

CONSERVATION OF COASTAL AND MARINE BIODIVERSITY IN THE EASTERN AFRICA REGION:

Progress in Implementation of the Jakarta Mandate

By

The Contracting Parties to the Nairobi Convention



April 2001



CONVENTION ON
BIOLOGICAL
DIVERSITY



IUCN
The World Conservation Union

**PROGRESS IN IMPLEMENTING THE JAKARTA
MANDATE IN THE EASTERN AFRICA REGION**

**A Report to the Fifth Conference of the Parties to the
Convention on Biological Diversity**

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May 2000

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Preface

In February 2000, the IUCN Eastern Africa Regional Office (IUCN-EARO) and the Agricultural University of Norway (NORAGRIC), with funding from NORAD, held a workshop to develop a proposal to assist the States of the Western Indian Ocean implement the Jakarta Mandate on Marine and Coastal Biodiversity under the Convention on Biological Diversity. The workshop was attended by representatives from Kenya, Mozambique, Madagascar, Seychelles, South Africa, Tanzania and from several regional organisations (UNEP, Nairobi Convention, WIOMSA, SEACAM, CORDIO, WWF) and a number of Norwegian institutions. The purpose of the workshop was to:

- review progress made in implementing the Jakarta Mandate in each participating country,
- identify gaps and priority actions, and
- formulate a more detailed project proposal for submission to NORAD.

The presentations from national representatives constituted such a useful body of information that it was resolved that they should be compiled into an informal information paper, for submission to the fifth Conference of the Parties (COP5) of the Convention on Biological Diversity (CBD) in May 2000 by the contracting Parties to the Nairobi Convention. The country reviews provide valuable information to complement the existing national reports presented at the COP, many of which pay little attention to marine biodiversity.

The report also contributes to the role identified for Regional Seas Conventions and Actions Plans of devising ways and measures as well as a format for reporting to CBD on progress made in the implementation of the Jakarta Mandate. Other regions might look at this as an example, and consider whether they might contribute to the CBD and Jakarta Mandate in a similar manner.

This report is a **DRAFT** and will be revised to incorporate comments and amendments from the contributors before final publication.

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Thanks also go to Kate Thuo, Mine Pabari, and Veronica Muthui for assistance with the organisation of the workshop and preparation of this report, and to Gordon Arara for lay-out and preparation of final copy (all at IUCN-EARO). The report was compiled and edited by Sue Wells (IUCN-EARO) and Martin Jenkins (consultant to IUCN), and overall production was co-ordinated by Dixon Waruinge (UNEP).

Acronyms

ACOPS	Advisory Committee on Protection of the Sea
CBD	Convention on Biological Diversity
COP	Conference of the Parties
CORDIO	Coral Reef Degradation in the Indian Ocean
EEZ	Exclusive Economic Zone
ENSO	El Niño-Southern Oscillation
FAO	Food and Agriculture Organisation of the United Nations
GEF	Global Environment Facility
ICRAN	International Coral Reef Action Network
ICRI	International Coral Reef Initiative
ICZM	Integrated coastal zone management
IFREMER	Institut Français de Recherche pour l'Exploitation de la Mer
IMCAM	Integrated marine and coastal area management
IUCN	The World Conservation Union
MPA	Marine protected area
NBSAP	National biodiversity strategy and action plan
NORAD	Norwegian Agency for Development Co-operation
NORAGRIC	Agricultural University of Norway
OAU	Organization of African Unity
PACSICOM	PanAfrican Conference on Sustainable Integrated Coastal Management
PERSGA	Regional Organisation for the Conservation of the Environment of the Red Sea and Gulf of Aden
PRE-COI	Regional Environment Programme of the Indian Ocean Commission
RECOSEX	Regional Co-operation in Scientific Information Exchange - WIO
SBSTTA	Subsidiary Body on Scientific, Technical and Technological Advice
SEACAM	Secretariat for East African Coastal Area Management
SIDS	Small Island Developing States
UNCTAD	United Nations Commission on Trade and Development
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organisation
WIO	Western Indian Ocean
WIOMSA	Western Indian Ocean Marine Science Association
WWF	World Wide Fund for Nature

Executive summary

The conservation and sustainable use of marine and coastal biological diversity are among today's most important environmental issues. This is particularly so in the Eastern African region, with its high marine biodiversity, rich marine and coastal resources, and growing human population dependent on those resources. Overexploitation of marine resources, pollution, habitat destruction and degradation all have a serious impact on marine and coastal ecosystems in the region. Of particular concern is coral bleaching, which had a catastrophic effect on reefs in the area in 1998/99 and which is believed to be linked to climate change.

Responses to the crisis facing marine and biological diversity have taken place at all scales from the local to the global. At the global level the most relevant instrument is the Convention on Biological Diversity (CBD) and its associated Jakarta Mandate (1995) and work programme on marine and coastal biodiversity (established in 1998). Regionally, the 1985 Nairobi Convention, one of the UNEP Regional Seas conventions, has an important role to play.

The CBD work programme on marine and coastal biological diversity explicitly invites regional organizations, arrangements and bodies to co-ordinate activities of, and/or relevant to, the work programme and notes that they should as appropriate report to the Convention on their activities. In February 2000, IUCN and NORAGRIC convened a workshop in Mombasa, Kenya, attended by representatives of Parties to the Nairobi Convention, as well as South Africa and a number of regional organizations, to assess regional progress in the implementation of the Jakarta Mandate, and identify priorities for further action. The workshop produced a summary report, individual country reports and reports from each of the regional organizations that attended. All are included here.

Of the five major thematic areas of the Jakarta Mandate, the workshop identified integrated marine and coastal area management (IMCAM), marine protected areas (MPAs) and sustainable use of coastal and marine living resources as priorities for the region. Progress to date and needs and recommendations for these were summarized and brief reviews made of the other areas (mariculture and alien species, as well as coral bleaching).

One overwhelming conclusion of the workshop was that a range of plans and strategies, both national and regional, was already in place, and that the priority now was implementation. This was particularly the case for issues relating to integrated marine and coastal area management, marine and coastal protected areas and coral reef bleaching. However, it was acknowledged that more work needed to be done at all levels on sustainable use of marine and coastal living resources, particularly fisheries.

The workshop highlighted the value of a regional approach to these issues, and demonstrated the potential synergies between the Nairobi Convention and the CBD. The form of reporting developed by the workshop, as presented here, could serve as a model for reporting by regional organizations and processes to the CBD.

Introduction

The Eastern Africa, or Western Indian Ocean, region is renowned for the attractiveness of its coastal zones, high marine biodiversity and rich marine and coastal resources. It is a region of high diversity, particularly for corals (Veron, 1995) and reef fish (McAllister *et al.*, 1994) but lack of solid taxonomic work in the region means that it is difficult to compare it to other parts of the world. The area is considered a distinct biogeographical province of the Indo-West Pacific, with high levels of regional endemism. Local and national endemism are generally low, except around some of the islands, notably Mauritius and Reunion, and in southern Mozambique. The region also has high diversity of the larger 'charismatic' marine species (e.g. at least twenty species of cetacean, five of the seven species of marine turtle, numerous seabirds), and an important remnant population of the threatened dugong. The region is also home to the coelacanth, a unique marine fish, originally known only from this region, but recently also found in South-east Asia.

Some alarming evidence now indicates that we are facing a global crisis in the marine environment requiring urgent action. As much as 10% of the world's coral reefs, the most biologically diverse marine systems, have been irreparably degraded. Half of the world's coastal mangroves (which provide vital nursery ground habitat to countless species) have been cleared, and converted to other uses. Fishing overcapacity has led to crashes of many of the world's major fisheries, along with significant habitat destruction, high levels of waste through by-catch and discards, and devastating impacts on artisanal (small-scale) fishing communities.

In marine and coastal environments, direct causes of biodiversity loss include over-exploitation of living marine resources, pollution, introduction of alien species, and habitat destruction and degradation. More indirect (underlying) causes include: inappropriate policies and programmes of international financial institutions, economic and other incentive and disincentive systems, land and sea tenure and access arrangements, and the undervaluing of biodiversity.

The Western Indian Ocean Region has not escaped from these impacts. Some 30 million people now live on the coast in the region, many dependent on its resources, and many having a significant impact on its diversity. As a result the area has suffered widespread degradation over the last few decades.

An issue of particular concern in the region is the devastating impact of the coral bleaching event that took place in 1998/99 and left many reefs severely damaged. Evidence strongly suggests that this is linked to climate change, and that such events may become more frequent.

Responses to the crisis facing marine and coastal biodiversity in this region and elsewhere have taken place at all levels from the local to the global. The most relevant global instrument is the Convention on Biological Diversity and its associated Jakarta Mandate, while regionally the Nairobi Convention has potentially a very important role to play.

The Convention on Biological Diversity (CBD) and the Jakarta Mandate

The Convention on Biological Diversity (CBD) is now the primary international framework for biodiversity conservation. It has three principal objectives:

- the conservation of biological diversity;
- the sustainable use of the components of biodiversity; and
- the equitable sharing of benefits derived from genetic resources.

As of 12 Feb 2000, the CBD had 177 Parties, including all countries in the region with the exception of Somalia. Of all thematic concerns so far addressed by the CBD, marine and coastal

ecosystems have probably received the most attention. This was the main topic at the first meeting of the Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA – the main advisory body on scientific and technical matters to the CBD) and it was subsequently a major theme at the second meeting of the Conference of the Parties (COP2) in 1995. Threats to marine biodiversity are recognized in the "Jakarta Mandate on Marine and Coastal Biological Diversity" which sets out a number of actions to be taken, elaborating on the obligations and requirements in the various Articles of the Convention.

The Jakarta Mandate and the CBD programme of work on marine and coastal biodiversity

At its first meeting (Paris; September 1995) SBSTTA produced a comprehensive set of recommendations for action to conserve marine and coastal biodiversity (UNEP/CBD/COP/2/5; recommendation I/8). These recommendations covered, in particular, five thematic areas: integrated marine and coastal area management (IMCAM), mariculture, alien species, living marine resources and marine protected areas.

At the second meeting of the COP to the CBD, held in Jakarta, Indonesia, in November 1995, the marine and coastal environment was the major ecosystem focus. This was the first time the international community had addressed in a comprehensive way the urgent, global problem of marine and coastal biodiversity loss. At this meeting the COP reviewed the SBSTTA recommendations in depth and formally "supported" them (UNEP/CBD/COP/2/19). The decisions taken on this topic were referred to collectively in the Ministerial Statement issued as the Jakarta Mandate on Marine and Coastal Biodiversity (Jakarta Mandate).

The Jakarta Mandate represents a significant step forward, with potentially far-reaching impacts. First, it sets out a checklist of concrete measures that Parties to the CBD should take. It also invites major international bodies to improve their existing activities and develop new actions, to promote the conservation and sustainable use of marine biodiversity, taking into account the recommendations contained in the Mandate. Finally, it sets in motion an important process under the CBD to address, in much greater depth, the most urgent threats to marine and coastal biodiversity.

The five principal action areas of the Jakarta Mandate are:

1. Institute integrated marine and coastal area management (IMCAM), including community-based coastal resource management, and prevention and reduction of pollution from land-based sources.
2. Establish and maintain marine protected areas for conservation and sustainable use.
3. Use fisheries and other marine living resources sustainably.
4. Ensure that mariculture operations are sustainable.
5. Prevent introduction of, and control or eradicate, harmful alien species.

Three additional action areas are identified by De Fontaubert *et al.* (1996), as being essential to ensure full implementation of the Mandate. These are:

- Identify priority components of biodiversity and monitor their status and threats to them.
- Build capacity to use and share the benefits from marine genetic resources.
- Take responsibility for transboundary harm and global threats to marine biodiversity.

At its fourth meeting (Bratislava, 4-15 May 1998), the COP adopted a programme of work on marine and coastal biological diversity, to assist in the implementation of the Jakarta Mandate at the national, regional and global levels (Decision IV/5 Annex). It identified key operational objectives and priority activities within the five programme elements listed above, providing also a general

programme element encompassing the co-ordination role of the Secretariat, the collaborative linkages required and the effective use of experts.

In Decision IV/5, the COP recognized that the primary basis for the programme of work should be action at national and local levels. It also invited regional organizations, arrangements and bodies to co-ordinate activities of and/or relevant to the programme of work, noting that these organizations should as appropriate and according to their own rules of procedure report to the Convention on their activities. It further stressed that activities associated with the programme of work should be cost-effective and efficient, and that duplication of efforts should be avoided and harmonization of respective programmes of work pursued through strong co-ordination between the Convention and other relevant bodies.

Regional Processes

An African Process on Protection, Management and Development of the Marine and Coastal Environment, particularly in Sub-Saharan Africa, arose from the PanAfrican Conference on Sustainable Integrated Coastal Management (PACSIKOM) in 1998, organised by the Government of Mozambique with the Government of Finland, UNESCO and UNEP. As expressed in the Maputo Declaration, which was drawn up at PACSIKOM, this was an effort to give greater emphasis to management of the seas and coasts in Sub-Saharan Africa. The process was continued in late 1998, through the Cape Town Conference on Co-operation for the Development and Protection of the Coastal and Marine Environment in Sub-Saharan Africa, where the Cape Town Declaration was adopted. This meeting was organised by the Government of South Africa, ACOPS and UNEP and reviewed existing conventions and programmes. The African process was endorsed by the Assembly of African Heads of State and Government at the Summit of the Organisation of African Unit (OAU) in Algiers in 1999.

Of greater immediate relevance to the Eastern African Region is the Nairobi Convention (The Convention for the Protection, Management and Development of the Marine and Coastal Environment of the Eastern African Region). This convention forms the legal basis for the UNEP Regional Seas Programme in the region.

The Nairobi Convention

The Nairobi Convention was adopted in 1985, along with two protocols and an action plan:

- Protocol concerning Protected Areas and Wild Fauna and Flora in the Eastern African Region.
- Protocol concerning Co-operation in Combating Marine Pollution in Cases of Emergency in the Eastern African Region.
- Action Plan for the Protection, Management and Development of the Marine and Coastal Environment of the Eastern African Region.

The Parties to the Convention are: Comores, France (Réunion), Kenya, Madagascar, Mauritius, Mozambique, Seychelles, Somalia and Tanzania. South Africa will shortly accede, in recognition of the professional and financial resources that it can bring to the programme. UNEP provides the Secretariat of the Convention and the Government of Kenya has been designated as the Depository for the Convention and its protocols. A Regional Co-ordination Unit is based in the Seychelles. From the year 2000, the Nairobi Convention will be run jointly with the Abidjan Convention (covering West Africa), with joint Conferences of the Parties, and the establishment of a Joint Implementation Unit at UNEP, in Nairobi. In 2001 the Cape Town Partnership Conference will review linkages between the Nairobi and Abidjan Conventions.

Two meetings of the Conference of the Parties to the Nairobi Convention have been held to date, the first in Seychelles in 1997 and the second in Mauritius in November 1999. A number of activities are currently underway to strengthen the Convention. The Convention and Protocols are to

be revised to take account of regional and global developments that have taken place since the Convention came into force, in particular the CBD. In addition, a new biennial work programme has been drawn up and was approved at the second meeting of the Contracting Parties in November 1999 (UNEP, 2000).

The work programme has three main themes:

- Assessment, including long-term monitoring, of the coastal and marine environment, focussing on coral reefs and related ecosystems, shoreline changes (erosion), and land-based sources of pollution.
- Management-related actions addressing coral reefs and related ecosystems, shoreline changes (erosion), land-based sources of pollution, and marine sources of pollution.
- Co-ordination with other conventions and partners, and legal aspects.

The protocols, Action Plan, and the new biennial work programme, as well as the requirements of the Convention itself, all relate closely to the Jakarta Mandate and the associated CBD programme of work on marine and coastal biodiversity. Progress made in implementing the Nairobi Convention will thus contribute directly to meeting the objectives of the Jakarta Mandate.

Implementation of the Jakarta Mandate in the region

In February 2000, IUCN and NORAGRIC organized a workshop in Mombasa, Kenya, to address implementation of the Jakarta Mandate within the Eastern African region. The meeting was attended by representatives of five of the Parties to the Nairobi Convention, as well as South Africa and a number of regional organizations. Of the five specific programme elements of the Jakarta Mandate, the workshop identified the first three (integrated coastal area management; establishment and maintenance of marine protected areas; and sustainable use of marine and coastal living resources) as priorities for the countries in the region.

Progress made and the priority actions required under these themes are summarised below, with short overviews of the other two elements (mariculture and alien species) and of coral bleaching, an issue of great importance in the region and one specifically addressed by the COP of the CBD in Decision IV/5. Further discussion is also provided on cross-cutting issues identified as important at the Mombasa workshop, and on possible synergy between the Nairobi Convention and the CBD. Details of national-level actions are provided in the country reports in Part 2, and summaries of the activities of regional organisations in Part 3.

Integrated Marine and Coastal Area Management (IMCAM)

Progress made

The Jakarta Mandate encourages the use of IMCAM (or integrated coastal zone management – ICZM) as the most suitable framework for addressing human impacts on marine and coastal biodiversity and for promoting its conservation and sustainable use. Governments in Eastern Africa have shown increasing political commitment to the establishment of IMCAM programmes, as evidenced by:

- The 1993 Arusha Resolution on Integrated Coastal Zone Management in Eastern Africa including the Island States, agreed at the Workshop and Policy Conference on ICZM (Linden, 1993).
- The 1997 Seychelles Conference Statement on Integrated Coastal Zone Management, agreed at the Second Policy Conference on ICZM (Linden and Lundin, 1997).

A Third Ministerial Conference on Integrated Coastal Management will take place in 2000 in Mozambique. Several regional organizations are playing, and have played, important roles in promoting IMCAM in the region. These include:

- Western Indian Ocean Marine Science Association (WIOMSA), which is developing a programme on capacity building for IMCAM, supported by the University of Rhode Island Coastal Resources Center.
- Secretariat for East African Coastal Area Management (SEACAM), which has facilitated recent meetings on IMCAM, developed training courses and disseminated relevant publications, such as guidelines on tourism and aquaculture.

Several countries in the region now have IMCAM policies in place, notable progress having been made in particular by South Africa and Tanzania. Others, such as Kenya, are starting to develop such policies. Many countries now have the recommended 'two-track' approach underway – i.e. development of policy, legislation and institutional frameworks at the national level, and implementation of local level programmes at specific sites. Details of progress made are given in a number of publications, including the proceedings of the Arusha (Linden, 1993) and Seychelles (Linden and Lunden, 1997) meetings, and of various regional workshops (e.g. Humphrey and Francis, 1997; Moffat and Kyewalyanga, 1998).

Needs and Recommendations for the Future

The Mombasa workshop identified lack of integrated cross-sectoral mechanisms, monitoring and control mechanisms for pollution, urban planning, environmental considerations in development planning and strategic tourism planning as region-wide issues that need addressing. The work programme under the Nairobi Convention also identifies a number of elements of IMCAM as in need of action, notably erosion and land-based sources of pollution.

Major recommendations include:

- 1.1. Develop IMCAM policy frameworks and legislation throughout the region, as many countries still lack mechanisms to integrate sectoral activities, such as aquaculture, tourism, mining and port development, in coastal areas. However, in some countries, the approach of developing a policy followed by legislation may not be appropriate. Careful analysis at country level is necessary to identify appropriate approaches.
- 1.2. Improve sharing of experiences and documentation of lessons learned, particularly during policy formulation. In particular, increase the number of demonstration programmes, with an emphasis on showing how IMCAM activities can be made sustainable. Programmes such as those underway at Tanga (Tanzania) and Mombasa (Kenya) should be documented, their 'lessons learned' identified and then shared and evaluated, and efforts made to move on to longer-term, sustainable programmes. This will require development of mechanisms, indicators and principles.
- 1.3. Develop effective Environmental Impact Assessment (EIA) legislation and implementation.

Marine and Coastal Protected Areas (MPAs)

Progress made

In the early 1990s, some 50 marine sites and 18 coastal sites in the region received some level of protection, but as pointed out by Kelleher *et al.* (1995), many of these areas were essentially 'paper parks' with no effective protection or management. Considerable national progress has been made in recent years, as indicated by the country reports. Countries within the region are at very different stages in the development of national MPA systems. Most have the beginning of a system in that they have more than one MPA, but there are very few countries where MPAs are being managed as a unified network. Kenya is perhaps closest to this with all MPAs under the jurisdiction of the

Kenya Wildlife Service; Tanzania is currently developing a system through its Marine Parks and Reserves Unit.

Recent regional initiatives to establish and improve the management of marine protected areas include:

- A 1998 regional workshop on MPAs, Tourism and Communities (Salm and Tessema, 1998).
- A regional training course for MPA managers organised by the Institute of Marine Sciences of the University of Dar es Salaam, the Coastal Zone Management Centre of the Netherlands, and WIOMSA in Kenya, February 2000.
- Work to develop economic tools for sustainable financing of MPAs (Emerton, 1999).
- Development of a framework for capacity building in MPA management in the Western Indian Ocean (Francis *et al.*, 1999).
- Reviews of MPA status in parts of the region currently being undertaken by UNEP through its International Coral Reef Action Network (ICRAN) project and by WWF in the context of its ecoregion programme.
- A 'vision' paper being prepared for SEACAM, with the assistance of the Coastal Zone Management Centre of the Netherlands, to develop consensus on challenges and opportunities for MPAs within the region over the next 20 years (Siegel, in prep).
- Development of a number of activities under the Nairobi Convention work plan to improve management of MPAs.

Needs and recommendations for the future

Many sites of high biodiversity value in the region are still unprotected. There is also resistance in many areas to the establishment of new MPAs owing to a misunderstanding of their role and lack of awareness of their benefits, particularly amongst fishers who perceive them as a threat to their fishing rights. In many countries, different government agencies are responsible for different types of MPAs, creating difficulties in terms of lack of harmonization of legislative controls, management approaches and enforcement.

Major recommendations include:

- 2.1 Undertake further work to ensure that an ecologically representative network of MPAs and other legally protected resource conservation areas will be established for the region. WWF's ecoregion assessment should help to identify gaps that need to be filled.
- 2.2 Improve awareness amongst stakeholders of the role and benefits of MPAs.
- 2.3 Improve management effectiveness of existing MPAs. Activities that will help to achieve this include:
 - Creation of a network of MPA managers (the feasibility of this is currently being addressed by WIOMSA);
 - Development of a system or central holding site for sharing, exchanging and learning from management plans from different MPAs;
 - Undertaking a broad, participatory review of MPA management in the region, for example through a Task Force, of key agencies and institutions, that would promote evaluation as a tool for adaptive management and improved effectiveness.
 - Continued building and improvement of capacity for the establishment and effective management of MPAs. Recent planning workshops and training courses have initiated a solid framework for capacity building and these initiatives should be maintained (Francis *et al.*, 1999).
- 2.4 Undertake further research, including targeted research on, for example, optimum size of MPAs, to improve understanding of the ecological and socio-economic roles of MPAs.

Sustainable Use of Coastal and Marine Living Resources

Progress made

It is widely acknowledged that successful socio-economic development in the region will be closely linked to well-planned and sustainable use of coastal and marine living resources. Despite this, remarkably little attention has been paid to fisheries in the region. The Commonwealth Science Council initiated a collaborative programme for 'Western Indian Ocean Resources Conservation' in 1996, but this was never followed up. Greatest attention has perhaps been paid to the elimination of destructive fishing methods, particularly the use of dynamite and beach seine nets. Even here changes tend to take place very slowly. Although fisheries are largely unregulated, the community-based, collaborative management approach for artisanal fisheries is proving successful where it has been introduced.

The most notable regional efforts underway are those for the protection of individual species of particular concern such as turtles. The latter are legally protected throughout the region. In addition to national efforts, there has been considerable investment at the regional level, with the 1996 Sodwana Declaration which identified a comprehensive range of actions and led to the development of the Marine Turtle Conservation Strategy and Action Plan for the Indian Ocean (IUCN, 1996). This was followed in October 1999 by the Resolution on developing a Regional Agreement on the Conservation and Management of Marine Turtles and their Habitats in the Indian Ocean and South-East Asian Region. The Institut Français de Recherche pour l'Exploitation de la Mer (IFREMER) in Reunion held a meeting in December 2000 at which a proposal was developed for a programme of research and monitoring activities that would go some way to implementing these components of the strategy. National turtle recovery plans have been produced for some countries or are in preparation (e.g. Kenya and Comores). A regional training workshop on the use of Turtle Excluder Devices was held in 1998 and the importance of this technology is widely understood (Wamukoya and Salm, 1998). However, their use is still rare in the region.

Needs and recommendations for future action

In few, if any countries, is there adequate management of the inshore artisanal fisheries (which are of critical importance for many coastal communities), the commercial inshore fisheries, dominated by shrimp trawling, or the commercial offshore fisheries, dominated by foreign vessels, operating either under licence or illegally. All these fisheries are vitally important to the regional economy, either in terms of food security, or through revenue generation in the case of the sale of licences to foreign vessels, notably for the tuna and billfish fisheries.

Management is severely hampered by the serious lack of information, national policy and national legislation on fisheries, the lack of mechanisms for information sharing and exchange, and major lack of technical and financial capacity. National reporting of landings tends to be very simplified and overlooks many species. TRAFFIC's work on sharks, lobsters, bêche-de-mer, and shells, for example, demonstrates that data are largely absent for developing appropriate management measures for these groups, despite the fact that they are the targets of important, and often growing, fisheries (Marshall and Barnett, 1997, Marshall *et al.*, 2000). Legislation is also particularly lacking for the less traditional fisheries, or for those that have only recently become of major commercial value, such as shark and octopus.

EEZs throughout the region are not enforced, policed or monitored and there are no data on the size of foreign fleets and their annual catch figures. European Union and Asian vessels, in particular, are known to fish widely and in large numbers in EEZs of the region. Much of the offshore fishing in the region is thought to be illegal. There has also been little effort to harmonize fishery policies or legislation, although a common fisheries policy is being considered under the newly formed 1999 East African Co-operation (for Kenya, Tanzania and Uganda).

With regard to threatened marine biological diversity in the region, the dugong is believed to be declining seriously, despite legal protection, largely through incidental take. Similarly, there is much incidental take of cetaceans, although the value of these animals to the tourist industry, in terms of dolphin and whale watching tours, could help to encourage less damaging fishing practices.

Major recommendations include:

- 3.1 Increase understanding of biological and socio-economic aspects of fisheries in the region, including non-traditional, lesser known species, and in particular carry out a regional stock assessment, especially for tropical multi-species fisheries.
- 3.2 Develop appropriate and improved long-term monitoring systems for fisheries including for by-catch and non-traditional species.
- 3.3 Develop management systems, policy, legislation, governance and institutional capacity for sustainable fisheries, through, for example, promotion of the implementation of the FAO Fisheries Code of Conduct, the introduction of management tools such as economic incentives and certification (for example through the Marine Stewardship Council), and establishment of no-take areas.
- 3.4 Undertake further efforts to ensure that destructive fishing methods are eliminated and by-catch reduced.
- 3.5 Pay particular attention to cross-border issues, relating to fisheries and other marine species, particularly turtles.
- 3.6 Develop sustainable and appropriate alternative livelihoods – both fishery and non-fishery based. The identification of sustainable livelihoods based on alternatives to activities that are now being increasingly regulated or controlled (e.g. use of small mesh nets) is a high priority. This will require research, for example, into changes in gear/net size/use of non-traditional species; diversification to other species and/or activities (such as ecotourism and agriculture); mariculture; and improvement of marketing opportunities.
- 3.7 Address as a high priority fishing by foreign vessels, particularly where this is illegal or carried out unsustainably at the expense of countries in the region.
- 3.8 Ensure effective implementation of the WIO Marine Turtle Strategy. Efforts need to be increased to develop programmes and find funding to assist with the implementation of this at both national and regional levels. National turtle recovery plans should be developed for those countries lacking them, and implemented elsewhere.
- 3.9 Ensure appropriate conservation measures and recovery plans are developed and implemented for other threatened marine species, such as dugong and coelacanth.

Mariculture

Progress made

Mariculture is potentially very important in many countries in the region, although in few places is it a major economic activity at present. Farming of shrimp and seaweed are the two main commercial enterprises and at present these are largely carried out on a small-scale and without major impact on the environment. Nevertheless mariculture is considered to be a growing pressure. In 1998, environmental NGOs in Tanzania and Kenya, at the initiative of the East African Wildlife Society, held a workshop on shrimp aquaculture and mangrove conservation which resulted in the 'Mombasa Declaration' urging governments to institute IMCAM. Preventative action is also being taken, for example through the publication, by SEACAM, of guidelines for sustainable aquaculture (Hambrey *et al.*, 2000), and in some countries such as Tanzania, the development of national policies (TCMP, 1999).

Needs and recommendations for future action

Mariculture needs to be addressed in national IMCAM planning, and coastal areas should be zoned to identify those sites that are suitable for this activity. Better scientific information and policies are also needed, as well as monitoring of those areas where mariculture has been initiated.

Alien Species

Alien marine species are an increasing problem in other parts of the world where introduced species of algae, molluscs, other invertebrates and even fish are having significant adverse impacts on marine and coastal biodiversity. Eradication of established alien species is difficult, if not impossible. In the Eastern Africa region, this is not yet considered an issue of major concern, but this is largely because of an almost total lack of information. Sources of alien species include mariculture and ballast water, and in both cases there is potential capacity for introductions. There is already some concern about the potential impacts of the Philippine algae, *Euchema*, which is now farmed in many areas in the region, although it is not spreading at present. This is a topic that needs further research and investigation before major problems arise. In the meantime, countries should take all necessary precautions to prevent establishment of inappropriate introduced species.

Coral Bleaching

A major outbreak of coral bleaching took place in 1998 and 1999, associated with the 1998 ENSO (El Niño-Southern Oscillation) event. In response to the concern expressed at COP4 of the CBD, the Secretariat of the CBD convened an Expert Consultation on Coral Bleaching in October 1999. This concluded that:

- The mass coral bleaching and mortality events of 1998 appear to be the most severe and extensive ever documented.
- The geographic extent, increasing frequency and severity of mass bleaching events are likely a consequence of a steadily rising baseline of marine temperatures.
- The rise in sea temperature and consequent coral bleaching and mortality pose a significant threat to coral reefs and the human populations that depend on them, particularly in Small Island Developing States (SIDS).

The Western Indian Ocean was the region most affected by coral bleaching in 1998 and 1999 and States in this area are thus particularly concerned with its impact and the need for mitigating measures. Considerable activity (for example the CORDIO programme – see Part III) is already underway in the region, but there is a need to address management implications now. Although there is no regional International Coral Reef Initiative (ICRI) action plan for coral reefs (as has been developed in other regions), strategic planning has been carried out in a number of regional fora, in particular for the work programme of the Nairobi Convention. The Eastern African component of ICRI is carrying out some relevant activities, particularly in relation to marine protected areas.

At SBSTTA 5 in February 2000, it was agreed that the issue of coral bleaching should be recommended for full integration into the marine and coastal programme of work under the Jakarta Mandate. Through recommendation V/6, SBSTTA asked the COP of the CBD to urge Parties and relevant bodies to implement response measures, including research programmes, capacity building, community participation and education.

The workplan of the Nairobi Convention identifies coral reefs as a priority and specifies a number of relevant activities. In the Western Indian Ocean region, whose many reefs are severely degraded from bleaching, the priority is to develop mitigating methods including maintenance of optimum conditions for reef recovery, the identification of appropriate and feasible restoration methods and addressing the socio-economic impact of bleaching on tourism and fisheries.

SBSTTA also recommended that the COP of the CBD request the UN Framework Convention on Climate Change to take all possible actions to reduce the effect of climate change on coral reefs. Eastern African States, particularly SIDS, can play an important role in reporting on this, particularly as the initiative for this recommendation came largely from within the region, with the Seychelles playing a notable role.

Cross-cutting issues

As well as the thematic areas addressed above, the Mombasa workshop identified a number of important cross-cutting issues and more general priorities for the region that are also highly relevant to the implementation of the Jakarta Mandate. These are discussed in brief below.

Improved regional co-ordination

There is a clear need for the establishment of more effective co-ordination mechanisms for regional initiatives on marine and coastal biodiversity protection, and for greater sharing of experiences and dissemination of lessons learned. This might involve the documentation of demonstration projects, publication of lessons learned, and development of 'tool boxes'. Examples include the establishment of a regional network for MPA practitioners, and the development of a truly regional newsletter.

Capacity-building

Although capacity-building has been a major activity in recent years, it remains a high priority. The workshop recognized that insufficient human resources and lack of trained experts in relevant fields, combined with weak co-operation with overseas scientific institutions, were major obstacles in many countries. Experience suggests that capacity building should be more carefully targeted, in particular towards 'in-service' or 'on-the job' training, using the 'learning-by-doing' approach. Many people have found that on returning from training courses they have not been equipped with the skills to translate their learning into direct management application. This could be ameliorated for example, by developing short-term 'internships' for coastal managers with relevant institutions and agencies. Longer term, more traditional forms of training are also required, particularly to increase the number of people with higher degrees in relevant subjects.

Combined with greater capacity building, there is a need for incentives for career development. As the number of qualified people increases in the region, they will need access to suitable infrastructure and incentives to use and apply their expertise.

Other important issues:

- The need for long-term monitoring and evaluation programmes, using the community-based approach as this is more likely to be sustainable, and for promotion of the concept of 'environmental reporting'
- Better use of both scientific and traditional knowledge in management.
- Development of economic tools and instruments (auditing ecological services of coastal ecosystems).
- Greater focus on effective enforcement and compliance.

Potential Synergies between the Nairobi Convention and the Jakarta Mandate

There is a recognized need to harmonize activities undertaken and reporting requirements between the CBD and other biodiversity-related treaties, both at the global and at the regional level. In particular, there are many areas of synergy and complementarity in the work programme of the Jakarta Mandate and those of the UNEP Regional Seas Conventions and Action Plans, including the

Nairobi Convention. At a meeting of the Regional Seas Conventions and Action Plans in the Hague in July 1999, the roles of these conventions in the implementation of the Jakarta Mandate were discussed. It was recognized that greater effectiveness of the latter could be achieved through collaboration and thematic joint programming with the former (UNEP, 1999).

The work programme for the Nairobi Convention itself identifies collaboration both with other Regional Seas Programmes and harmonization with global conventions as important activities under Theme 3, Co-ordination and Legal Aspects. An important activity will be the updating of the Convention itself to reflect global agreements developed since it was drawn up in 1985. Particular areas of synergy and roles for the Regional Seas Conventions and Programmes in implementation of the Jakarta Mandate as identified at the meeting at The Hague are listed in the box at the end of this section.

Harmonization of reporting requirements

Under Article 26 of the CBD, Parties are to present, at intervals, reports on progress made in the implementation of the Convention. As identified at the Hague meeting (see box), the Nairobi Convention could play a role in devising ways and measures, as well as a format, for reporting to the CBD on progress made in the implementation of the Jakarta Mandate. Participants at the Mombasa workshop suggested that this process involve a workshop every two year and preparation of a report for the COP of the CBD, through the Nairobi Convention. The report presented here is a potential model for such a report. National Jakarta Mandate working groups could be established, and a mechanism for information exchange between relevant regional organizations (e.g. WIOMSA, SEACAM, RECOSEX) established.

The major focus of the first national reports (to have been submitted by 31 December 1998) was implementation of Article 6 of the CBD, under which Parties are required to develop or adapt national strategies, plans or programmes for the conservation and sustainable use of biological diversity. The most important such plans are national biodiversity strategies and action plans (NBSAPs) already developed by many countries and in development in others. Analysis of the first national reports to the CBD and of many NBSAPs indicates that, often, marine and coastal issues are not adequately addressed within them. This applies in the Eastern African region and elsewhere. There is a need to look regionally at progress with these strategies in relation to marine issues. Reporting through the Nairobi Convention to the CBD could provide a focus to encourage greater attention to marine and coastal issues in NBSAPs and in national reports to the CBD.

Possible roles of the Regional Seas Conventions and Action Plans

- a. To devise ways and measures as well as format for reporting to CBD on progress made in the implementation of the Jakarta Mandate
- b. To promote, within the framework of IMCAM, the integration of biological diversity concerns in all socio-economic sectors adversely impacting the coastal and marine environment
- c. To assist in the development of national and regional capacity-building
- d. To provide guidance on maintenance and wider application of local and traditional knowledge
- e. To promote the identification of key habitats for marine living resources on a regional basis, with a view to further development of policies for action to prevent physical alteration and destruction of habitats, and to pursue restoration of degraded habitats, including *inter alia*, coral reef systems
- f. To promote the identification and development of ecosystem approaches compatible with the sustainable use of marine and coastal living resources
- g. To make available to the Parties information on conservation and sustainable use of marine and coastal genetic resources, including bioprospecting, exploring ways to expand the knowledge base on which to make informed and appropriate decisions about how this area might be managed in accordance with the objectives of the CBD
- h. To assist in developing criteria for selection of marine and coastal protected areas, where critical habitats for marine living resources should be one important criterion
- i. To evaluate the current state of scientific and technological knowledge of the effects of mariculture on marine and coastal biological diversity
- j. To identify gaps in existing or proposed legal instruments, guidelines and procedures to counteract the introduction and the adverse effects exerted by alien species and genotypes which threaten ecosystems, habitats or species, paying particular attention to transboundary effects
- k. To identify means to support capacity-building in developing countries to strengthen their ability to conduct work related to the prevention, control and eradication of those alien species which threaten marine and coastal ecosystems, habitats and species
- l. To maintain and update regularly a database of experts on marine and coastal biological diversity and to promote the strengthening of taxonomic expertise at regional and national levels.

Conclusions

The Mombasa workshop highlighted a number of important issues in the conservation and sustainable use of marine and coastal resources in the Western Indian Ocean region, which have been summarized in this report. The workshop showed how countries with, in the main, very limited resources, are attempting to fulfill their obligations under the Jakarta Mandate and has drawn attention to regional priorities and needs. One overwhelming conclusion of the workshop was that a range of plans and strategies, both national and regional, was already in place, and that the priority now was implementation. This was particularly the case for issues relating to integrated marine and coastal area management, marine and coastal protected areas and coral-reef bleaching. However, it was acknowledged that more work needed to be done at all levels on sustainable use of marine and coastal living resources, particularly fisheries.

The workshop has clearly shown the value of a regional approach and demonstrated that actions under regional agreements and conventions (in this case the Nairobi Convention) can play an important role in a wider context (ie. the Convention on Biological Diversity). The form of reporting set out here could well serve as a model for other regions in reporting to the CBD on implementation of the Jakarta Mandate and other thematic work programmes.

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PART II: COUNTRY REPORTS¹

COMORES

(Based on text provided by Fatouma Ali Abdallah and Faouzia Abdoulhalik)

Introduction

The country has very little technical and financial capacity for marine biodiversity protection and management. However, each village has a local association as well as community and women's groups which contribute actively to management of marine and coastal resources. The traditional social structure ensures full community participation, with village associations comprising members from all stakeholder groups. These associations voluntarily carry out activities related to environmental management and also review all development proposals.

1. Integrated Marine and Coastal Management

National policy

- The Environmental Action Plan is the only general policy framework.
- Policy initiatives are being developed as part of the Regional Environment Programme of the Indian Ocean Commission (PRE-COI) and include initiatives on erosion, corals reefs and ecotoxicology

Legislation

- Framework environmental legislation is being developed which will specifically refer to ICZM
- Community level regulations in place

Responsible authorities/institutes

- Ministry of Production and Environment, Direction General de l'Environnement (DGE)
- Direction General for fisheries
- Direction General for tourism

Implementation of ICZM (projects, demonstration sites etc)

- Three pilot projects through PRE-COI in Mitsamiouli (erosion control), Itsamia (turtle protection) and Itsandra (waste management)

2. Marine and Coastal Protected Areas

National Policy

- Marine parks are to be managed jointly with local authorities in charge of the environment and village communities

Legislation

- Legislation drafted and approved for Moheli Marine Park

Responsible authority

- Direction General of the Environment

Establishing a network of MPAs

- Moheli Marine Park shortly to be declared
- Plans underway to establish a Coelacanth Marine Park, Grand Comores

Management

- At Moheli Marine Park, coral reef monitoring underway
- Plans for establishment of environmental Trust Fund

¹ Reunion was not represented at the workshop in Mombasa and there is no country report in this draft. It is planned to include one in the final published version, if agreed by the relevant agencies.

3. Sustainable Use of Coastal and Marine Living Resources

National policies

- No national policies developed yet for fisheries or sustainable use of marine resources
- Species Action Plan for marine turtles prepared.

Legislation

- No fisheries legislation at present (colonial legislation is now obsolete)
- New legislation in preparation on protection of endemic and/or threatened fauna and flora
- Licensing system being developed to implement CITES obligations

Responsible authorities/institutes

- Direction Generale de la Peche (Dept of Fisheries)
- National Institute for Applied Research on Fisheries and Environment
- National Center of Documentation and Scientific Research

Enforcement

- Not applicable for fisheries (no regulations)
- Personnel being trained for enforcement of CITES regulations
- Training of village associations in turtle monitoring and protection

4. Environmentally Sustainable Mariculture

National policy and legislation

- Under development

Responsible agencies

- Direction General of fisheries

5. Controlling/halting introduction of alien species

National policy and legislation

- Under development

Responsible agencies

- Direction General of Environnement

6. Gaps identified and/or particular problems or issues

- Need for capacity building in environmental law, ICZM, MPAs and other marine biodiversity protection issues
- Difficulties in enforcing existing legislation
- Need for national policy and legislation on fisheries
- Need for integrated and cross-sectoral mechanisms
- Lack of technical expertise for the development of sustainable aquaculture
- Need to implement the biodiversity strategy and action plan

KENYA

(Based on presentation by Helida Oyieke)

Introduction

Kenya has prepared a National Biodiversity Strategy and Action Plan (NBSAP) and a National Environmental Action Plan, which recognise the importance of the coastal and marine environment. Although largely government-led, a growing number of NGOs and private sector initiatives are involved in coastal and marine biodiversity protection, and the value of stakeholder involvement and participation is increasingly recognised. EIA protocol has been drawn up but this is not mandatory and depends on the willingness of relevant government departments to implement it.

1. Integrated Marine and Coastal Management

National policy

- National policy being developed as part of process initiated in 1994 to introduce ICM

Legislation

- no national legislation yet, but the Environmental Management and Co-ordination Bill was recently passed and will provide framework legislation once enacted. An EIA protocol has been developed.

Responsible authorities/institutes

- Coast Development Authority (CDA) (based in Mombasa) established in 1994 with mandate for co-ordination, coastal development planning and sustainable utilisation of coastal resources.
- Coastal Management Steering Committee (CMSC) with representation from government, private sector and NGOs, with its Secretariat (ICAM), hosted by CDA.
- District Development Committees and Local Authorities have certain responsibilities for coastal management at local levels.
- Plans are being developed for national institutional arrangements for ICM

Implementation of ICZM (projects, demonstration sites etc)

- Pilot programme initiated in 1994 at Bamburi-Nyali, north of Mombasa, with CDA, Kenya Wildlife Service (KWS), Kenya Marine and Fisheries Research Institute (KMFRI) and local communities and fishing groups. Plans are now being developed to initiate similar demonstration activities in other areas.
- Training courses held on ICAM

2. Marine and Coastal Protected Areas

National policy

- Traditionally a top-down approach but increasing community participation

Legislation

- Wildlife Conservation Act (19xx) provides for the establishment of Marine Parks in which exploitation is totally prohibited, and Marine Reserves in which controlled exploitation, particularly traditional fishing is allowed.

Responsible authority

- Kenya Wildlife Service

Establishing a network of MPAs

- 4 National Marine Parks and 6 National Marine Reserves spread fairly evenly along the coast; includes some of the earliest MPAs in Eastern Africa (e.g. Malindi Marine National Park, established 1969). Kenya probably has the most extensive network of MPAs in the region and does not have the capacity for establishing further MPAs; priorities therefore are to improve management

Management

- Management plans have recently been developed for most of the MPAs

3. Sustainable Use of Coastal and Marine Living Resources

National policies

- Community dialogue has recently been adopted as a means of enforcing fishing regulations among artisanal fishermen

Legislation

- Turtles and dugong protected

Responsible authority/institutes

- Department of Fisheries
- Kenya Marine and Fisheries Research Institute: carries out research
- Kenya Sea Turtle Conservation Committee (KESCOM) co-ordinates turtle conservation activities, especially at community level and helped to formulate the Sea Turtle Recovery Plan for Kenya

Effective enforcement

- Little formal policing because of lack of resources
- TEDs (Turtle Excluder Devices) are now in operation

4. Environmentally Sustainable Mariculture Practice

Mariculture is comparatively small-scale. Pilot shrimp farming activities have proved largely unsuccessful, although mangroves were destroyed in the process. There are plans to develop small-scale crab culture (Kwale District) and seaweed farming (Shimoni?) in some areas.

National policy and legislation

-

Responsible agency

-

Improving mariculture practices 'on the ground' (demonstrations etc)

-

5. Controlling/halting introduction of alien species

No studies or information. Under the NBSAP, it is recommended that a legal instrument or guidelines for the introduction of alien species be developed for the country. There is also a need for an incident list of introductions into the marine environment.

6. Gaps identified and/or particular problems or issues

- Need for stock assessment of fishery and other marine resources
- Strengthen capacity for monitoring climate change and its impact on resources (e.g. coral bleaching)
- Strengthen capacity to generate information relevant to the management of marine resources

MADAGASCAR

(Based on text by R. Rakotongrasata and A. Cooke)

Introduction

Madagascar benefits from a multi-donor National Environmental Action Programme (NEAP) carried out in three 5-year phases. The first phase (1992-1996) established key environmental institutions including the Ministry of Environment, the National Environment Office (Office National pour l'Environnement ONE) (which is responsible for co-ordinating NEAP implementation) and the National Protected Areas Management Association (Association Nationale pour la Gestion des Aires Protégées - ANGAP). The emphasis of the current second phase (1997-20001) is on policies, strategies and instruments for sustainable use of natural resources and includes a marine and coastal environment component (Environnement Marin et Côtier - EMC) based in ONE and funded by UNDP/GEF/World Bank. The main objectives of EMC are: 1) participatory development of national ICZM policy, laws and instruments; 2) improving knowledge of marine and coastal ecosystems; 3) developing systems for decentralised integrated management of key activities. A national biodiversity strategy, currently under development, will promote

sustainable resource management, equitable sharing of benefits, conservation of genetic resources and biosafety.

1. Integrated Marine and Coastal Management

National policy

- EMC has overseen establishment of working groups at the national level and in pilot regions (Toliara, Nosy Be) and of executive ICZM structures at local (villages, communes) and regional levels (groups of communes, regional development committees) in the pilot and other regions.
- EMC has recently launched an initiative to prepare an issues document (“green paper”) to communicate ICZM concepts and issues to a wide audience as a basis for participatory development of a comprehensive ICZM policy. EMC aims to encourage appropriation of the policy process by the national and regional working groups as a key step in building constituencies for ICZM in Madagascar. The communication document will be published in May, 2000.

Legislation

- No specific ICZM legislation yet. The “green paper” will identify options for legal reform and legislation necessary for ICZM implementation.

Responsible authorities/institutes

- Proposals will be developed for institutional structures for ICZM.

Implementing ICZM on the ground (projects, demonstration sites etc)

- Beginning with a series of small attention-drawing interventions, EMC has developed partnerships with local structures for the implementation of ICZM demonstration projects including dune stabilisation, mangrove re-planting, marine protected area delimitation, seaweed farming and shoreline toilet construction (an acute need in several coastal towns). Integrated management plans for key resources and activities (reef fishing, mangrove exploitation and tourism) and for limiting environmental degradation and pollution are being developed in pilot areas (Toliara, Nosy Be). These actions will feed into local and regional ICZM plans. In partnership with EMC, CARE has been promoting integrated resource management along a sector of the Masoala peninsular using the Gestion Locale Sécurisée (GELOSE) law.
- The Madagascar component of the regional environmental project of the Indian Ocean Commission (PRE-COI) (due to close in June 2000) took steps to establish regional and national networks for monitoring of coral reefs and ecotoxicological phenomena which led to reef monitoring exercises at five different sites and a network on ecotoxicology.
- The World Bank/GEF has agreed to fund a regional project co-ordinated by the COI to support reef monitoring over a further 4 years, although agreement has not been reached on a focal institution for Madagascar. EMC plans to promote an extension of reef monitoring to include private sector operators.
- The EMC programme has generated reports on ecosystem degradation and pollution in the pilot regions (Toliara, Nosy Be) which make recommendations on the establishment of local coastal observatories and pollution prevention plans, for which there are modest funds for the purchase of equipment.
- The regional (COI) project for prevention of oilspills co-ordinated by the Ministry of Environment (MINENV) will prepare an atlas of sensitivity of the Madagascar coast and will develop oilspill assessment and response plans and procedures.

2. Marine and Coastal Protected Areas

National Policy

- A WWF sponsored national workshop in September, 1999, established that MPAs should generally be seen as tools for sustainable management of resources and adopted the term

“Zones Marines et Côtières à Gestion Spéciale” (ZMCGS) to embrace all types of MPA. EMC is currently working on a policy document aimed at facilitating a representative network of ZMCGS under various management regimes. Marine and coastal protected areas may be split into two categories – those within the national network under ANGAP, and those outside. A working group of ANGAP, EMC, WWF and others has been established to co-operate on the development of marine and coastal conservation areas (AMCCs) for the national network, including regulations specifically adapted to MPAs. In parallel, the EMC programme is promoting the establishment of locally managed protected areas at Toliara and Nosy Be.

Legislation

- ANGAP has prepared a draft law, Code des Aires Protégées (COAP) which will cover both marine and terrestrial national protected areas.
- Law 93-022 provides for the creation of marine reserves and protection of endangered species by regulatory decree.

Responsible authority

- National Protected Areas Management Association (ANGAP).

Establishing a network of MPAs

- National MPAs exist at Masoala (three marine reserves totalling 10,000 ha including reefs and mangroves) and at Mananara-Nord biosphere reserve (1000 ha of mangrove; 1000 ha of reef), both in the North East.
- The National Park of Baie de Baly in the North West includes several parcels of protected mangrove amounting to approximately 3500 ha (no management yet).
- Local protected areas include the island of Nosy Tanikely (Nosy Be), declared a marine reserve of about 10 ha under communal and ministerial decrees, and the islet of Nosy Ve, Toliara, established by customary social convention or “dina” which protects the islet of 21 ha, and 400 ha of surrounding reefs, of which just 4 ha of reef are strictly protected as a reserve for tourist diving.
- A WWF/UNESCO sponsored workshop in November 1998 considered and refined four proposals for marine biosphere reserves (Grand Récif, Toliara; Nosy Hara Island complex; Belo-sur-Mer; Sahamalaza Peninsular and Radama Islands).
- A technical workshop organised by ANGAP in July 1999 identified a number of sites spread over five marine eco-regions for future inclusion in the MPA network.
- Proposals have also been made for creation of new MPAs at Ifaty (Toliara), Lokaro (Tolagnaro) and by WCS for a marine mammal sanctuary and management zone in the Baie d’Antongil.
- Five islets were declared as sea turtle nesting reserves in 1923, of which two are now under *de facto* local management (Nosy Iranja, Nosy Ve). An interministerial decree has been drafted by ONE that would permit delegation of management to any legal entity (e.g. NGO’s, companies, decentralised collectives) and to add new sites.

Management

- Madagascar has participated in several workshops relating to MPA management, including the Regional Planning Workshop on the Training Needs for MPA Management in Zanzibar, May-June 1999. WWF proposes to include management training in a 3-year support package for the MPAs of Masoala, and MPA management is likely to be included in the forthcoming WIOMSA/CRC regional capacity building programme. In 1999, a study mission from EMC visited MPA projects at Tanga (Tanzania) and Chumbe Island (Zanzibar). The EMC programme includes some MPA management training. An imminent UNEP study will assess national capacity needs.

- Management plans for Masoala are under development, whereas the management system for Mananara Nord is maturing and allows local fishers limited access according to a rotational system.

3. Sustainable Use of Coastal and Marine Living Resources

National policies

- Current fisheries policy focuses on expanding the sector, improving efficiency and improving livelihoods of coastal populations depending on fishing. A feasibility study for the ecological sustainability of fisheries was commissioned by MPRH in 1997 but awaits official adoption.

Legislation

- Fisheries are governed by Law 93-022 which embraces the many regulations passed under previous legislation and requires that fisheries be managed sustainably. Marine mammals receive absolute protection.
- The industrial shrimp fishery, now Madagascar's 3rd largest export earner, is increasingly regulated

Responsible Authority

- Coastal and marine living resources are the responsibility of both the Ministère de la Pêche et des Ressources Halieutiques (MPRH) and the Ministère des Eaux et Forêts (MEF).

Effective enforcement

- A project has been launched for community-based management of the artisanal lobster fishery under the "GELOSE" law permitting devolution of management to resource users (Law 96-025).
- Enforcement of the industrial shrimp fishery should improve with the installation of transmitters in all vessels. Implementation of ICZM and increased devolution of authority for resource management to user communities should improve enforcement at the local level.
- The Programme Sectoriel Pêche of FAO/MPRH has established systems for monitoring traditional fisheries at several sites in the province of Toliara.

4. Implementing Environmentally Sustainable Mariculture Practice National policy and legislation

- Shrimp aquaculture was preceded by feasibility studies which mapped suitable sites and led to a strategic development plan. The industry, now consisting of four major investors, has adopted a self-regulatory approach and has developed with MPRH a code of conduct and a draft charter for development of the industry. These will promote good practice, including use only of indigenous strains, extensive or semi-extensive culture, strict disease control without antibiotics, obligatory EIA and ecological and water quality monitoring, mangrove conservation, implementation of social projects (schools, clinics etc.) and ecological restoration following farm closure. Proposals for a seaweed farming code to be developed by producers and the relevant authorities, share similar objectives and place special emphasis on fair benefits and security of tenure for artisanal producers.

Responsible agency

- The sea water resources directorate (Direction des Ressources Halieutiques - DRH) established an aquaculture division in 1995, which was elevated to full directorate status with the creation of MPRH in 1996. The draft charter for shrimp aquaculture provides for a national aquaculture council, a national aquaculture office and six provincial aquaculture commissions.

Improving mariculture practices 'on the ground' (demonstrations etc)

- Shrimp farming in Madagascar is noteworthy for establishing ponds only in barren areas not covered by trees (“tannes”). Early projects have served as “showcases” for subsequent development.

Monitoring and evaluation

- The code of conduct and draft charter for shrimp aquaculture require regular ecological monitoring by all farms. Current EIA practices under the MECIE decree insist on monitoring of water quality and ecological indicators.

5. Controlling/halting introduction of alien species

National policy and legislation

- The draft national biodiversity strategy proposes development of strategies and regulations on biosafety. It highlights the need for specific structures to deal with movements of GMOs and the lack of information on alien invasive species. The code of conduct and draft charter on shrimp aquaculture stipulate exclusive use of indigenous species and strains and require that indigenous strains only be exported in exceptional circumstances.

Responsible agency

- Import/export of living organisms is controlled generally by the Ministère des Eaux et Forêts - MEF, with the Direction des Eaux et Forêts (DEF) being specifically responsible for species under CITES.

Implementing best practices/management measures

- In the absence of information, no measures taken.

6. Gaps identified and/or particular problems or issues identified

- Madagascar lacks large-scale, long-term, demonstration ICZM projects which tackle coastal management problems at a regional level, in particular the relationship between agricultural practices and watershed erosion.
- There is insufficient capacity for managing ICZM programmes. While projects such as the WIOMSA/CRC will contribute, much more is needed to develop Madagascar's own cadre of ICZM managers.
- There is a critical lack of human capacity within Madagascar to develop and manage MPAs.
- There is a critical lack of any programme to gather information on and assure the protection of endangered marine species, notably sea turtles and certain gastropods. Many species listed under CITES, including sea turtles, still receive no or only limited protection under domestic law.
- Current development of aquaculture is limited to shrimp and seaweeds. There is a need for research and development of other types of aquaculture.
- Research is required to establish the nature and scale of the problem of invasive alien species.

MAURITIUS

(This section is incomplete and has not been reviewed by relevant national agencies; information is taken from the country report prepared for the Inter-ministerial CZM conference, Maputo 2000)

Introduction

There has been growing political will for improved protection and management of marine biodiversity. This has come about in part through the implementation of the first National Environment Action Plan (NEAP), and the approval in January 2000 of the second NEAP which proposes the creation of a Coastal Zone Management Division in the Ministry of Environment. The Mauritius Oceanography Institute was also established in January 2000.

1. Integrated Marine and Coastal Management

National policy

- National sewage master plan prepared

Legislation

- Environmental Protection Act, 1991
 - National Coast Guard Act, 1988 gives authority to Coast Guards to prevent activities that would threaten the marine environment
 - Ports Act, 1976 regulates pollution

Responsible authorities/institutes

- Responsibility for coastal zone currently shared between several government agencies
- Plans for creation of an Integrated Coastal Zone Management Division under the Ministry of Environment

Implementing ICZM on the ground (projects, demonstration sites etc)

-

2. Marine and Coastal Protected Areas

National Policy

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Legislation

- Wildlife and National Parks Act, 1993

Responsible authority

-

Establishing a network of MPAs

- Blue Bay Marine Park and Balaclava Marine Park gazetted in 1997

Management

- Plans for marine park infrastructure have been prepared by a consultant. Research and monitoring programme underway to determine status and trends in reef biota and water quality

3. Sustainable Use of Coastal and Marine Living Resources

National policies

- Fisheries and Marine Resources Act, 1998

Legislation

-

Responsible authority/institutes

- Fisheries Protection Service, Ministry of Fisheries
- Albion Fisheries Research Centre

Enforcement

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4. Implementing Environmentally Sustainable Mariculture Practice

National policy and legislation

•

Responsible agencies

•

Improving mariculture practices 'on the ground' (demonstrations etc)

•

Establishing monitoring and evaluation programmes

•

5. Controlling/halting introduction of alien species

National policy and legislation

•

Responsible agencies

•

Implementing best practices/management measures etc

•

6. Gaps identified and/or particular problems or issues

- lack of cross-sectoral mechanisms and no governing body with overall responsibility for marine conservation

MOZAMBIQUE

(Based on a presentation by Helena Motta)

Introduction

Rich marine biodiversity, including at least 50 endemic marine fish. Strategy and Action Plan for Biological Diversity Conservation completed (1997). Less than 1% of the coastline protected in an MPA.

1. Integrated Marine and Coastal Management

National policy

- National Environmental Management Programme (approved 1996)
- National Coastal Zone Management Policy and National Coastal Zone Management Programme currently in preparation; once approved by the Council of Ministers this will provide the overall policy framework

Legislation

- Umbrella Environment Law, approved by Parliament in 1996
- EIA regulation 1997

Responsible authorities/institutes

- Coastal Zone Management Unit of Ministry for the Co-ordination of Environment Affairs (MICOA) with input from other ministries
- Ad-hoc inter-institutional technical committee for coastal management established in 1996, led by MICOA. This may become a technical subcommittee of the National Council for Sustainable Development, under the Environment Law
- Local coastal management committees created in some Provinces and Districts
- DNFFB (National Directorate for Forestry and Wildlife), responsible for mangrove forests

Implementation of ICZM (projects, demonstration sites etc)

- Mecufi Coastal Zone Management Project
- Xai-Xai Coastal Zone Management Project
- Strategic plans being produced for coastal areas of some Districts with stakeholder participation:
- National sub programmes for management of specific ecosystems (coral reefs, mangroves, seagrass beds) being prepared within MICOA; coral reef programme particularly well advanced
- ?Proposed World Bank project in north

2. Marine and Coastal Protected Areas

Legislation

-

Responsible authority

- DNFFB (National Directorate for Forestry and Wildlife)

Establishing a network

- Two marine areas: Bazaruto Marine Park; Inhaca and Portugueses Islands Reserves
- Coastal reserves in which boundaries end at high tide mark: Reserva de Maputo, Reserva do Pomene and Reserva de Marromeu (protect endangered species such as turtles and dugong)
- Recommendations exist for additional areas

Ensuring effective management

-

3. Sustainable Use of Coastal and Marine Living Resources

National Policy

-

Legislation

- Fisheries Law 1990; Marine Fisheries Regulations (regulate fishing gear, closed seasons, fishing grounds, etc.)
- Law on Guidelines for the Sustainable Use of Forestry and Wildlife Resources (1999)
- Moratorium on Coral and Ornamental Fish Exports between 1999 and 2001 (Ministry of Agriculture and Fisheries)
- Regulation on Recreational and Sport Fisheries (Council of Minister, 1999)
- Marine and Aquaculture Legislation (Ministry of Fisheries)

Responsible authorities/institutes

- Ministry of Fisheries
- Institute of Fisheries Research
- Institute of Small Scale Fisheries
- Establishment of a “National Biodiversity Unit”

Management and enforcement

- Research institutes producing management guidelines for sustainable use of most important fish stocks including shallow and deep-water shrimps, bottom fish, inshore fisheries and crayfish
- IDPPE programme on management of fisheries resources by local fishing communities at Moma-Angoche

4. Environmentally Sustainable Mariculture

National policy and legislation

- Ministry of Fisheries is developing guidelines and regulations
- EIA mandatory for aquaculture developments over 5 ha)

Improving mariculture practices (demonstrations etc)

- Demonstration project in Maputo (also large-scale development in Zambezia Province); few other activities underway

5. Controlling/halting introduction of alien species

Developing national policy and legislation

- Not well developed, but part of Strategy for Protection of Biological Diversity

6. Gaps identified and/or particular problems or issues

- Need for improvement of living conditions of local communities through ICAM processes
- More MPAs needed and improved enforcement of existing ones; introduction of ecosystem management approach and monitoring
- Capacity building in environmental legislation
- Implementation of marine and coastal components of Strategy / Action Plan for Biodiversity Protection

SEYCHELLES

(Based on information provided by relevant authorities in Seychelles, April 2000)

Introduction

The Environmental Management Plan of Seychelles (EMPS) 1990-2000 was prepared by the Government of Seychelles in 1989 with the assistance of UNDP, UNEP and the World Bank. It included two specific marine and coastal programmes (Coastal Management; Marine Resources Management) as well as several other programmes relevant to marine and coastal issues, and resulted in increased spending on ICZM activities in the country.

A new EMPS for the decade 2000-2010 is currently being developed and will shortly be approved by the Government. Thematic areas related to the Jakarta Mandate include: Land use, Coastal Zones and Urbanisation, Fisheries and Marine Resources/Processes, as well as several that are not specifically marine, but nevertheless relevant (e.g. Tourism and Aesthetics, Environmental Economics and Mainstreaming, and Sustainable Financing). The Biodiversity Programme of the new EMPS constitutes the implementation plan for the NBSAP which was formulated in 1997. Although has a primarily terrestrial focus it also includes turtles and biodiversity issues relating to the outer islands, such as Aldabra, which are critically important for marine biodiversity.

The Seychelles has played an important role in marine biodiversity protection in both global and regional for a. It has taken the lead in raising the issue of coral bleaching at the CBD, and hosts the Regional Co-ordinating Unit for the Nairobi Convention.

1. Integrated Marine and Coastal Management

National policy

- National Land Use Plan, 1992 - provides zoning scheme and indicates land use patterns
 - ICZM institutional review undertaken in 1999

Legislation

- Environment Protection Act, 1994 provides for protection of the environment and control of pollution
 - Town and Country Planning Act, 199x - primary instrument dealing with land use and coastal development

Responsible authorities/institutes

- There is no single ICZM agency or co-ordinating committees but several Ministries and specialised agencies have responsibility for coastal and marine issues, particularly the Town and Country Planning Authority
- Plans for establishment of a ?Coastal Zone Co-ordination Unit (or ?Marine Unit?)

Implementing ICZM on the ground (projects, demonstration sites etc)

- Coastal Zone Management Plans were prepared for some areas under the first EMPS
- Coastal and Marine Environment Baseline Study partially complete through Regional Environment Project of COI
- Several Support Programmes and activities under the new EMPS relate to ICM - implementation of ICM plans etc.

2. Marine and Coastal Protected Areas

National Policy

-

Legislation

-

Responsible authority

- Marine Parks Authority for national marine parks
- International NGOs for Special Reserves

Establishing a network of MPAs

- 6/8? national marine parks and 3 Special Reserves with marine components; 3 Shell Reserves. Over 23,000 ha of reef and other marine areas protected

Management

- Management plans produced for all marine parks but not all implemented - ??4 parks unmanaged
- Demarcation and mooring buoys installed in all MPAs? but maintenance poor
- Shoals of Capricorn Project carried out baseline studies for selected areas in marine parks and some coral reef monitoring underway

3. Sustainable Use of Coastal and Marine Living Resources

National policies

- Inshore Fisheries Management Strategy has been prepared

Legislation

- Fisheries law?
- Use of shark nets banned
- All turtle species and marine mammals protected

Responsible authority/institutes

- Seychelles Fishing Authority (SFA)

Enforcement

- ?Coast guards?
- 3 fisheries protected areas and 9 zones where foreign fishing vessels are denied access

Monitoring

- Monitoring programme established for much of the fishery by SFA; fisheries and oceanographic database established by SFA; tagging programme for whale shark underway; monitoring of lobster and conch

There are also many conservation initiatives underway for seabirds and turtles

4. Implementing Environmentally Sustainable Mariculture Practice

National policy and legislation

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Responsible agencies

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Improving mariculture practices 'on the ground' (demonstrations etc)

- Prawn farm on Coetivy, giant clam and pearl oyster farm on Praslin

5. Controlling/halting introduction of alien species

National policy and legislation

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Responsible agencies

•

Implementing best practices/management measures etc

•

6. Gaps identified and/or particular problems or issues

- Lack of capacity and skills in marine science is a major problem. Some initiatives are underway (e.g. training being carried out by the Shoals of Capricorn project)
- Priority areas for fisheries identified in new EMPS: inshore fishery conservation programme, tuna and billfish management programme.
- Lack of co-ordination and co-operation mechanism for MPAs and no systems plan; Marine Coastal Assessment and Research Programme and MPA Programme as outlined in EMPS being addressed through proposed GEF project
- Lack of cross-sectoral consultation and interaction, despite several relevant intersectoral committees, which results in overlap, conflict and delayed action; some apparent contradictions and conflicts between policies on coastal and tourism development and marine biodiversity protection and sustainable use.

SOMALIA

(Based on manuscript by Rudy van der Elst, Oceanographic Research Institute, Durban, and Amina Abdalla, IUCN-EARO)

Introduction

The people of Somalia have been subjected to major civil war and inter-clan conflict since 1991. Two regions (Somaliland in the north-west and Puntland in the northeast) have attained stability and have evolved workable administrations, although these are not recognized by the international community. In the southern regions (Mogadishu, Kismayo etc) inter-clan conflict continues and thus no effective administration exists, and no marine and coastal biodiversity conservation and management activities are underway. As a result of the past conflict and lack of international recognition, many activities relating to the Convention on Biological Diversity, and to regional agreements such as the Jeddah and Nairobi Conventions were effectively terminated. Despite these negative developments, the war impeded coastal development and hence caused a general reduction in impact along the coastal zone. There is a small amount of NGO involvement in Somaliland and Puntland.

Somaliland and northern coast of Puntland come under the Jeddah Convention; eastern coast of Puntland and remaining southern coast of Somalia to Kenya border is covered by the Nairobi Convention.

1. Integrated Marine and Coastal Management

National policy

- Preliminary discussions and activities underway in Somaliland and Puntland, through PERSGA GEF project and EU-funded IUCN programme

Legislation

- Some early legislation relating to coastal development, but needs revising

Relevant authorities/institutes

- Somaliland: Ministry of Fisheries and Coastal Development with input from the Ministries of Planning, Environment and Transport
- Coastal municipalities have some responsibility e.g. at Berbera, the port authorities have responsibility for environmental matters;
- Puntland: Ministry of Ports, Natural Resources and Fisheries.

Implementation of ICZM (projects, demonstration sites etc)

- Ports of Berbera (Somaliland) and Bosaso (Puntland) have been rehabilitated with assistance from UNCTAD and efforts are underway to implement an ICZM approach at these sites;
- coastal land use planning undertaken at Zeyla using participatory approach

2. Marine and Coastal Protected Areas

Legislation

- None

Responsible authority

- as for ICAM

Establishing a network of MPAs

- Proposals for MPAs in Somaliland (Saardin Islands) and Puntland (); plans for assistance through PERSGA

3. Sustainable Use of Coastal and Marine Living Resources

National policy

- Policies under development for Somaliland and Puntland

Legislation

- Plans to develop legislation once policies in place

Responsible agencies/institutes

- as for ICAM at national level
- Fisheries committees and/or fisheries centres being established in some communities (e.g. Zeyla, Berbera) (fishing co-operatives destroyed in war)

Management and Enforcement

- Monitoring and reporting underway at certain locations; databases being developed to document annual landings and state of stocks and resources.
- Management measures proposed for lobster fishery in Puntland

4. Environmentally Sustainable Mariculture

- No activities at present

5. Controlling/halting introduction of alien species

- No information and no initiatives underway

6. Gaps identified and/or particular problems or issues

- Policies and legislation need to be put into place
- Access to scientific information and technical expertise urgently needed
- Pilot and demonstration projects in all aspects of marine and coastal biodiversity protection and sustainable use are required
- Local initiatives that are underway need recognition, support and encouragement
- Technical assistance is required to introduce regular reporting and management on coastal and marine use and management.

SOUTH AFRICA

(Based on text provided by Rudy van der Elst, Oceanographic Research Institute (ORI), Durban, KwaZulu-Natal).

Introduction

There is a growing political and public awareness of the value of biodiversity and its role in delivering benefits to the people of South Africa. Increased demonstration of ecological services has emphasized the value of the coast to leaders, hence promoting wise development in contrast to development impediments. All national policies and Acts are available to the public via the web (www.gov.za)

The Department of Environmental Affairs and Tourism (DEAT) is the lead agency responsible for policy, compliance, co-ordination and international conventions in the marine and coastal environment of South Africa. Strong scientific institutional arrangements exist, especially the South African Network for Coastal and Oceanic Research (SANCOR), which plans and promotes large marine and coastal research programmes that are focused, well co-ordinated and peer-reviewed at national level (eg the Sea & Coast programme). SANCOR also contributes to education and training, marine policy development, sustainable resource-use, socio-economic aspects of marine resources, marine biodiversity and mariculture development. SANCOR's membership brings together national structures such as the M&CM, the National Research Foundation (NRF), universities, museums, research NGOs, management agencies and stakeholders (more than 50 research institutions and 300 scientists are involved).

1. Integrated Marine and Coastal Management

National policy

- Policy and a White Paper on Sustainable Coastal Development, based on an extensive national consultative programme, has recently been adopted by the South African parliament.

Legislation

- National Environmental Management Act, 1998
- Development Facilitation Act, 1995
- National Water Act, 1998 – allocates water resources and protects public interests in catchments, rivers and estuaries.
- Sea Shore Act, 1935
- Provincial planning ordinances and acts

Responsible authorities & institutions

- Sub-Directorate: Coastal Management of DEAT is concerned with coastal zone management and its implementation at local (Provincial) level
- Environmental MinMec – A forum of all Provinces' environmental MEC's chaired by the national DEAT Minister.
- Interdepartmental Committee for the Coast (ICCOAST): established to address interagency co-ordination, and to be replaced by a Coastal Management Committee of the recently established Committee for Environmental Co-ordination

Implementation of ICZM (projects, demonstration sites etc)

- Regional demonstration projects to promote CZM initiatives and capacity in some provinces (e.g. KwaZulu-Natal:KZN), including the *Green Wedges* study which identifies priority conservation areas along the KZN coast, *Coastal Assets* project which highlights sustainable development opportunities, and the *Burning Issues* study which identifies the most pressing environmental problems in the coastal zone of KZN.
- Manuals, training courses and research projects with a focus on CZM, are providing access to technical support.

2. Marine and Coastal Protected Areas

National Policy

- Consultative process led by DEAT

Legislation

- Marine Living Resources Act, 1998
- National Parks Act, 1976
- Sea Shore Act, 1935
- Provincial Nature Conservation Ordinances

Responsible authority

- DEAT nationally, and National Parks Authority
- Provincial Nature Conservation agencies locally

Establishing a network of MPAs

- Many MPAs already established e.g. Maputaland and St. Lucia Marine Reserves protect biodiversity, including nesting turtles and coral ecosystems. De Hoop and Tsitsikamma MPAs protect primarily regional biodiversity and endemic fish species.
- Not all MPAs are in the right place, having been created by “default” rather than design. The DEAT’s working group on MPAs, with researchers from the University of Cape Town, have developed a method called *COMPARE* which can be used to evaluate MPA sites for selection based on ecological as well as socio-economic criteria.
- New and strategically located MPAs, eg Pondoland, Agulhas and West Coast Parks are being planned.
- Studies are underway on the quantitative dynamics of MPAs, especially for fish and their dispersal to replenish adjoining regions, leading to effective size selection of MPAs.

Management

- MPAs are increasingly seen as an essential and implementable option for fisheries management.

3. Sustainable Use of Coastal and Marine Living Resources

National policy

- Marine Fisheries Policy for South Africa, 1997
- Policy and White Paper on Sustainable Coastal Development, 1999
- Policy on subsistence use of marine resources, 1999

Legislation

- Marine Living Resources Act, 1998
- Sea Birds and Seals Protection Act, 1973

Responsible agencies/institutes

- Chief Directorate of DEAT, Marine and Coastal Management (M&CM) deals with fishery related matters at national level
- KZNNCS in KwaZulu-Natal

Enforcement

- Generally good but compliance in some sectors (eg abalone & lobster) is very poor with illegal take off compromising the TAC.
- Quantitative assessment of stocks is generally good, and status reports on key resources are published.
- Development of operational management plans (OMPs) for key resources provides for target setting and premeditates management action.
- Extensive databases, some for 20 years, provide long-term trends.
- Strong focus on by-catch reduction.

- Work on the use of chemical compounds in marine species for pharmaceutical uses, is advancing and is increasingly co-ordinated as a national activity to ensure improved management.

4. Environmentally Sustainable Mariculture Practice

Historically SA has seen a slow start to mariculture, due to abundant natural resources and low *per-capita* consumption of fish. Currently, a well organised Mariculture Group exists that is integrated with industry and involved in the production of mussel, abalone, oyster and prawns- all on medium scale. There is progress with the culture of vulnerable species such as ornamental fishes, corals and seahorses. This is promoting the reduction (voluntarily and by law) of wild capture and generating revenue to pursue appropriate research (eg at ORI). Environmental impacts have been low to absent.

National policy and legislation

- Consultative process led by DEAT
- Marine Living Resources Act, 1998

Responsible agencies

- M&CM of the DEA

Enforcement

- Basic environmental ‘controls’ are now in place to deal with future expansion of mariculture.

Mariculture practices ‘on the ground’ (demonstrations etc)

- Existing commercial operations are monitored and used to further improve “best practice” techniques.

5. Controlling/halting introduction of alien species

There is a growing awareness of the problem but a general lack of understanding the mechanisms involved. Some studies have been concluded, especially in the cooler Western Cape with mussel and crab invaders. Policies are being developed to deal with ballast water.

6. Gaps and/or particular problems or issues identified

- Environmental matters, and the coast in particular, are still secondary issues in the context of other national priorities such as health, education, defense etc.
- There is substantial provincial variability in capacity, for example the Eastern Cape and Northern Cape are poorly equipped to deal with coastal matters.
- There have been frequent changes in the government hierarchy, leading to a climate of uncertainty in marine science and a growing brain-drain, with a rising trend towards mediocrity in consulting. A major challenge to the future lies in creating stable jobs and careers in coastal and marine resources, so as to attract a new generation of scientists and managers and ensure that technical capacity remains high.
- Donor support is inadequate, partly because South Africa is considered to be “developed” .
- The high levels of crime in South Africa extend to high-value marine resources (such as abalone and lobster) which are poached at alarming levels.
- There is a need to expand communication with the more formal “development and industrial” sectors of society.
- A better understanding of the science of “resource and CZ management” in the context of “best practice” is needed, as well as measurable indicators of ICZM
- Ecosystem approaches need to be better focused so as to avoid a plethora of academic studies with few or no implementable results.
- South Africa should more formally link up the WIO with South Atlantic conservation initiatives as it straddles both regions

- Spatial Development Initiatives (SDIs) promoted by national government as a regional economic development thrust may threaten the ecological integrity of some coastal areas (eg through port and tourism development) unless improved collaboration with local authorities can be achieved.

TANZANIA

(based on information provided by Magnus Ngoile, Julius Francis and Jeremiah Daffa)

Introduction

Tanzania takes a very active role at the regional level in marine biodiversity conservation and sustainable management, and is responsible for leading the development of the work programme for the Nairobi Convention. It has active programmes in many areas relating to the Jakarta Mandate.

1. Integrated Marine and Coastal Management

National policy

- National policy being developed through Tanzania Coastal Management Partnership (TCMP) and White Paper submitted to Cabinet
- Mangrove Management Plan

Legislation

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Responsible authorities/institutes

- TCMP working through the National Environment Management Council (NEMC), currently leading the policy development process
- Mangrove Management Project

Implementation of ICZM (projects, demonstration sites etc)

- Tanga Coastal Zone Conservation and Development Programme
- Kunduchi Integrated Coastal Area Programme
- Rural Integrated Programme Support in Mtwara and Lindi
- Rufiji Environmental Programme

2. Marine and Coastal Protected Areas

Legislation

- Marine Parks and Reserves Act 1995

Responsible authority

- Marine Parks and Reserves Unit (MPRU) within Fisheries Department

Establishing a network of MPAs

- Mafia Island Marine Park
- Mnazi Bay proposed Marine Park
- Eight Marine Reserves (The islands of Mbudya, Bongoyo, Pangavini, Fungu Yasin, Maziwi Island (off Pangani), Tanga Coral Gardens, Chole Bay, and Tutia Reef) – previously under management of Fisheries Department, now transferred to MPRU. Chole Bay and Tutia Reef are part of the Mafia Island Marine Park.

Management

- Expansion of MPRU capacity planned
- Dynamite fishing halted
- Management Plan under development for Mafia Island Marine Park (MIMP)
- Agreement signed between MIMP and the Institute of Marine Sciences for the latter to undertake monitoring and evaluation activities within the Park

3. Sustainable Use of Coastal and Marine Living Resources

National Policy

- Fisheries Policy (1998) which incorporates the precautionary approach

Legislation

- Fisheries Act (1970, amended 1994)
- By-laws being developed at District level, e.g. for closed areas in Tanga Region

- Legislation being considered for TEDs (Turtle Excluder Devices)

Responsible authorities/institutes

- Fisheries Department
- Institute of Marine Science
- Department of Zoology and Marine Biology, University of Dar es Salaam
- Tanzania Fisheries Research Institute (TAFIRI)

Effective enforcement

- Dynamite fishing largely controlled (use of Police Marine and Navy)

4. Environmentally Sustainable Mariculture

National policy and legislation

- Mariculture Guidelines produced by Department of Fisheries with assistance from TCMP
- EIA regulations for mariculture now mandatory

Improving mariculture practices (demonstration sites etc)

- The large scale Rufiji mariculture development halted
- Seaweed farming well advanced as a community activity in Tanga, Lindi and Mtwara
- Pilot shrimp farming initiated in some areas

5. Controlling/halting introduction of alien species

- Potential damage from introduction of exotic seaweeds for mariculture (Philippine species)
- No information and little attention paid to the issue

6. Gaps identified and/or particular problems or issues

- Establishment of more MPAs; assessment of effectiveness of marine reserves
- Human and institutional capacity building
- Sustainable financing mechanisms
- Stock assessment and monitoring of fisheries
- Zoning and site identification for mariculture; identification of suitable marketable alternative species
- Sharing of experiences and documentation of ICM demonstration programmes

TANZANIA - ZANZIBAR

(Based on presentation by Salim Amar Salim and Asha Ali Khatib)

Introduction

1. Integrated Marine and Coastal Management

National policy

- National Environment Policy (1996) includes a coastal management component

Legislation

- Environment Act (1996) provides legal basis for ICM, and village level ICM plans

Responsible authorities/institutes

- Department of Environment has mandate to co-ordinate preparation and implementation of community environmental management plans and integrated coastal area management plans
- Zanzibar interagency planning team, led by DoE has been working on ICM since 1994
- Coastal Resource Management Committees established for Chwaka Bay Paje demonstration site

Implementing ICZM (projects, demonstration sites etc)

- Chwaka Bay-Paje pilot site – profile and strategy prepared, committee developed, activities initiated (e.g. construction of toilets)
- Zanzibar Municipal profile prepared

2. Marine and Coastal Protected Areas

Legislation

- Environment Act (1996), Part VIII
- Fisheries Act No. 66 (1999)

Responsible authority

- National Protected Areas Board established under the Environment Act has the mandate for protected areas policy development and implementation, recommendation of sites for protection, approval of management plans etc.
- Division to be established under the Sub-Commission of Fisheries to be responsible for Conservation Areas

Establishing a network of MPAs

- Menai Bay Conservation Area
- Misali Island reserve
- Chumbe Island reserve (private initiative)
- Mnemba Island reserve (private initiative)

Management

- Patrols involving local communities have been effective in the Menai Bay Conservation Area

3. Sustainable Use of Coastal and Marine Living Resources

National policy

- Environmental Policy of 1996 covers fisheries

Legislation

- Fisheries Act (1999)
- Environment Act (1996)

Responsible authorities/institutes

- Commission of Natural Resources, Fisheries Division, has mandate to control harvesting, collection, importing and exporting of any marine resources
- Under the Environment Act, an authority is to be made responsible for conservation of biodiversity, with mandate to develop national biodiversity strategies etc, prepare inventories, develop lists of threatened and endangered species, devise measures to remove threats to biodiversity, and regulate international and national trade in biodiversity

Effective enforcement

- Most enforcement takes place in MPAs, due to community participation in enforcement

4. Environmentally Sustainable Mariculture

National policy and legislation

- Legislation on mariculture in final stages of preparation

Responsible authority

- Commission for Natural Resources

Improving mariculture practices (demonstrations etc)

- Seaweed farming introduced in 1983; commercial production started in 1988. Has a relatively large impact on household incomes through cash income to women even though total value of harvest is small. Fish farming started at Pemba and Makoba; research underway on fish and seaweed farming.

5. Controlling/halting introduction of alien species

- No information or activities

6. Gaps identified and/or particular problems or issues

- Human and institutional capacity building
- Sustainable financing mechanisms
- Stock assessment and monitoring of fisheries

PART III: REPORTS OF REGIONAL ORGANISATIONS

1. UNEP – United Nations Environment Programme

UNEP plays an important role in the region, particularly through the Eastern African Regional Co-ordination Unit (EAF-RCU) based in the Seychelles. This is responsible for co-ordination activities related to the Nairobi Convention. In future a Joint Implementation Unit for the Nairobi and Abidjan Conventions will be established in Nairobi.

The UNEP EAF-RCU is also responsible for the implementation of the Eastern African component of ICRAN (International Coral Reef Action Network) programme on management of coral reef areas which is being developed through the Regional Seas Programme with funding from the UN Foundation. This involves a review of MPA management in the region, the policies being used and the impact of MPAs on coral reefs. The report will form the basis for development of MPA management guidelines for the region. Phase 2 will involve the establishment of demonstration MPAs in the region. UNEP is also working with the World Conservation Monitoring Centre on a regional coral reef assessment project.

UNEP has also sponsored the development of an Eastern Africa Coastal and Marine Environment Database and Atlas. As part of this a GIS database was initiated in Kenya in 1995 and a country atlas published in 1998. Similar atlases are in preparation for Tanzania and Mozambique. UNEP is also supporting the publication of an annotated bibliography of the coastal and marine environment in the WIO (Nyaka and Francis, in prep).

2. WESTERN INDIAN OCEAN MARINE SCIENCE ASSOCIATION

The Western Indian Ocean Marine Science Association (WIOMSA) is a non-governmental and non-profit organization dedicated to promoting the educational, scientific and technological development of all aspects of marine science throughout the Western Indian Ocean region. The expectation is that marine science will contribute to the sustainable use and conservation of coastal and marine resources. The Association is based and registered in Zanzibar, where its secretariat is hosted by the Institute of Marine Sciences of the University of Dar-es-Salaam.

WIOMSA's goal is to link marine scientists and coastal managers so that they draw upon one another's knowledge and experience in seeking solutions to coastal problems. WIOMSA believes that regional scientists and coastal management professionals will be better served by understanding the relevancy of emerging issues using an interdisciplinary approach. Both short-term and long-term strategies are needed to successfully improve regional capacity and to solve regional coastal issues.

WIOMSA is committed to training a core group of professional coastal/project management practitioners from each country in the region. A rapid assessment of capacity building efforts is currently underway in the region, with mini-capacity building workshops being conducted at the same time. The workshops will train selected coastal professionals and practitioners on the common methodology policy cycle process of coastal management, as well as examine the individual skills and core competencies of coastal professionals in the region. The key target groups will be on-going coastal management activities (working at local and national levels), donors, and in-country training and education programs. Another key targeted party will be the region's USAID bi-lateral missions.

Based on the outcome of the needs assessment, WIOMSA will determine its role in enhancing capacity for integrated coastal management implementation in the region. The capacity building program may consist of learning-by-doing activities, or an intensive short course. The curriculum will take into consideration the knowledge, experience, managerial skills and educational background of the region's marine scientists and managers. Regional issues, needs, priorities and each nation's stage of development will also be considered. The training will be targeted at marine scientists and managers who are, or will be, involved in various stages of the coastal management process. WIOMSA recognizes that participants may need to be reoriented in how to use their skills and expertise in an integrated coastal management context. In the future, the recipients of this training will conduct coastal management training courses in their respective countries.

WIOMSA is also developing capacity within the region for MPA management, under a joint project with the Institute of Marine Science, University of Dar es Salaam, and the Coastal Zone Management Centre, Netherlands. A regional training course in MPA management has been held and a training manual developed. The latter was tested in the training course and will be revised and published. Additional activities under the project include strengthening links with relevant regional programmes, conventions and networks concerned with MPAs, and carrying out further training activities.

WIOMSA also provides small research grants for scientists within the region, directed towards projects that focus on the link between science and social science.

3. SECRETARIAT FOR EASTERN AFRICAN COASTAL AREA MANAGEMENT (SEACAM)

SEACAM was established in 1997, at the request of the Eastern African coastal countries, with the aim of assisting the region to implement and coordinate coastal management activities following up on the Arusha Resolution (1993) and the Seychelles Statement (1996) on ICZM. It is hosted by the MICOA in Maputo, Mozambique and has been funded largely by Sida/SAREC. There are five priority areas of focus:

- Capacity Building of local NGOs
- Information Dissemination, through publications and an ICM database
- Coastal Management Leadership (or Public Sector Management)
- Environmental Assessment of Coastal Aquaculture and Tourism
- Sustainable Financing of coastal management programmes.

It is overseen by a Reference Group comprising representatives from participating states. Most of its work is carried out in partnership with national and regional organizations, to avoid duplication of effort. It does not carry out on-the-ground project implementation, but rather places emphasis on communicating lessons learned within the region, and in other countries, in IMCAM. A priority activity in year 2000 will be the organisation of the Maputo Ministerial Conference, in collaboration with MICOA and WIOMSA.

Capacity Building of Local NGOs

Four training courses on project management have been organised, and 80 NGOs officers from the Eastern African countries, as well as Angola and Namibia, have been trained. The training manual, **From a Good Idea to a Successful Project: Development and Management for Local Level Projects** was published in May 1999, and disseminated in the region and other parts of the world (SEACAM, 1999). A training course for the francophone island states will be organised and the manual translated into French.

Environmental Assessment of Coastal Aquaculture and Tourism

Nearly 40 government managers, NGO officers and private sector practitioners from 9 countries have been trained in environmental assessment of coastal tourism and guidelines have been published (Grange and Odendaal, 1999). Similarly, 30 government managers, NGO officers and private sector practitioners have been trained in environmental assessment of Coastal Aquaculture and guidelines have been published (Hambrey et al., 2000). Over 400 copies of both guidelines have been disseminated. Both sets of guidelines are to be translated into French and Portuguese, and summary booklets are to be produced.

Eastern Africa Coastal Management Database

This internet database (www.seacam.mz) includes coastal projects (over 2500), programmes, research institutions and individuals, many dealing with biodiversity and conservation. It is an excellent source of information to help share information and collaboration and has been well received in the region and other parts of the world.

Coastal Management Leadership

A Coastal Management Leadership Programme is being organised in South Africa and Seychelles and a second phase of this programme will be developed.

Sustainable Financing

A training course on sustainable financing of coastal management will be developed

Management of Marine Protected Areas

In 2000, SEACAM will work with partners to develop an MPA Network with CZMC and KWS. It is also contributing to MPA Management training courses with other partners and has commissioned a Vision Paper on the future of MPAs (Siegel in prep.).

4. WWF – World Wide Fund for Nature

The Global 200 is a series of ecoregions that represent all the major habitat types in terrestrial, freshwater and marine realms across the continents and ocean basins that deserve greatest emphasis because of their outstanding biological features. The East African Marine Ecoregion (EAME) is one of the Global 200 where WWF will apply the eco-region based conservation (ERBC) approach.

WWF defines an ecoregion as ‘a large unit of land or water containing a geographically distinct assemblage of species, natural communities, and environmental conditions’. The boundaries of an ecoregion encompass an area within which important ecological and evolutionary processes most strongly interact. Ecoregions provide two major advantages for conservation - one at the global planning level, the other at the regional planning and conservation action level.

First, ecoregions offer a means for objectively categorizing and assessing the panorama of biodiversity on a global scale. Second, the conservation of ecoregions requires planning and action at larger scales and with longer time horizons than most conservation and sustainable development effort to date. Conservation plans and actions are therefore more comprehensive, both in terms of biological goals and in addressing socio-economic factors that affect the sustainable use of resources and biodiversity.

Ecoregions provide a logical scale for developing conservation strategies because they match the scale of ecological and evolutionary processes. Because ecoregions can transcend political boundaries, decision-makers and others are encouraged to think, plan and act at international scales. In so doing, there is a greater chance that large-scale ecological and evolutionary processes that result from approaches based on political units will be addressed. Working at the ecoregional scale forces more thorough consideration of the cultural, economic, and political factors affecting human communities and their environment.

The East African Marine Ecoregion comprises the Western Indian Ocean coastal zones of Somalia (north to ...), Kenya, Tanzania and Mozambique (south to ...) and is a combination of two Global 200 ecoregions: East African Marine Ecosystems and East African Mangroves. The area has high levels of species diversity, particularly those of coral and reef fish that characterize the Western Indian Ocean. The seaward boundary is yet to be defined.

WWF has been active at four sites in the East Africa Marine Ecoregion: Bazaruto Archipelago in Mozambique, Mafia Island in Tanzania, Menai Bay in Zanzibar, and Kiunga Marine Reserve in Kenya. These projects have adopted a strategy of working with the local communities to promote the sustainable utilization of resources. National institutions and governments have also been involved in creating the necessary policy environment. For example, WWF’s close working relationship with the Tanzanian government and local Tanzanian coastal communities resulted in the creation of Mafia Island Marine Park and Menai Bay Marine Reserve. These projects will continue to be implemented in accordance with their laid out goals and objectives. However, the ERBC approach progresses, opportunities for synergy between the projects and the former will be promoted.

WWF aims to promote the ERBC approach to identify which activities can best address the region’s problems and threats and conserve biodiversity and the functionality for the longer term. The ERBC follows general guidelines that seek to identify the biological situation on the ground and threats affect the resources, including the key drivers behind them. Areas that are essential for the long-term survival of biodiversity will be identified and their conservation status and potential threats assessed. Strategies that ensure sustainability of biodiversity and functions of these key areas will be identified and supported.

A key factor in ERBC is participation by a wide range of governmental and non-governmental institutions, donors, private sector, local people and individuals. No one organisation can alone successfully implement a

programme of the ERBC magnitude. WWF therefore seeks to promote ERBC by supporting the planning process that leads to the development of a conservation plan and specific activities that need to be undertaken. Further, WWF will implement some of the activities in partnership and collaboration with other interested parties, and will assist in strengthening the capacities of potential partners as necessary.

To help identify the key areas for biodiversity and ecological processes, threats, major players and relevant issues, a series of planning activities are envisioned. The start is a rapid appraisal exercise (reconnaissance), followed by in-depth biological and socio-economic assessments. These stages lead to the identification of a biological vision of what a healthy functioning ecoregion should look like over the long-term. Articulation of conservation action, even as the socio-economic aspects are taken into consideration, should derive from this vision. A plan with specific activities for implementation is the final stage. An elaboration of the various ERBC planning stages and how they are currently playing out in EAME are given below.

The ERBC approach will address many of the areas covered by the Jakarta Mandate: marine and coastal management; marine and coastal protected areas; sustainable use of coastal and living resources; sustainable use of coastal living resources; environmentally sustainable mariculture practices; and controlling/halting introduction of alien species. Furthermore, ERBC seeks to relate activities to the long-term conservation of biodiversity and sustainable use of resources. In addition, the necessary mechanism for monitoring progress and the needed capacity to carry out the various activities are also focal areas under the ERBC approach. WWF has other relevant initiatives and that could address issues at other levels. The global Endangered Seas and Climate Change campaigns can be utilised to address issues at those higher levels and at can also be linked directly to field activities.

5. CORDIO – Coral Reef Degradation in the Indian Ocean

The CORDIO programme was set up in 1999 to respond to the degradation of coral reefs throughout the Indian Ocean that occurred particularly as a result of the bleaching and mass mortality of coral that took place during the 1998 El Nino. Monitoring of the reefs has been carried out in many of the countries in the region. Rapid assessments of socio-economic impacts, particularly on tourism and fisheries, have also been undertaken. Research activities will be continued in these areas, with particular emphasis on alternative livelihoods and other socio-economic issues, and on restoration and recovery of damaged reefs.

6. PROGRAMME REGIONAL ENVIRONNEMENT/COMMISSION DE L'OCEAN INDIEN (PRE/COI)

The Regional Environment Programme of the Indian Ocean Commission is funded by the EU. It has been running since 1995 and will end in 2000. It covers five countries – Comores, Madagascar, Mauritius, Reunion and Seychelles – and is implemented through a regional office in Mauritius. It provides support for the development of regional and national policies concerning the management of the coastal zone and protection of endemic and endangered flora. However, its main objective has recently focused on supporting national programmes and policies for ICZM.

7. RECOSIX (REGIONAL CO-OPERATION IN SCIENTIFIC INFORMATION EXCHANGE – WIO)

This is a network for exchange of information on marine and coastal issues, based in Mombasa, Kenya, and established with assistance from the Intergovernmental Oceanographic Commission (IOC) and the Belgian Administration for Development Co-operation. It hosts two databases: MASDEA – a regional marine biodiversity database funded by UNESCO, and WIObase – a marine science information resource centre. It also holds seminars, disseminates information and produces a regular newsletter.

ANNEX 1: Principal elements of the Jakarta Mandate

1. Integrated Marine and Coastal Area Management (IMCAM)

The Jakarta Mandate encourages the use of ICM as the most suitable framework for addressing human impacts on marine and coastal biodiversity and for promoting its conservation and sustainable use. In particular, Parties are recommended to:

- establish and/or strengthen institutional, administrative and legislative arrangements for ICM and integrate ICM plans and strategies within national development plans
- promote ICM as the framework for addressing impacts of land-based activities on marine and coastal biodiversity by, among other things, minimizing or eliminating inputs of pollutants
- develop and adopt integrated management measures, including land/habitat use capability analysis and planning for multiple use; resource use practices based on precautionary ecosystem management approaches and best management practices; and sustainable tourism planning and management
- carry out environmental impact assessments of all major coastal and marine development activities with special attention to biodiversity, and taking into account cumulative impacts. Undertake systematic monitoring and evaluation of project impacts during implementation
- where appropriate and practical, prevent physical alteration, destruction and degradation of vital habitats and pursue restoration of degraded habitats, including spawning and nursery areas
- undertake and exchange information on demonstration projects as practical examples of ICM
- in cooperation with the Global Programme of Action for the Protection of the Environment from Land-based Activities, address the impacts of land-based activities on marine and coastal biodiversity and identify methodologies and research to assess these impacts
- address socio-economic needs of coastal communities in IAM planning and implementation
- promote rapid appraisal techniques to improve the conservation and management of marine and coastal biodiversity
- address impacts on marine and coastal biodiversity of desludging and pollution by maritime vessels, and mitigate adverse effects
- consider the effectiveness of both area and species management as tools to provide a balanced approach

2. Marine and Coastal Protected Areas (MPAs)

Recommended Action by the Parties

- based on consideration of biogeography and scale, and CBD objectives, establish or consolidate representative systems of marine and coastal protected areas, and enhance linkages and information exchange among the sites
- conservation measures related to MPAs should emphasize the protection of ecosystem functioning, in addition to protecting specific stocks
- incorporate MPAs within a broader framework for multiple use planning (as exemplified by UNESCO's Biosphere Reserves)
- research and monitor MPAs to assess their value
- apply, as appropriate, rapid assessment techniques to identify and improve the management of MPAs
- consider critical habitats of living marine resources as an important criterion for the selection of MPAs, within the framework of IAM encourage the participation of local communities and resource users in the planning, management and conservation of MPAs
- consider all three levels of biological diversity (i.e., genetic, species and ecosystem), and factors determining their structure and function, in the development and implementation of MPA management plans

3. Sustainable Use of Coastal and Marine Living Resources (CMLR)

Recommended Action by the Parties:

- base management decisions on the precautionary approach and best available and sound scientific knowledge, research and information, taking into account ecosystem impacts
 - local communities, users and indigenous peoples should be involved in the conservation/management of resources
 - national legislation should be implemented to ensure the conservation/ sustainable use of CMLR in conformity with the CBD, U.N. Convention on the Law of the Sea (UNCLOS), Agenda 21, and the FAO Code of Conduct for Responsible Fisheries
 - reduce waste (such as waste through discard, spoilage or mortality in trade)
 - accede to and fully implement and enforce existing international agreements addressing over-exploitation and conservation of CMLR, especially the Agreement on Straddling and Highly Migratory Fish Stocks
 - augment the present mono-species approach to modelling and assessment by an ecosystem, process-oriented approach, based on research of ecosystem processes and functions, with an emphasis on identifying ecologically critical processes
 - support FAO's efforts to provide advice on management and technology tools (as recommended in the FAO Code of Conduct)

4. Mariculture

The COP-2 recommended that Parties implement environmentally sustainable mariculture practices including:

- incorporate mariculture into integrated marine and coastal zone management plans, particularly taking into account the vulnerability of areas of high biological value
- subject proposed mariculture activities to prior environmental and social impact assessments, incorporating the participation and needs of local and indigenous communities
- develop regulations for mariculture activities
- minimize the use of chemicals, high nutrient release and freshwater diversions (specific steps to achieve this include use of chemicals only in a prescribed and responsible manner, improvement in feed technology, and in promotion of integrated farming and polyculture),
- ensure that mariculture operations do not result in the over-exploitation of natural stocks through harvesting of wild larvae
- introduction of alien species, products of selected breeding and living modified organisms resulting from modern biotechnology should be treated as an introduction into the wild (due to difficulties of complete containment); consequently, adherence to applicable international codes of practice (such as the International Commission for Exploration of the Sea and the Organisation Internationale Epizootique) should be a minimum requirement
- in regards to introduction of alien species, products of selected breeding and living modified organisms resulting from modern biotechnology, risk assessments should be rigorous, must correspond with the precautionary principle, and an appropriate monitoring programme must be put in place if introduction goes ahead
- give preference to the use of local species
- encourage development of technologies to ensure a more complete containment of mariculture organisms
- make conservation of genetic diversity in wild stocks (which farmed populations are derived from) an objective of overall management
- undertake, where possible, restoration programs in areas where unsustainable mariculture operations have already substantially reduced or destroyed natural habitats and ecosystems

5. Alien Species

Parties are recommended to:

- prevent, control, or eradicate those alien species which threaten ecosystems, habitats or species; this might include the implementation of international protocols and guidelines (e.g., IMO ballast water guidelines or the Code of Practice of the International Council for the Exploration of the Sea)
- conduct environmental impact assessments, including risk assessment, prior to intentional introductions of alien species and canal construction linking coastal water bodies, and consult with neighboring States before introducing alien species into shared waters; to minimize unintentional introductions, assessments might include: identification of primary introduction pathways and types of organisms with greatest danger potential; mitigation techniques to minimize unintentional introductions; monitoring to identify the establishment of alien species; and development of means for elimination of hazardous alien species
- prior to intentional introductions, assess possible indigenous species alternatives, whether the introduced species can be adequately monitored and whether adverse effects can be reversed within two human generations; additional assessment should include:
 - biological information on the species in its native habitat, including life stages and trophic level;
 - results of previous introductions elsewhere;
 - potential impact on indigenous species;
 - associated pathogens and parasites and ability to treat or screen for such organisms;
 - potential for habitat modification; and
 - potential for interbreeding with and deleterious genetic impacts on indigenous species/stocks
- educate the general public to the possible ecosystem dangers that could result from the release of ornamental species and unauthorized releases of species for sport fisheries
- conduct research to further understand the impacts of alien species on in-situ conservation
- establish, under the CBD's clearing-house mechanism (CHM) or other data exchange mechanism, information on:
 - normal or pathogenic flora and parasites of aquatic species being introduced for mariculture or stocking programs;
 - infectious agents detected in indigenous, wild or alien cultured stocks;
 - parasitic life-cycles;
 - pathogen-specific methods of detection;
 - disease outbreaks and immune status in commercially shipped stocks; and
 - environmental impact or similar assessments to evaluate effective and ineffective methodologies for preventing the introduction of, controlling, and eradicating alien species and minimizing their adverse effects
- support efforts of the IMO to draft ballast water guidelines and review those guidelines, to ensure their consistency with the CBD's objectives and provisions
- contact relevant international bodies (e.g., FAO) with a view to ensuring adequate controls of intentional introductions of alien or living modified organisms that have adverse effects on marine biodiversity
- review information provided by Parties and other sources on the assessment of alien species introductions to gain from past experience

ANNEX 2: Principal marine and coastal projects in the WIO region relating to the Jakarta Mandate

(based on data originally compiled by Julius Francis, IMS)

PROJECT / PROGRAM / PLAN	COUNTRY	FUNDING	ISSUE				
			ICZM	MPA	Marine resources	Mari-culture	Alien species
Kiunga Marine Reserve	Kenya	WWF		X			
Nyali-Bamburi-Shanzu ICM	Kenya	UNEP/FAO/USAID/URI	X		X		
Kisite Marine Reserve	Kenya	BMZ		X			
Diani Marine Reserve	Kenya	IUCN					
National ICM policy	Kenya	USAID/URI					
Tanga Coastal Zone Conservation and Development Programme	Tanzania	IRISH AID	X		X	X	
Kunduchi ICAM	Tanzania	Sida	X				
Mangrove Management Plan	Tanzania	NORAD	X			X	
Mafia Island Marine Park	Tanzania	NORAD/WWF		X	X		
Menai Bay Conservation Area	Tanzania	WWF		X	X		
Chwaka-Paje Coastal Zone Management Project	Tanzania	UNEP/FAO	X				
Tanzania Coastal Management Partnership	Tanzania	USAID/URI	X				
Mnazi Bay proposed Marine Park	Tanzania	UNDP/GEF		X			
Mecufi CZM	Mozambique	NORAD/UNDP	X				
Coastal Zone Management Unit	Mozambique	DANIDA	X				
Xai-Xai District Coastal Area Project	Mozambique	UNEP/FAO	X				
Bazaruto National Park	Mozambique	WWF		X			
Olifany River Project	South Africa						
Ken Project (Kosy Bay)	South Africa						
ICM/MPAs national policy?	Madagascar	WWF	X	X			
Traditional Fisheries in Southwest Madagascar	Madagascar	UNDP			X		
North Mananara Marine Park	Madagascar	Netherlands/UNESCO		X			
Biodiversity Conservation /Moheli Marine Park	Comoros	UNDP/GEF/IUCN		X	X		
Indian Ocean Commission	WIO Islands	EU	X				
CORDIO (Coral reef degradation)	WIO Region	Sida					
Implementation of Jakarta Mandate	WIO Region	NORAD/IUCN					
Secretariat for Eastern Africa Coastal Area Management (SEACAM)	WIO Region	Sida/WB	X			X	

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IUCN - Eastern Africa Marine and Coastal Conservation Programme

The aim of IUCN's Eastern Africa Marine and Coastal Programme, which has been operating since 1992, is to facilitate the maintenance of the biodiversity and ecological processes of marine and coastal ecosystems in East Africa, the restoration of their functioning where this has been impaired, and the sustainable and equitable use of marine resources. Current priorities include providing assistance with the establishment and effective management of marine protected areas, the implementation of integrated coastal management and the development of sustainably managed fisheries. The programme supports a number of projects in Tanzania, Kenya, Comoros and Seychelles and also facilitates several regional initiatives, particularly in relation to UNEP's Nairobi Convention.

The Nairobi Convention

The Nairobi Convention for the Protection, Management and Development of the Marine and Coastal Environment of the Eastern African region came into force in May 1996. The Convention has two protocols: one concerning Protected Areas and Wild Fauna and one concerning Cooperation in Combating Marine Pollution in Cases of Emergency in the Eastern Africa Region. All the Eastern African States of Comoros, Kenya, Mauritius, Tanzania, Seychelles, Somalia, Mozambique, Reunion (France) and Madagascar have ratified the Convention and the two protocols. UNEP is the Secretariat of the Convention and is responsible for organizing a meeting of the Conference of Parties every two years to review progress and to develop new work programmes. The Regional Coordinating Unit in the Seychelles promotes programmes and projects that enable nations and the people of the Eastern African Region and their partners to protect, manage and develop their marine and coastal resources in a sustainable way. The priority areas for 2001-2003 are: coral reefs and associated ecosystems; land based sources of pollution; marine protected areas; and coordination with other regional programmes and partnerships.

Convention on Biological Diversity

The Convention on Biological Diversity entered into force in 1993. It is the only global treaty that addresses the three levels of biological diversity: genetic resources, species and ecosystems. It is also the first to recognise that conservation of biological diversity is a common concern of humankind, that investments in conserving biodiversity will result in environmental, economic and social benefits, and that economic and social development and poverty eradication are priority tasks. Its triple objectives are to conserve biological diversity, to use the components of biological diversity in a sustainable way, and to share equitably the benefits arising out of genetic resources. Over 175 countries and the European Community have ratified the Convention. They have committed themselves to developing national biodiversity strategies and action plans and to integrating the conservation and sustainable use of biodiversity into decision-making across all economic sectors.



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CONVENTION ON
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