategy prepared by the TCMP.

In *Ghana* the World Bank assisted the government in formulating an ICM strategy, and a national plan is currently in preparation. *Nigeria's* government is just embarking on the development of a national ICM plan.

### **Moving from Piecemeal to Integrated Approaches**

Agencies directly responsible for fisheries, ports and harbors, tourism, or environment frequently request support from the donor community for sectoral initiatives. At the central policymaking level, however, demand

for ICM often arises only in response to a natural catastrophe, such as storms and flooding, or to such human-caused events as oil spills in near-shore waters. The preparation of ICM plans provides an opportunity to undertake a more systematic and cross-sectoral analysis of coastal resources, their uses, and the issues and opportunities faced by resource users. Such analyses would contribute to the development of sustainable and productive strategies for the sound use and management of coastal resources and would highlight issues of immediate or continuing concern.

In the following chapter, we review the World Bank's record of assistance for concerted sustainable coastal management strategies in Sub-Saharan Africa and identify some ways of making this support more effective.

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# World Bank Support for Coastal and Marine Resource Management

## *Achievements and Shortcomings*

Since the 1992 UNCED meeting (the “Earth Summit”) in Rio de Janeiro, World Bank support for coastal and marine resource management has increased significantly. Investments in this area in Sub-Saharan Africa had grown to US\$176 million by mid-2000. The investments, in the form of GEF financing or of concessional funds from the World Bank Group’s International Development Association (IDA), include both stand-alone projects and components of sectoral programs.

The Bank has also supported several regional initiatives, mostly through grants and in collaboration with GEF. The Bank’s regional program for building capacity for ICM in East and southern Africa, in partnership with the Swedish International Development Cooperation Agency (Sida) and the Secretariat for Eastern African Coastal Area Management (SEACAM), is an example of Bank assistance that has successfully leveraged bilateral grant financing. A regional fisheries project to increase country capacity for monitoring and managing fish stocks is currently in preparation, with support from GEF and IDA.

In addition to the current programs in Ghana, Mozambique, and Tanzania described in Chapter 2, new initiatives are in various stages of development, largely with support from GEF. The countries involved include Benin, Eritrea, Guinea-Bissau, Namibia, Senegal, the Seychelles, and South Africa.

Some of the programs are national in scope; others are limited to specific geographic areas. For example, in South Africa several biodiversity management projects contain components that target coastal and marine resource management. The marine component of the Cape Peninsula Biodiversity Project is designed to strengthen the management of existing marine protected areas and to demarcate new areas for limited-harvesting and no-take zones in collaboration with user groups. The Bank is also supporting a regional coral reef monitoring project of the Indian Ocean Commission in the western Indian Ocean.

Research, information dissemination, training, and capacity-building initiatives supported by the Bank have led to heightened awareness of issues pertaining to coastal area management in Sub-Saharan Africa. Of

particular note are the activities of SEACAM, which has received Bank support for training programs aimed at national and provincial public agencies as well as NGOs and community groups. SEACAM's coastal management database provides information for researchers and practitioners on ongoing ICM programs. Other activities sponsored by SEACAM include the formulation of guidelines for environmental assessment in key activities such as coastal tourism, aquaculture, and coastal mining (Box 6).

In response to the mass coral reef bleaching in the Indian Ocean associated with the major El Niño change in weather patterns in 1997–98, the World Bank sponsored research into the ecological and socioeconomic impacts of the bleaching. Limited support continues to be provided to the research program Coral Reef Degradation in the Indian Ocean (CORDIO) for further work on socioeconomic impacts and on the potential for alternative livelihoods for reef-dependent coastal communities.

An innovative program for knowledge management and decentralized decisionmaking in the ecologically significant Orange River Mouth area shared by South Africa and Namibia has received World Bank support. The initiative was launched as a way of gathering and making available information needed by South Africa's Northern Cape Coastal Working Group and Namibia's Coastal Zone Working Committee as input for strategic development plans. The program focuses on interaction between users and managers and supports the goal of sound governance of coastal and marine resources and areas. Distance learning, training, and stakeholder consultations are used to promote environmental awareness, participatory planning, and capacity building for ICM. The Distance Learning and

### **Box 6. SEACAM's Guidelines for Coastal Activities**

SEACAM's guidelines for coastal tourism, coastal aquaculture, and, recently, coastal mining provide an important tool for promoting economically viable coastal development in countries with weak policy and institutional frameworks for sustainable utilization of coastal and marine resources. The guidelines also help build capacity among coastal stakeholders and decisionmakers, enabling them to recognize economic opportunities, plan and implement coastal development in a sustainable way, and monitor and mitigate any negative impacts of coastal development. The guidelines recognize that the application of environmental assessment on a regional basis (for example, in the formulation of an integrated coastal area management plan) is particularly appropriate in coastal areas that host multisectoral activities and are experiencing rapid urban development.

Information Sharing Tool (DLIST) component of the program aims to build capacity at the provincial and local levels by providing access to information and supporting empowerment and decentralization strategies, as described in Box 7. The project also provides a vehicle for participative planning in the dynamic coastal zone through facilitation of priority setting, institutional strengthening, and collaboration between stakeholders, the private sector, ICM experts, and civil society. The Orange River initiative illustrates how coastal communities can be empowered to play an active role in planning and managing the resource base. (Box 9 in Chapter 6 looks at a poverty reduction program being carried out as part of the Orange River rehabilitation effort.)

Several of the projects supported by the Bank focus on the conservation or sustainable use of coastal and marine biodiversity. The reason for this emphasis may be that the projects were largely funded by GEF under OP2, its operational program for aquatic biodiversity conservation. A few projects, however, are multipronged, supporting strategic planning, community development, and private sector involvement, as well as biodiversity management. Examples include the Mozambique Coastal and Marine Biodiversity Management Project (discussed in Box 10 in Chapter 6) and a proposed project in Eritrea that would support food security for coastal dwellers as well as promote ICM.

Although there has been considerable growth in the number of ICM initiatives under way or planned, the coastal and marine portfolio in Sub-Saharan Africa exhibits a number of shortcomings when compared with investments in sectors such as infrastructure, education, and health. Specifically, the interventions are limited in scope, capacity, and funding (being heavily grant dependent), and the number of integrated, ecosystem-based approaches is still small.

The World Bank continues its drive to mainstream environmental issues into the broad goal of achieving sustainable development through lasting poverty reduction. The institutionwide environmental strategy provides an overall structure for promoting sustainable development in programs supported by the Bank. At the regional level, the Africa Region's environmental strategy sets up a framework for creating positive incentives and the enabling conditions for improved environmental management through policy reform and through capacity building in the public and private sectors and in civil society. In formulating its strategic agenda for ICM in Sub-Saharan Africa, the Bank works proactively to provide leadership and coordination in a vital area for natural resource management.

The next chapter turns to the experience gained thus far in ICM initiatives in Sub-Saharan Africa.

### **Box 7. Distance Learning for Empowerment: The DLIST Initiative**

Power and knowledge are closely related; the “know” and “know-not” groups tend to coincide with the “haves” and “have-nots.” Partly because of this information gap, a skewed power balance persists in South Africa despite the demise, in 1994, of the apartheid system that sustained it.

Like other parts of South Africa, the Northern Cape Province suffered greatly from the effects of apartheid. To add to its problems, international mining companies in the area are now downscaling, leaving in their wake a devastated environment and few alternatives for earning a livelihood. Strategies for protection and rehabilitation of the ecosystem and for sustainable development of coastal resources are needed. An additional motive for expediting the establishment of appropriate planning and management is that the Northern Cape Province shares with Namibia an area of international environmental importance, the ecologically rich Orange River Mouth.

Representatives of governments at different levels, the private sector, local communities, and other stakeholders from the Northern Cape Province identified information sharing as a pressing need. A participatory process assisted by the World Bank led to the creation of the Distance Learning Information Sharing Tool (DLIST), which is being used interactively not only by the original interested groups but also by registered users as far away as Madagascar and the United States.

Through direct interaction, DLIST disseminates ICM concepts, processes, and issues that are relevant to coastal stakeholders. DLIST has provided a valuable means of building up a pool of information to support ICM in the Northern Cape Province–Namibia area and of helping to bring empowering knowledge to disadvantaged groups and persons. It is now being supported by the United Nations Development Programme (UNDP) under IW:Learn, UNDP’s international waters capacity-building program.

*Source:* Information from EcoAfrica, Cape Town, South Africa, accessed 2002.



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## 4

# Experience to Date with Integrated Coastal Management

The preceding chapter surveyed some of the initiatives being undertaken, with the support of the donor community, to improve coastal and marine resource management in Sub-Saharan Africa. Despite these efforts, the degradation of the resource base, conflicts relating to resource use, and poverty in coastal communities remain largely unabated. Overexploitation of resources, unplanned development, productivity losses, and social and economic inequities continue to escalate. Although the ICM approach and its incremental results have the potential to create an effective consensus regarding coastal resource management among stakeholders in Sub-Saharan Africa, the adoption and implementation of the approach have, for the most part, been constrained by the lack of an institutional core.

Elements of an appropriate institutional core include an effective policy regulatory framework, structures of authority, working modalities for interinstitutional coordination, the presence of trained personnel in both the public and private sectors, and availability of financial resources. Although the existence of such a core is the foundation for generating real demand for ICM, within nations there may exist smaller constituencies in the public, private, and NGO sectors that act as agents of change. In Ghana, Mozambique, and South Africa, the environmental agency took on this role. In Nigeria, NGOs such as the Nigerian Conservation Foundation (NCF) and the Center for Environmental Research and Social Enterprise (CERASE), as well as representatives of public agencies, act as change agents. In many instances government sectoral agencies—for example, in fisheries, tourism, urban planning, and environmental management—share responsibility for different aspects of ICM.

ICM is still relatively new in Sub-Saharan Africa, compared with Asia and Latin America, and few conclusions can be drawn from implementation to date. Nevertheless, some important lessons can be derived from early experience with raising awareness, stimulating policy dialogue, and building constituencies, partnerships, and consultative processes in program design and implementation.

To assist in identifying strategic directions for ICM in Sub-Saharan Africa, a stock-taking exercise was carried out to assess experience so far with donor support for initiatives involving the region's coastal areas. The key findings and constraints identified are summarized here.

*Multisectoral issues cannot be addressed by means of a single-sector orientation.* Many interventions involving the coastal and marine environment, whether supported by the World Bank or funded by the donor community, have a sectoral focus. Those that are aimed at promoting sustainable development of the threatened resources of the coastal area tend, with a few exceptions, to be oriented toward a single issue—protecting species, minimizing pollution of the marine ecosystem, or improving coastal infrastructure. The emphasis is often on harvesting resources (such as fish, minerals, or forest products) or on promoting trade and investment in the coastal zone by, for example, rehabilitating ports, encouraging tourism, or creating industrial zones. Pollution management is tackled as a separate issue, and coordination of efforts is seldom evident. Moffat and others (1998), in their assessment of ICM in East Africa, draw attention to the focus on conservation and the neglect of the development aspects of ICM. Although concentration on a single issue may be an efficient way to launch a project and may succeed in implementing some of the elements of a coastal management program, it lacks the holistic, cross-sectoral, and multistakeholder approach that is both the hallmark of ICM and a prerequisite for sustainable development.

*Inadequate institutional and human capacity undermines the takeoff of ICM.* The significant weaknesses in human resource skills and institutional capacity in Sub-Saharan Africa account for the long delays in program and project start-up. (The preparation phase of the Mozambique Coastal and Marine Biodiversity Management Project took four years, and a similar project in Guinea-Bissau has been under preparation for four years.) Another manifestation of this problem is seen in the very small number of ICM programs under implementation.

*The knowledge gap prevents the emergence of early adopters.* A key reason for the small number of ICM initiatives in the region is lack of knowledge and awareness. There is insufficient recognition of the severity of problems in the coastal zone, of the various linkages (between poverty and reliance on natural resources and ecosystem services, between human interventions and impacts on ecosystems, and between sectoral initiatives and transboundary issues involving shared ecosystems), and of the necessity for intersectoral coordination and planning. There is a critical need for information acquisition and sharing to advance knowledge in ICM and related disciplines and so inform the decisionmaking process. Subject areas in which better understanding is needed include:

- Environmental assessment—in particular, strategic environmental assessment (SEA)
- Environmental and natural resource economics
- Geographic information systems (GIS) and modeling of coastal and marine ecosystems to assist ICM planning
- Physical and biological oceanography
- Hydrology and hydrography
- Maritime law, including jurisdictional questions and issues of sovereignty
- Intergovernmental issues relating to the management of coastal and marine areas, including both modern and traditional property rights
- Zoning issues
- Distributional equity and social issues in coastal settlements.

Information from these thematic areas needs to be combined with indigenous knowledge and lessons from experience in resource management. Finally, closing the knowledge gap entails empowerment of resource users and identification of incentives for sharing information.

*Limitations in scope, funding, and commitment lead to weak, ad hoc, stopgap programs—yet the problems are long term.* With the exception of trust fund resources from donor countries that have an interest in coastal and marine issues, such as Denmark, the Netherlands, Norway, and Sweden, financing is not readily forthcoming for ICM initiatives. Funding from the World Bank and from other agencies is extended in response to demands from small, localized constituencies to address either single issues or multiple issues in geographically limited areas. The reasons for the constraints on resources include the intersectoral character of ICM and the lack of an institutional structure or framework to support or spearhead ICM programs; the costs of planning, preparation, and implementation; and the long lead times involved.

Initiatives aimed at balancing the tradeoffs between promoting development and protecting threatened species and habitats tend to be small-scale, localized operations with modest budgets. Experience with ICM initiatives in other regions indicates that although localized programs or special-area management plans and programs can be successful in the short term, commitment at the national level is needed to ensure sustainability and long-term continuation of programs. Small programs funded by donors or NGOs, although visible and attractive, are too dependent on external financial and technical assistance to be sustainable over the medium to long run. These initiatives are also affected by institutional constraints, by weak commitment and capacity of individual governments, and by political upheavals. Project funds may run out before local ownership and con-

trol are fully established, leading to stakeholder frustration. Furthermore, such ad hoc programs do not deal with all of the significant issues in coastal and marine management, which include the effects of land-based sources of marine pollution, proactive contingency planning for risk management and for prevention of disasters such as oil spills and flooding, equity issues involving access to coastal and marine resources, and reconciliation of the development needs of coastal populations with maintenance of the integrity of coastal ecosystems.

*Failure to use ecosystem-based approaches creates a mismatch between problems and interventions.* Coastal and island nations in the region border large marine ecosystems that extend across boundaries, requiring an ecosystem-based approach and coordinated action among the littoral states for effective management. With a few exceptions—the GEF-funded Gulf of Guinea Large Marine Ecosystem Program, the Benguela Current Large Marine Ecosystem Program, the UNEP's Regional Seas Program, and SEACAM's efforts to promote ICM capacity in East Africa—no significant initiatives are under way that take an ecosystem approach toward sustainable management of Sub-Saharan Africa's coastal and marine areas. The next chapter looks at how the World Bank and its partners can work to change this unsatisfactory situation.

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## 5

# A Strategic Agenda for ICM

Over the past decade, the World Bank has lent support to a steadily growing program for managing coastal and marine resources. Disappointingly, however, many of the investments are confined to addressing biodiversity issues. As noted in the last chapter, many donor-supported activities consist of small-scale, localized interventions, and not enough scaling up of these pilot or demonstration projects has taken place in Sub-Saharan African coastal nations. Another factor is that most countries lack the national policy, strategic, and regulatory frameworks needed to guide investment in coastal and marine areas. And support by the World Bank for ICM initiatives remains modest when compared with the magnitude of the complex issues facing the coastal nations of Sub-Saharan Africa and the size of investments in traditional sectors such as water, sanitation, health, education, and urban and rural development. The reasons include the lack of a coordinating institutional mechanism to request support for an integrated approach to coastal and marine resource management; the focus on conservation, leading to a tendency to channel proposals for support toward GEF; and insufficient awareness of the economic gains to be reaped from the adoption of an integrated approach. A significant opportunity exists for the World Bank to play a strategic role in providing catalytic support to these countries' endeavors to manage coastal and marine resources sustainably.

Although conservation of coastal resources is important, particularly in areas that are rich in biodiversity, planners need to take cognizance, too, of the significant economic opportunities present in these areas, which can be maximized through sound planning and management. The focus of investment needs to be expanded to include such ICM goals as planning, zoning, minimization of risks to vulnerable populations, increased capacity for disaster preparedness, empowerment of local stakeholders, conflict management, and control of pollution in international waters. Partnership with the private sector and investment in sustainable coastal tourism, sustainable mariculture, and soundly planned and managed industrial ventures could yield significant benefits on the local as well as the national level.

The overarching goal of the World Bank Group in Sub-Saharan Africa is poverty reduction through environmentally and socially sustainable development. More than any other region of the world, Sub-Saharan Africa relies on its environmental base, both economically and socially. Now the vital coastal resource base is threatened by interdependent forces, including extreme poverty, unprecedented population growth in coastal communities, and overexploitation of resources (World Bank 1996).

In 1994, as part of a World Bank–led exercise to provide direction and support for the many environmental initiatives that emerged from UNCED, the Bank commissioned the study “Africa: A Framework for Integrated Coastal Zone Management.” The report, first issued in 1994 and revised in 1996, was intended to set forth a rationale for incorporating ICM into strategies for environmentally sustainable development in Africa and to provide a framework for Bank investments in the management of coastal and marine resources. The report proposed the following goal for development in Africa’s coastal zone over the next three decades:

Establish a working system for integrated and participatory development planning and natural resource management in the coastal zone by the year 2025. This system will seek to optimize the net benefit flows from coastal resources to individuals and society by reducing user conflicts, mitigating adverse development impacts and enhancing the productivity of coastal ecosystems. (Hatzioios, Lundin, and Alm 1996)

The framework document recommended that the Bank identify targets of opportunity for advancing ICM in Sub-Saharan Africa in order to bring about sustained improvements in coastal habitats and in the socioeconomic conditions of coastal communities, which make up almost half of the total population of the region’s coastal nations.

### **Identifying Operational Goals and Principles**

To derive an operational interpretation of the goal enunciated in the framework document, we dissect the statement into four strategic goals reflecting experience with ICM in Sub-Saharan Africa.

- a. *Establish a flexible, adaptive working system.* One of the greatest challenges to management in an uncertain situation is that information, goals, and circumstances change with time. This is especially true in developing countries. Plans that do not permit innovation and flexibility often result in failure. It is well recognized that adaptive planning involves a continuous and active process before and during project execution. Accordingly, the ICM agenda promotes adaptive management systems that integrate natural resource management activities in coastal and marine areas. Such a management system provides flexible mechanisms

- for dealing with the uncertainties inherent in a system involving multiple issues, stakeholders, and policy options (CIFOR 1998).
- b. *Enhance the value of coastal ecosystems* by increasing their long-term physical and economic productivity.
  - c. *Promote equitable distribution of the current and future flows of benefits* from coastal resources.
  - d. *Ensure that adequate incentives are provided for proper management, that user conflicts are reduced, and that any adverse impacts are also fairly distributed.*

Strategic goals (b), (c), and (d) encompass the concepts of net benefit flows, productivity enhancement, and distribution embedded in the overall goal statement. (References in the statement to individuals, society, reduction of user conflicts, and impact mitigation all relate to distributional aspects.) Strategic goals (c) and (d) are aimed at reducing poverty among coastal dwellers through optimization of benefits. Strategic goals (a) and (d) focus on improving governance and capacity in coastal and marine areas.

The next step is to translate these strategic goals into operational principles, each embodying a general target against which an intervention or action can be assessed. According to these principles, interventions should:

- Promote adaptive management systems that permit effective interaction among local stakeholders, the private sector, government, and the donor community
- Support effective policies and incentives for equitable realization of benefits
- Generate positive and equitably distributed domestic benefits
- Where possible, generate positive and equitably distributed global benefits.

## **Determining Priorities for Investment**

To set priorities for intervention in the coastal and marine areas of Sub-Saharan Africa, we next identify specific criteria, using the strategic goals and principles outlined above and building on the framework for ICM capacity assessment developed by Shah and others (1997). These criteria are used primarily for identifying and ranking targets of opportunity, but they can also be used to monitor the effectiveness of interventions. Although the criteria are meant to guide investment for ICM, they also serve as indicators of which areas need attention when designing ICM projects. For example, if institutional effectiveness is weak because of poor local capacity, some groundwork in this regard may have to be done before designing a project. The level of capacity enhancement achieved can also serve as an indicator for monitoring effectiveness of program implementation.

The criteria fall into four main categories: those for institutional effectiveness, policy effectiveness, equitable distribution of domestic benefits, and equitable distribution of global benefits (Table 2).

*Criteria for institutional effectiveness* may include local capacity, the quality of environmental programs, private sector involvement, and the availability and level of external assistance.

*Criteria for policy effectiveness* assess the extent to which ICM interventions are likely to succeed in the country's political and socioeconomic environment. A successful intervention should enhance existing stability or build in mechanisms that are adaptive and are resilient to shocks arising from political instability.

*Criteria for equitable distribution of domestic benefits* address the value of the country's coastal and marine ecosystem, expressed in terms of the net benefits of intervention. The precautionary principle should be applied in situations where there exists a threat of serious impacts on the ecosystem and

**Table 2. Criteria for ICM Interventions**

<i>Criterion</i>	<i>Components</i>
Institutional effectiveness	Capacity and competence of the local partner; existence and quality of national environmental action plans and programs, national conservation strategies, biodiversity conservation strategies and programs Private sector participation; country's willingness to involve private sector Availability and level of external assistance (high level of donor interest may attract additional donors and investment but deter others); appropriate balance of donor participation; improved donor coordination
Policy effectiveness	Political stability Country commitment Clarity regarding property rights Incentives
Equitable distribution of domestic benefits	Current use of coastal and marine resources Potential uses of coastal and marine resources Threats to coastal and marine resources Cost-effectiveness Dependence on resources
Equitable distribution of global benefits	Use and nonuse values Representativeness Biodiversity Threats to coastal and marine resources Cost-effectiveness



on its functions and provision of goods and services. A successful intervention is one that reduces the aggregate likelihood of threats or includes mechanisms for mitigating the impacts of such threats on productivity or distribution. (Oil spill contingency planning is an example.) Given the goal of maintaining or enhancing domestic benefits, an intervention should be rated on the basis of the level of domestic expenditures and the effectiveness of their use in, for example, reclaiming degraded coastal and marine ecosystems or avoiding significant deterioration of nondegraded areas. An intervention should target areas where cost-effectiveness is high or should create the conditions for making complementary interventions more cost-effective. The latter is sometimes referred to as “barrier-removal” intervention. Removing an institutional barrier may improve the cost-effectiveness of other existing or future programs.

*Criteria for equitable distribution of global benefits.* Global use and nonuse values refer to the global value or benefits of current and potential uses of the coastal and marine ecosystem. These values are additional to the domestic use and nonuse values. A successful intervention results in the maintenance or enhancement of benefits generated by the use of coastal and marine resources and promotes equitable distribution of these benefits. A successful intervention should maintain biodiversity resources and environmental functions in the coastal zone.

Global threats to a particular country’s coastal zone can include complex situations such as the projected effects of climate change (sea level rise and extreme climatic events), downstream effects of activities in neighboring countries, coastal pollution, sedimentation, and overfishing by people from neighboring countries and from outside the area. A successful intervention reduces the aggregate likelihood of threats or provides mechanisms for decreasing the impacts of such threats on productivity and distribution.

Applying the strategic goals, principles, and criteria described in this chapter, we carried out an exercise to prioritize ICM investments for Sub-Saharan Africa, by country. (See Appendix A for a complete list of criteria and countries.) The weights assigned to each criterion for each country are based on the available data and on assessments by experts both within and outside the country. There is a degree of subjectivity and relativity in the ranking exercise, and the rankings themselves are subject to change on the basis of local, national, and global externalities at a given time. Nevertheless, we believe that the exercise is useful in determining where investments by the Bank are most needed and have the highest likelihood of successful implementation. The exercise indicates the following priorities, with 1 being the top priority and the countries listed in order of priority within the main ranking:

1. Seychelles, South Africa, Mauritius, Mozambique, Ghana, Senegal, The Gambia, Tanzania, Namibia
2. Nigeria, Madagascar, Côte d'Ivoire, Guinea, Benin, São Tomé and Príncipe, Gabon, Mauritania
3. Cape Verde, Djibouti, Sierra Leone, Republic of Congo, Somalia, Liberia, Cameroon, Togo, Angola.

Any of the countries classified as low priority could nevertheless qualify for World Bank assistance in response to a natural catastrophe or some other event or should an institutional or policy process create new situations or opportunities.

The next chapter examines how World Bank strategies and processes may be able to support integrated coastal management in countering the threats facing Sub-Saharan Africa's coastal and marine environment.

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## 6

# Implementing ICM Programs

## *The Way Forward*

The World Bank's environmental strategy emphasizes three key objectives:

- *Improving the quality of life*—that is, improving health and livelihoods and reducing the vulnerability of those affected
- *Enhancing the quality of growth* by supporting policy, regulatory, and institutional frameworks for sustainable environmental management and promoting sustainable private development
- *Safeguarding the quality of the regional and global commons* by dealing with threats to climate change, forests, water resources, and biodiversity.

The World Bank's role in supporting coastal and marine resource and area management in Sub-Saharan Africa is guided by the strategic goals articulated in the Bankwide environmental strategy, the Africa Region's Framework for Integrated Coastal Zone Management described in Chapter 5, and the goals, principles, and intervention criteria outlined in that chapter.

At the global level, the Bank is committed to mainstreaming environment in development planning processes, programs, and implementation. In accordance with that policy, investments in the coastal and marine environment may be integrated into larger investments in traditional sectors such as rural development, infrastructure, water, fisheries, and tourism. In specific instances, as described earlier, the investments may be in the form of stand-alone coastal and marine resource management projects supported by IDA and by GEF.

Given the complex and changing nature of the coastal and marine ecosystem and the lack of experience with ICM in Sub-Saharan Africa, in defining strategic directions to guide investment we focus on the following themes:

- Strengthening the institutional core
- Improving the quality of life of coastal communities
- Promoting partnerships between the public sector, the private sector, and civil society

- Promoting sustainable management of fragile ecosystems across political and geographic boundaries

Within each of these themes, the emphasis is on barrier removal through adaptive management, experimentation, learning, and information sharing.

### Strengthening the Institutional Core

The institutional core consists, in essence, of the key decisionmaking agents, the processes they engage in, and the information they make use of within these processes. Certain characteristics of the institutional core have been found to be critical for the success of ICM programs.

1. *Strong institutions at the subnational as well as the national level.* Strong political will and commitment have to be present at the very beginning of any ICM program, and there must be appropriate institutional coordination at the central and local levels during the program planning and implementation stages. Chua (1993) suggests that an interagency coordinating body is preferable for implementing an ICM program. Lack of integrated planning has led to conflicts about resource use, deterioration of the resource base, and reduction of development opportunities. Conflicts between agencies with different development goals and overlapping mandates have led to duplication of effort and thus to inefficiency and waste of valuable resources.
2. *Transparency in decisionmaking, public participation in program design, and proper feedback processes.* Top-down programs designed and initiated by donors and national policymakers have encountered difficulties in securing the buy-in and commitment of local stakeholders. The ultimate success of ICM depends on ownership and initiative by local actors. It follows that public consultations, information dissemination, and outreach programs are important ingredients of any ICM program.
3. *Good information and assessment systems.* Obtaining reliable information on coastal and marine resources and processes is a major challenge facing ICM planners. Improving the institutional core entails the generation of credible ecological, biophysical, and socioeconomic data on the ecosystem. Valuable information can be obtained from national and local environmental action plans and environmental impact assessments, from local development plans, and from sector-specific studies conducted by the private sector and by governments, with support from the international donor community. The economic and social costs and benefits arising from the prescribed use of a particular resource or area need to be

evaluated carefully in designing an intervention. Cost-benefit assessments can reveal externalities and hidden costs that affect the health of the ecosystem or vulnerable segments of society and that need to be addressed through appropriate policy or institutional reforms. Such assessments can complement environmental and social analysis to identify tradeoffs that may need to be made in planning the best use of the coastal area. (See Box 8, on the use of strategic environmental assessment.) Close interaction with a range of stakeholders—in the public and private sectors; at the regional, national, and local levels; in modern and traditional institutions; and in the NGO community—during the ICM planning process can be most useful in filling many of the informational needs.

### **Improving the Quality of Life in Coastal Communities**

Poverty and inequality are the greatest threats to sustainable development. Nowhere are these problems more apparent than in coastal and marine areas, where competition for resource use often results in conflict, unemployment, poverty, and overexploitation of the resource base. Experience with ICM initiatives that target poverty reduction through empowerment is uneven, and efforts to assess outcomes are therefore premature. There is a significant need for experimentation and for initiatives designed to ensure

#### **Box 8. Strategic Environmental Assessment: A Powerful Planning Instrument**

Strategic environmental assessment (SEA) is an important tool for addressing environmental issues at an early stage in policy and program formulation and ensuring that these issues are monitored throughout the life of the program. The integration of SEA into planning processes allows environmental assessment to evolve from a reactive tool to a mechanism that proactively facilitates sustainable resource management. National SEA guidelines cut across sectors and ecosystems, complementing national coastal management policy and promoting collaborative integrated approaches toward strategic planning for coastal and marine areas.

In South Africa, for example, strategic environmental assessment is driven by the concept of sustainability (CSIR and DEAT 1999). Recognizing the limitations of project-specific environmental assessment, the guidelines provide a framework for integrating sustainability into development plans and programs. Recent legislation in South Africa mandates that the principles of sustainability be integrated into all development planning processes. SEA is recognized as a tool for operationalizing these principles and incorporating environmental issues into strategic decisionmaking.

that vulnerable communities engage in coastal enterprises in such a way as to derive a fair share of the benefits from these projects.

Interventions should (a) support devolution and decentralization of decisionmaking relating to control of resources, allowing stakeholders at the local and community levels to participate actively in area and development planning; (b) identify innovative mechanisms for generating employment, with attention to programs that focus on conservation of fragile and globally significant ecosystems; (c) support partnerships with the private sector to ensure sustainable financing for small-scale initiatives; and (d) promote broad-based involvement in planning to improve the equity of resource distribution. Broad-based involvement also facilitates peer enforcement of compliance with locally developed and accepted norms and standards. Box 9 describes a proactive effort under way in South Africa.

### **Promoting Sustainable Management of Fragile Ecosystems**

Maintaining well-functioning ecosystems and ecological processes is critical for meeting human needs and ensuring the sustainability of economic activities in coastal and marine areas. Coastal and marine ecosystems are increasingly subject to multiple pressures, ranging from the effects of human activities to natural disasters brought about by climatic variations. Maintaining species diversity requires a coordinated approach and the involvement of the global community in interventions at the local level. Although Sub-Saharan Africa has a significant number of marine protected areas (MPAs), their effective management is impeded by a multitude of constraints. Better integration of MPAs into an overall ICM framework that incorporates participatory processes designed to increase awareness of the value of coastal and marine biodiversity would lead to improved management of the resource base. Interventions should also promote partnerships in coastal and marine tourism enterprises and mechanisms for sharing the revenues.

Research into the state of fragile ecosystems is needed to facilitate the regular monitoring and assessment of the coastal and marine environment. Such assessments are vital to sound decisionmaking on the use of the resources of these areas. For example, the Bank's support for CORDIO, the research program on coral reef degradation in the Indian Ocean, focuses on the biophysical impacts of coral degradation resulting from bleaching and other disturbances, the long-term outlook for recovery, the socio-economic effects of coral mortality, the options for mitigating these impacts through management and through development of alternative livelihoods, and the prospects for interventions aimed at restoration and rehabilitation of reefs to accelerate ecological and economic recovery.

### **Box 9. Poverty Reduction through Sustainable Coastal Management in South Africa**

Community-driven development projects that promote viable and environmentally sustainable economic opportunities for coastal communities are the focus of a new Poverty Relief Fund mobilized by South Africa's Department of Environmental Affairs and Tourism (DEAT). The initiative supports alternative income-generating activities in coastal communities of the country's Northern Cape Province that previously depended on subsistence farming and the diamond mining industry.

The Poverty Relief Fund is also helping with the rehabilitation of an important transboundary salt marsh and wetlands area at the mouth of the Orange River, shared by the Northern Cape Province and Namibia. The site has been designated by both South Africa and Namibia for the Ramsar List of Wetlands of International Importance. (The Convention on Wetlands, signed in 1971 in Ramsar, Iran, provides a framework for national action and international cooperation for the conservation and wise use of wetlands and their resources; currently there are 1,150 sites on the Ramsar List.) This sensitive, globally significant ecosystem had been seriously degraded through poor management and the effects of coastal mining. The Working for Water Project supported by the Poverty Relief Fund employs more than 100 coastal inhabitants in restoring the hydrological regime, eradicating alien vegetation, conserving the site, and developing it as a community-run ecotourism project.

DEAT also promotes private sector initiatives for sustainable harvesting of kelp resources by worker-owned companies. The project is supported by the Gariiep Strategic Development Initiative (SDI), one of several SDIs in South Africa. The SDI programs, which are key investment components of the government's macroeconomic growth strategy, are involved primarily in promoting nodes of economic development.

The major institutions concerned about ecosystem preservation—including the World Wide Fund for Nature (WWF), the World Conservation Union, the World Resources Institute (WRI), The Nature Conservancy (TNC), Conservation International (CI), and the UNEP—have agreed that certain principles should guide conservation efforts in the 21st century (WWF 2001). These efforts should be driven by a common vision, using networks of protected areas within managed coastlines as the core components of conservation planning. They should be planned and implemented over time scales compatible with ecological processes. Finally, they should combine rigorous science, traditional knowledge, and politics and should consider the social, economic, and policy factors critical to sustainability.

The WWF's Ecoregion Program Global 200 identifies a series of ecoregions representing major habitat types in the terrestrial, freshwater, and

marine realms that warrant greater emphasis because of outstanding biological features. One of the 10 marine ecoregions on this list, the East African Marine Ecoregion, stretches from southern Somalia to the shores of KwaZulu-Natal Province, South Africa—a distance of over 4,600 kilometers—and is home to a population of about 22 million (Map 3). A focus on regional approaches such as the Marine Ecoregion Program will make it possible for planning and management of the coastal and marine areas to be based on a sound understanding of the connectivity of ecological processes, including coastal and offshore currents, tidal influences, transport of nutrients, and the movement of large marine animals, as well as human population dynamics.

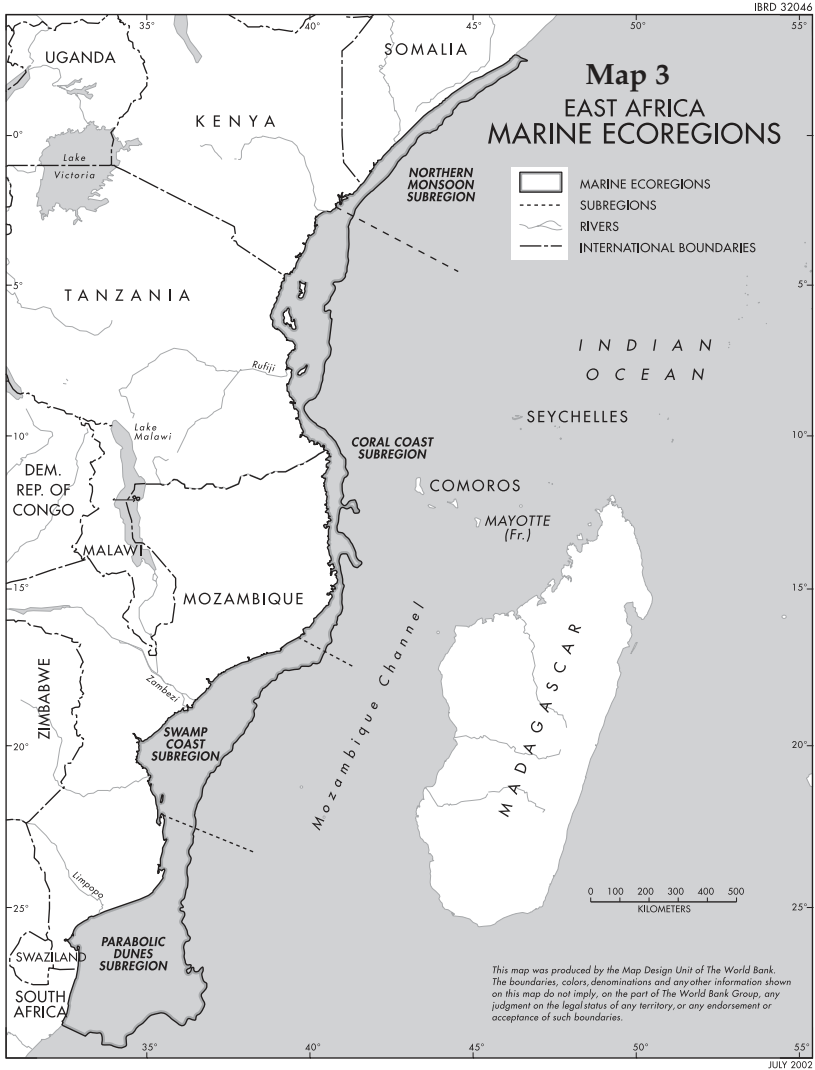
### **Promoting Partnerships between the Public Sector, the Private Sector, and Civil Society**

The public sector in coastal nations has in the past proved ill equipped to address the multidimensional problems of coastal and marine areas. The private sector has the advantage of being capable of rapid and flexible adaptive decisionmaking, and it can be a source of complementary funds in the form of venture capital. Removing the barriers to effective participation by the private sector in the management of coastal and marine resources may therefore contribute to the success and sustainability of interventions.

For example, the Coastal and Marine Biodiversity Management Project (CMBMP) in Mozambique, supported by the World Bank and GEF, emphasizes partnership between the public sector, the private sector, and civil society in bringing about improvements in the livelihoods of coastal communities and in the ecosystem. The project, described in Box 10, is a key element of Mozambique's National Coastal Zone Management Program.

Making the investments needed to address ICM issues often requires greater expenditures than appear to be economically efficient for the borrowing country. Although the donor community remains committed to ICM and to the protection of coastal and marine resources, increased and targeted financing, from the World Bank and other partners, is needed to implement a coordinated and sustained strategy for research, analysis, knowledge management, and investments to promote ICM. Such a strategy requires innovative partnerships with GEF and with bilateral donors and the identification of opportunities for additional resource transfers from concessional sources. Partnerships of this kind, and additional resource transfers, are currently being implemented for the conservation and management of critical ecosystems (under the Critical Ecosystems Partnership) and are under consideration for renewable energy. The possibility of setting up strategic funds at the regional level to finance urgent ICM priorities was endorsed at the Global Conference on Oceans and Coasts at Rio+10.





### **Box 10. Promoting Partnerships for Sustainable Coastal Management in Mozambique**

Mozambique's Coastal and Marine Biodiversity Management Project (CMBMP) is a pilot for an integrated, multipronged approach designed to support sustainable development of coastal and marine areas. Its elements include:

- Strategic spatial planning that fully integrates conservation with regional development
- Establishment and strengthening of key terrestrial and marine conservation areas
- Initiation of community-driven microprojects to promote sustainable use of coastal and marine resources
- Identification of best practices for environmentally and biodiversity-friendly economic development
- Establishment of public-private partnerships for promoting sustainable coastal development.

This project is the first phase of a long-term national coastal zone program. If successful, the activities piloted under it will be adopted and replicated throughout the coastal zone.

The program design sought to respond to the great need for development and sustainable livelihoods in impoverished communities in Mozambique's unique coastal areas. The government has lacked the resources and information to provide these opportunities to the poor, but the country's return to peaceful conditions and the drawing power of pristine coastal and marine areas make Mozambique an attractive possibility for private sector-led growth. Without an appropriate policy and regulatory framework, however, such investments run the risk of being both environmentally and socially unsustainable. The CMBMP aims to provide the necessary planning framework to avoid this danger. The project's capacity-building activities—in particular, at the provincial and local levels—will facilitate partnerships between coastal communities and the public and private sectors.

*Source:* World Bank (2000).

Closer collaboration within the World Bank Group and its partners is also important in mainstreaming ICM in ongoing programs and projects. For example, the International Finance Corporation (IFC), the World Bank Group's private sector development arm, is actively considering new investments involving tourism development. In such cases a blended pro-

gram of financing from GEF, the World Bank Group, and bilateral funds could support a comprehensive program for sustainable management of coastal and marine resources in countries with high use values in tourism and recreation at the national level and high global values in the form of coastal and marine biodiversity. Close partnerships with the UNEP, the World Conservation Union, the FAO, the WWF, the Intergovernmental Oceanographic Commission (IOC), and other agencies promoting ICM are critical for supporting the implementation of international maritime agreements.

Close links need to be forged between the private sector, on the one hand, and, on the other, academic and research institutions and foundations that have strong marine studies and ICM programs. The objectives of this coordination would be to advance knowledge concerning ICM; to disseminate new information and mobilize and synthesize local knowledge; to develop local capacity for carrying out research; and to strengthen capacity for implementing ICM. Networking with national and international NGOs and close collaboration with bilateral aid agencies are also vital.

### **Conclusion: Tailoring ICM to Country Development Needs**

As the Africa Region's environmental strategy notes, Africa is too ecologically, socially and politically diverse for any one strategy or solution to be universally applicable. Furthermore, the ICM agenda is just one among numerous priorities set by the Bank internally and by client countries on the basis of political, social, economic, and other pressing needs. Even though the need for ICM as an organizing framework for addressing the population and development pressures impinging on the coastal margins of Sub-Saharan Africa is obvious, many of the poorer nations of the region may find themselves unable to afford the luxury of long-term planning horizons and lacking the resources to invest in enabling activities that take a long time to bear fruit. Achieving an integrated approach—both horizontally, in terms of economic and sectoral integration, and vertically, in terms of resource management and governance arrangements—is a long-term proposition. The benefits of ICM are unlikely to be felt in the near term. ICM programs may therefore not be adopted in a holistic sense in countries where political and social pressures for development are too strong and capacity and commitment to carry out strategic planning is weak or nonexistent. In such countries, ICM programs that are introduced through external donor support are unlikely to be sustained in the absence of strong links to more immediate economic and social welfare programs that have a high national priority. Small pilot efforts that address local priorities are not likely to be replicated at the scale and rate required to make significant

headway on the sustainable development front unless supported by massive commitments of external assistance.

To confront this reality on the ground, ICM will need to be more strategic in design and packaged as a value-added increment to traditional economic investments. In addition to investments within fisheries or environment programs, opportunistic approaches will have to be adopted, targeting large-scale investments in the water, infrastructure, energy, and transport sectors with the aim of making such investments more “coastal friendly” by averting downstream impacts and bringing about more explicit benefits to coastal populations and ecosystems. Strategic environmental assessment may be refined to allow evaluation of the costs and benefits for downstream environments of programmatic lending in the water and energy sectors. Projects in these sectors may affect, for example, large coastal megacities, where migration patterns may be affected by land use or investment strategies in watersheds upstream; rural landscapes; and natural ecosystems at the land-water interface, such as biologically productive coral reefs, mangroves, and estuaries. Ensuring environmental flows and instream uses of surface and groundwater, maintaining or improving water quality for downstream use, and taking into account the nonmarket or future-option values of coastal ecosystems as providers of valuable services that depend on clean and reliable flows are among the ways that such investments can be leveraged to yield benefits to coastal populations.

Mainstreaming ICM to achieve the necessary scale and impact will also require more explicit synergies with the poverty reduction strategies of specific countries and with the Millennium Development Goals set by the United Nations. ICM targets will need to be linked to quality of life, quality of growth, and environmental sustainability—objectives identified in the Millennium Development Goals and in the Bank’s environmental strategy. The gains to be reaped through ICM approaches will need to be presented in terms of national development priorities and designed to meet targets that support these priorities. Some countries (as illustrated by the priority-setting exercise described in Chapter 5 and Appendix A) will be ready for the whole package: strengthening the institutional core, including the strategic planning, policy, and regulatory frameworks, governance arrangements, and conflict resolution; promoting partnerships; ensuring sustainable management of fragile ecosystems; and improving the quality of life of coastal communities. Others may only be ready to adopt and sustain activities that can be incorporated into more explicit income-generating investments with the potential to demonstrate immediate benefits. It may be necessary in some countries or localities to address immediate and perhaps very visible problems while working toward longer-term solutions for underlying causes. The immediate problem may be coastal erosion, significant declines in fish catches, or loss of revenue as a result of a

downturn in coastal tourism. A rapid infusion of capital, as well as capacity-building support, may be required to deal with these problems. Lessons from such experiences may then provide sound feedback for putting in place the governance arrangements, enabling activities, conflict resolution mechanisms, and so on needed to strengthen the institutional core for future ICM implementation.

Ecosystems and ecological processes span political and geographic boundaries, and many governments, as well as development partners, are recognizing the need for environmental management at the subregional rather than the national or local level. The droughts and floods that afflicted Mozambique, South Africa, and Zimbabwe in 2000 are examples of how national leaders have recognized the need for cooperation in managing ecosystems and natural resources. As described earlier in this chapter, leading institutions concerned about ecosystem preservation have concluded that conservation in the 21st century must be driven by a common vision, using subregional approaches and forming networks of protected areas. Such regional approaches will provide a mechanism for involving both countries that are not yet ready for ICM planning and those that have demonstrated readiness and commitment within an integrated, planning framework that reaches beyond political boundaries to encompass a larger geographic scale. The new instruments being considered by the World Bank for assisting subregional initiatives can provide much-needed catalytic support for multidonor initiatives that are planned and implemented over longer time scales that are more compatible with ecological processes.

# Appendix A

## Illustrative Exercise in Setting Priorities for Integrated Coastal Management in Sub-Saharan Africa, by Country

Criterion	Category I						Category II									
	<i>Seychelles</i>	<i>South Africa</i>	<i>Mauritius</i>	<i>Mozambique</i>	<i>Madagascar</i>	<i>Ghana</i>	<i>Senegal</i>	<i>Gambia, The</i>	<i>Tanzania</i>	<i>Nigeria</i>	<i>Kenya</i>	<i>Namibia</i>	<i>Côte d'Ivoire</i>	<i>Guinea</i>	<i>Benin</i>	<i>Guinea-Bissau</i>
Bank involvement	2	3	2	1	2	1	2	2	1	1	2	2	2	2	2	2
Biodiversity	1	1	1	1	1	2	1	2	1	1	1	1	1	1	2	1
Cost-effectiveness of intervention	1	1	1	1	1	1	1	1	1	2	1	2	2	2	2	
Country commitment	1	1	2	2	3	2	1	2	2	2	2	1	2	2	2	1
Dependence on CMR	1	1	1	1	1	1	1	1	1	2	1	1	1	1	1	1
Donor involvement	2	1	2	1	2	1	1	2	1	2	2	1	2	2	2	2
ESD program quality	1	1	1	2	1	1	2	2	2	2	2	1	2	2	2	1
Global biodiversity	1	1	1	1	1	2	1	1	1	1	1	2	1	1	1	1
Global threats	1	2	1	1	1	2	2	2	1	1	1	1	2	1	1	1
Global use/nonuse values	1	1	1	1	1	2	2	2	1	1	1	1	2	1	1	3
Incentives	2	2	2	3	3	2	2	2	2	2	2	2	2	3	3	2
Local capacity	1	2	2	3	2	2	2	2	2	2	2	2	2	2	2	2
Partner availability	1	1	1	2	2	1	1	1	1	2	2	2	2	2	2	2
Political stability	1	1	1	1	3	1	1	1	1	2	2	1	2	2	1	1
Potential use of CMR	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Property rights clarity	1	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2
Threats to CMR	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Use of CMR	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

Note: CMR, coastal and marine resources; ESD, environmentally sustainable development. Countries are listed from left to right according to the number of criteria justifying ICM investment that have been fulfilled at present.

Category III															
<i>Gabon</i>	<i>Comoros</i>	<i>São Tomé and Príncipe</i>	<i>Eritrea</i>	<i>Angola</i>	<i>Cameroon</i>	<i>Togo</i>	<i>Mauritania</i>	<i>Equatorial Guinea</i>	<i>Cape Verde</i>	<i>Djibouti</i>	<i>Sierra Leone</i>	<i>Congo, Rep.</i>	<i>Somalia</i>	<i>Liberia</i>	<i>Congo, Dem. Rep.</i>
2	3	2	2		2	2	2		2		2				
2	1	1	1	2	2	2	2	2	1		2	1		2	2
2	2	2	2	2	2	2	2	2	2	2	2	2	3	2	2
2	2	2	1	3	2	2	2	2	2	2	3	3	3	3	3
1	1	1	1	1	1	1	2	1	1	1	3	1	1	1	3
2	2	1	2		2	2	2	2	2		3				
2	2	2	2	2	2	2	2	2	2			3			
2	1	1	1	2	1	2	2	2	1		1	1			
2	1	1	1	2	1	2	2	2	1		1	2			
1	1	1	1	2	2	2	2	2	1		1	2		2	
3	3	3	3	3	3	3	3	2	3		3	3	3	3	3
2	2	2	2	3	3	3	3	3	2		3	3	3	3	3
2	2	2	2	3	2	2	2	3	2		3	3		3	3
1	2	1	2	3	2	1	1	2	1	2	3	2	3	3	3
1	1	1	1	1	1	2	2	1	1	1	1	2	1	1	
2	2	2	2	3	2	2	2	2	2	3		3	3		3
1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2
1	1	1	1	1	1	1	1	1	1		1		1	1	

1 High priority     
 2 Moderate priority     
 3 Low priority     
  Not available

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# Appendix B

## Global Conference on Oceans and Coasts at Rio+10: Principal Recommendations

The list in this appendix replicates that in Section VI, “Summary of Recommendations,” of the co-chairs’ report on the Global Conference on Oceans and Coasts at Rio+10, held in Paris, December 3–7, 2001. The full report is available at <http://www.udel.edu/CMS/csmpr/rio+10>.

<i>Issue</i>	<i>Recommendations</i>
<b>Poverty reduction and healthier coastal communities</b>	<ol style="list-style-type: none"><li>1.1 Establish and implement programs in integrated coastal and ocean management to guide development opportunities in coastal areas of developing countries while maintaining or achieving environmental quality.</li><li>1.2 Target donor aid more explicitly to achieve poverty reduction/public health improvement in developing countries, such as, for example:<ul style="list-style-type: none"><li>• Encourage the GEF to analyze how project proposals funded under the GEF will address poverty alleviation/public health gains.</li><li>• Encourage donors to set up a “Small Project Fund” for addressing ocean and coastal issues. “Small grants” of usually less than \$25,000 per project can be useful sources for: (a) capacity building, particularly among local authorities and nongovernmental organizations; (b) dissemination of good practice; (c) preparation of larger project proposals; and (d) demonstration projects to promote sustainable livelihoods.</li></ul></li><li>1.3 Recognize sustainable aquaculture and responsible fisheries as parallel and essential elements of a common strategy to ensure global seafood security and fill the supply gap forecasted for the next decade.</li><li>1.4 Focus on innovative approaches to small-scale fisheries and aquaculture, empowering the sector, establishing fishing rights including access to necessary infrastructure to support livelihoods and tenure systems, integrating fisheries into coastal management, and taking account of the interactions and compatibilities between aquaculture and harvest fisheries.</li><li>1.5 Support the implementation of the Global Programme of Action for the Protection of the Marine Environment from Land-Based Activities, and in particular the Strategic Action Plan on Municipal Wastewater.</li></ol>



- 1.6 Prevent destruction, loss of human lives and associated costs through appropriate forecasting, early warning, prevention, preparedness, and mitigation measures of ocean-related natural disasters.

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**Implementation and compliance with international agreements**

- 2.1 Develop a common Global Vision for Oceans, Seas, and Coasts which provides the goals and objectives for the governance of the oceans and coasts, to which the multitude of international regulatory regimes and institutions contribute.
- 2.2 Promote transparency, participation, and accountability in decision-making on oceans and coasts at all levels.
- 2.3 Undertake a broad diplomatic process for wider ratification and implementation of multilateral agreements related to oceans and coasts (such as UNCLOS, Fish Stocks Agreement, etc.), and develop strategies for ensuring peace and security of oceans and coasts, including peaceful settlement of ocean disputes.
- 2.4 Promote joint implementation of clusters of international legal instruments and programs addressing oceans at global, regional and national levels, through, for example: memoranda of understanding among governing bodies, joint work of scientific bodies, joint consideration of related agreements, and joint work programs.
- 2.5 Streamline national reporting around clusters of international legal instruments and programs addressing oceans to ease countries' reporting burdens.
- 2.6 Encourage the creation of national ocean and coastal councils to formulate national policies on oceans and coasts and to implement, in a coordinated fashion, clusters of international agreements on oceans and coasts.
- 2.7 Regional scales of ocean governance should be recognized and promoted as an essential approach to pursue the sustainable development of oceans and coasts and to integrate global approaches with local ones.

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**Capacity building for governance of ocean and coastal areas**

- 3.1 Involve both the national and subnational levels of government in the development and implementation of integrated coastal management programs, avoiding exclusive reliance on pilot projects which often do not "scale up" to include other parts of the coastal zone.
- 3.2 Increase the capacity of local governments and community-based groups to manage coastal and marine areas with appropriate scientific inputs and participatory processes.
- 3.3 Take decisive actions to ensure effective management measures for the coastal areas of each nation, moving from the implementation of demonstration projects to a more complete coverage of each nation's coastline, by working toward committing to the following targets:

- 20% of national coastlines under management by 2012
  - 60% of national coastlines under management by 2022
  - 100% of national coastlines under management by 2032
- 3.4 Promote the formulation of policies for the management of exclusive economic zones (EEZ) as a new frontier to maximize the economic return from ocean resources, in particular through the development of common visions for sustainable development across all ocean sectors using an ecosystem-based approach and the setting of national and regional ocean management objectives and priorities.
  - 3.5 Encourage donors to create synergy among many “single issue” projects (such as biodiversity, coastal erosion) funded by multiple donors in the same national context which often operate with few connections among them, and to weave these into a comprehensive coastal management effort.
  - 3.6 Promote good practice and performance measurement standards for donor-funded projects in integrated coastal management and encourage progress and accountability at all levels.
  - 3.7 Improve the interconnection between education and training in integrated coastal management to allow for more systematic capacity building in the field. To this end, donors and governments should consider the establishment of regional consortia of local universities on integrated coastal management.
  - 3.8 Promote the development of Regional Partnerships aimed at improving the management of coastal and marine resources, following successful cooperation models such as the African Process for the Development and Protection of the Coastal and Marine Environment in Sub-Saharan Africa recently endorsed by the OAU Summit and the African Regional Preparatory Process for WSSD.

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**Protection of coastal and marine areas and biodiversity**

- 4.1 Consider a timetable and specific resource commitments to further implement the Jakarta mandate on marine and coastal biodiversity under the CBD.
- 4.2 Develop an internationally accepted marine biodiversity classification system for the marine realm that supports the development of a rationale for MPA systems within jurisdictions.
- 4.3 Establish and expand a comprehensive global representative network of marine protected areas that includes regional and national systems of highly protected/no take areas for the maintenance of connectivity and corridors.
- 4.4 Ensure the effectiveness of existing MPAs through the development and application of performance measures.

	4.5 Incorporate marine protected areas into an overall integrated coastal and ocean management system using the social sciences to enhance the participatory process, and assess and address impacts on local human communities.
	4.6 Consider establishing MPAs or special conservation areas in the high seas in areas under threat, such as seamounts.
<b>Monitoring and assessment of the marine environment</b>	<p>5.1 Develop a periodic, comprehensive global report on the State of Oceans and Development, building on existing regional and sectoral efforts. This report should anticipate and plan for emerging ocean and coastal issues, such as offshore aquaculture and bioprospecting of marine genetic resources.</p> <p>5.2 To support the global assessment, implement an operational observing system that is adequate to detect changes occurring in the marine environment from estuaries to the deep sea and the development and application of modeling and forecasting techniques to achieve operational capabilities analogous to weather prediction.</p> <p>5.3 Advance the scientific understanding of interactions among marine, terrestrial and atmospheric systems and of how human activities influence these interactions through synthesis and improved understanding of: (a) the ocean-climate system, and of (b) coastal systems that are affected by the ocean-climate system and land-based human activities.</p> <p>5.4 Improve the linkage between science and management through partnerships that enable more effective use and exchange of data and information to the benefit of communities and society as a whole, by including, inter alia, the socio-economic aspects of marine pollution and physical degradation in the State of the Oceans and Development report, and in particular through the development of environmental and socio-economic indicators measuring the performance of management actions related to oceans and coasts.</p> <p>5.5 Support the implementation and financing of the Global Programme of Action for the Protection of the Marine Environment from Land-Based Activities.</p>
<b>Small island developing states (SIDS)</b>	<p>6.1 Integrate economic, environmental, and social vulnerability factors into a vulnerability index with special applicability to SIDS.</p> <p>6.2 Secure greater and sustainable returns from ocean resources through improved domestic policies and legislation, improved terms of trade in ocean resources, and higher levels of domestic and foreign investment.</p> <p>6.3 Build capacity for the sound management of the exclusive economic zones of Small Island Developing States.</p>

- 6.4 Call for Barbados +10 to be convened as a full and comprehensive review to focus on achievements, constraints and new initiatives necessary to significantly advance sustainable development within SIDS.

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**Emerging issues**

- 7.1 Consider international instruments or voluntary guidelines to manage access to and exploitation of the genetic resources of the deep seabed (for example, in the form of a protocol or voluntary guidelines attached to the CBD and/or to UNCLOS).
- 7.2 Address the human health issues posed by genetically modified organisms through the ratification and implementation of the Cartagena Protocol on Biosafety attached to the CBD and the control of alien and invasive species.
- 7.3 Address issues in the high seas, including considering the establishment of marine protected areas in deep hydrothermal vent areas and the conservation of sensitive habitats such as seamounts.
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*Note:* CBD, Convention on Biological Diversity; OAU, Organization of African Unity; MPA, marine protected area; UNCLOS, United Nations Convention on the Law of the Sea; WSSD, World Summit on Sustainable Development.

Section VII of the report, "General Conclusion," states:

In conclusion, the Conference wishes to transmit a sense of urgency to the WSSD for addressing the issues surrounding the sustainable development of oceans and coasts. Participants at the Conference generally agreed that we are in a critical situation of declining trends that requires immediate actions by nations and governing bodies worldwide. This sense of urgency and priority was corroborated in ministerial statements, as well as by non-governmental, governmental, and international experts, scientists, commercial fishing, and industrial representatives attending the meeting. It is essential that we link economic development, social welfare, and resource conservation in order to achieve sustainability of oceans and coasts. The Conference issues an urgent call to action to decision makers in the WSSD process to develop a detailed action plan for the sustainable development of the world's oceans and coasts.

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# Notes

1. Cited in WRI (2001b). The share is based on world landings (catch) of marine fish stocks, both demersal and pelagic, measured in millions of tons a year.
2. Declaration on an African Process for the Development and Protection of the Coastal and Marine Environment in Sub-Saharan Africa.
3. ICM principles are being applied in the Tanga Coastal Zone Conservation and Development Program (TCZCDP), the Kunduchi Integrated Coastal Area Management Project (KICAMP), the Mafia Island Marine Park (MIMP), the Rural Integrated Project Support (RIPS), the Rufiji Environment Management Project (REMP), and the Mangrove Management Project (MMP).