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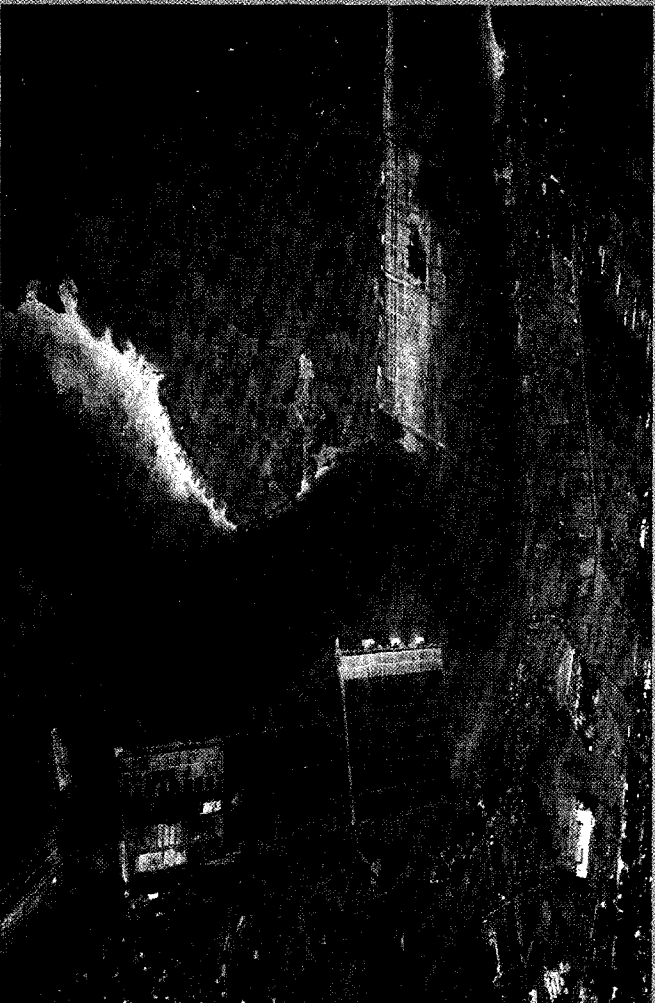


EDITORS

O. Linden & C. G. Lardin

The Journey from Arusha to Seychelles

*Successes and failures of
integrated coastal zone management
in Eastern Africa and island states*



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The Journey from Arusha to Seychelles

**Successes and failures in integrated coastal zone management
in Eastern Africa and island states**

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in Eastern Africa and island states***

Proceedings of the Second Policy Conference on
Integrated Coastal Zone Management in Eastern Africa and Island States
Seychelles, 23–25 October, 1996

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List of Acronyms

AFRC	Albion Fisheries and Research Centre	KMFRI	Kenya Marine and Fisheries Research Institute
AIDAB	Australian Agency for International Development (now AUSAID)	KPA	Kenya Ports Authority
BEI	Banque Européenne d'Investissement	KWS	Kenya Wildlife Services
CBO	Community-Based Organisation	MICOA	Ministry for Coordination of Environmental Affairs, Mozambique
CIDA	Canadian International Development Authority	MIMP	Mafia Island Marine Park
CFD	Caisse Française de Développement	MWF	Mauritian Wildlife Foundation
COI	Indian Ocean Commission	NEAP	National Environmental Action Plan
CZM	Coastal Zone Management	NGO	Non-Governmental Organisation
DANCED	Danish Cooperation for Environment and Development	NORAD	Norwegian Agency for Development Cooperation
DANIDA	Danish International Development Authority	ODA	Overseas Development Administration, United Kingdom
DGIS	Directorat Général de la Coopération Internationale des Pays-Bas	ORSTOM	Institut Français de Recherche Scientifique pour le Développement en Coopération
EAF	Eastern African Coastal Marine Environment Database and Atlas	PRE-COI	Programme Régional Environnement – Commission de l'Océan Indien
EEZ	Exclusive Economic Zone	RECOSCIX	Regional Cooperation in Scientific Information Exchange in the Western Indian Ocean
EIA	Environmental Impact Assessment	-WIO	
EPZA	Export Processing Zone Authority	SADC	South African Developing Countries
ESA	Environmentally Sensitive Area	SANCOR	South African Network for Coastal and Oceanographic Research
FAO	Food and Agriculture Organisation	SAREC	Swedish Agency for Research Cooperation with Developing Countries (now Sida/SAREC)
FDA	Fonds de Développement de l'Aquaculture	Sida	Swedish International Development Cooperation Agency
FED	Fonds Européen de Développement	SFA	Seychelles Fishing Authority
FINIDA	Finish International Development Authority	SIDS	Small Island Developing State
GIS	Geographic Information System	TAFIRI	Tanzania Fisheries Research Institute
GEF	Global Environment Facility	UDSM	University of Dar es Salaam
GTZ	Deutsche Gesellschaft für Technische Zusammenarbeit, Germany	UEM	Eduardo Mondlane University, Maputo
IAEA	International Atomic Energy Agency	UNCED	United Nations Conference on Environment and Development, Rio de Janeiro, 1992
ICAM	Integrated Coastal Area Management	UNDP	United Nations Development Programme
ICZM	Integrated Coastal Zone Management	UNEP	United Nations Environment Program
IEM	Integrated Environmental Management	UNESCO	United Nations Educational, Scientific and Cultural Organisation
IFAD	International Fund for Agricultural Development	USAID	United States Agency for International Development
IHSM	Institut Halieutique et des Sciences Marines, Madagascar	WIOMSA	Western Indian Ocean Marine Science Association
IMS	Institute for Marine Sciences, Zanzibar, Tanzania	WMO	World Maritime Organisation
IOC	Intergovernmental Oceanographic Commission	WWF	World Wide Fund for Nature
IUCN	International Union for the Conservation of Nature		
JICA	Japan International Cooperation Agency		
KEFRI	Kenya Forestry Research Institute		

Foreword

The shoreline of Eastern Africa including the island states extends 11 000 linear kilometres and is inhabited by 30 to 35 million people. Tourism is an important economic activity in this region, and in many of the countries it is largely coastal based. The region receives an estimated two million visitors per year, bringing in about US\$1 billion. Perceived economic opportunities act as magnets for large numbers of people who migrate to the coast. In some countries of the region, the entire population can be considered to be coastal and urbanisation is high. Therefore, coastal environmental and natural resource management issues are important throughout the region.

The growing number of coastal fishermen, at present estimated at about 100 000 on a full time basis, means that fishing efforts continue to increase, with larger scale ventures and more destructive fishing methods. This increased pressure has resulted in declining catches; they are now only about 40% of what they were 15 years ago. About 50% of East African fishermen risk losing their jobs in the coming decades if this trend is allowed to continue. Coastal tourism, the main foreign exchange earner in much of the region, is also facing unprecedented problems. The expansion of tourism has led to larger scale infrastructure development in the coastal zone of several countries, without the benefit of environmental assessments. As a result, in some countries income from tourism has dropped dramatically in the last several years, partly due to environmental degradation. For example, in Kenya income from tourism has dropped by 40% during the last few years.

Increased flows of organic wastes and nutrients are being generated from every major urban centre in the region. In almost no country does more than 20% of the sewage receives proper treatment. Inland activities such as inappropriate agricultural methods exacerbate runoff and siltation. In many watersheds soil erosion rates of around 25–40 tonnes per hectare and year are typical. It is estimated that approximately 500 million cubic metres of sediment flow into the Western Indian Ocean every year. Large and critical parts of the coastal zones are deteriorating, owing to erosion, biodiversity loss, ecosystem degradation, nutrient flux imbalances and human competition for coastal resources. As human activity and presence increase, consequent environment damage forecloses the future sustainability of development. Not only are peoples' lives in jeopardy but the stability of local, national and regional economies is at stake.

The environmental and natural resource management ministers of the region met in 1993 in Arusha, Tanzania, to address these problems at a regional level. The ministers considered and endorsed a Resolution containing various recommendations dealing with the coastal zones of their countries (*The Arusha Resolution on Integrated Coastal Zone Management in Eastern Africa including Island States*). Integrated Coastal Zone Management (ICZM) was put forward as the best tool to address the multiplicity of issues involving the coastal zones. In the years since Arusha, there have been a number of initiatives both regionally and on the national level, to try to achieve improved management of the coastal environment and resources. In particular, the Meeting of Practitioners in ICZM in Tanga, Tanzania, in August 1996, provided an opportunity to share experiences and give examples. The present report is the outcome of *The Second Policy Conference on Integrated Coastal Zone Management in Eastern Africa and Island States* that was held in Seychelles 23–25 October, 1996. Here,

policy makers from the region assessed successes and failures in ICZM since Arusha, and discussed and agreed on actions needed to improve the situation.

On behalf of Sida and the World Bank we wish to thank the organisers, the Ministry of Foreign Affairs, Planning and Environment of Seychelles, for the preparatory work which made the Conference a success. Delegations representing all the coastal and island countries of the region, often headed by the minister in charge, participated in the Conference. This shows the commitment of the Governments of the region to the issues related to improving the protection and management of coastal areas in the different countries. We are convinced that many of the recommendations will be enacted in the near future and that more of the principles of Integrated Coastal Zone Management will be applied in the planning and implementation of coastal development projects. Early successes on the ground will be important in convincing decision makers to put coastal management at the top of the development agenda. If new management methodologies and institutional structures can be established to take care of previously unmanaged resources, there will be reason to regard the future of the coasts and their people as one of the prime resources driving economic development in the region.

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Opening Statement by HE France Albert René, President of the Seychelles

Your Majesty, Former President, Ministers, Excellencies, Ladies and Gentlemen.

It is a great pleasure and a privilege for me to welcome His Majesty King Carl Gustaf to this Conference. His Majesty's presence here today denotes the importance that he attaches to the issues that will be addressed by this Conference.

I would also like to warmly acknowledge the presence of all the Ministers and all of you distinguished representatives of international organisations who have come such a long way to be with us today.

Your Majesty, Excellencies, Ladies and Gentlemen.

The people of Seychelles consider you to be our privileged guests. Business aside, we urge you to make the most of our hospitality and to have an enjoyable and pleasant stay in our country. It is appropriate that on the eve of the 21st Century we are all gathered here to decide on a matter of the greatest importance and, may I add, survival for the region of Eastern and Southern Africa, including the island states of the Indian Ocean.

All of our countries hold significant areas of coastal zones, which have borne the impact of population pressure, environmental degradation and inadequate institutional frameworks. The challenges facing us today are manifold, but as I see it today, from the experience of Seychelles, the system of Integrated Coastal Zone Management may be the one solution, which offers the greatest potential and most avenues for the management of resources, non-duplication of scarce financial funds and the effective use of limited skilled human resources. Integrated Coastal Zone Management has emerged as a viable and proven alternative to the more traditional methods of planning and management in the coastal zone. It provides a framework which systematically and comprehensively links all critical factors and elements of the somewhat "elusive" sustainable development equation, a prerequisite for the countries of the region of Eastern and Southern Africa and the island states.

Moreover, Integrated Coastal Zone Management makes it possible for decision-makers, politicians, scientists, local communities, private sector groups etc. to have, a common vision and common objectives. This is a dynamic process which ensures that the planning, implementation and integration of related activities are mainstreamed into the national processes of sustainable development at all levels, cutting across sectors and narrow interests.

The time has come for us to realise that the systematic globalisation of the world and the vulnerability of developing economies will make it even harder to conserve our coastal zones and natural environment, whilst, at the same time, improving our economic performance or, at least, maintaining the basic needs for food, peace, stability and dignity for our people and societies.

Hence, in recognising the close links between the "conservation of the natural resources" and the "macro-economic" situation of the country, one has to look at more innovative and practical ways of ensuring that the exploitation of natural resources does not have irrevers-

ible adverse impacts on the environment, in order to find sufficient foreign exchange earnings to repay debts.

I believe, in this context, that the programme of debt conversion for conservation purposes becomes all the more a necessity for the region as a whole. Ideally, this programme should seek to channel financial resources into the region's coastal management actions. This will reinforce the region's ability to face the challenges of today with brighter prospects for the challenges of tomorrow.

With this in mind, I would like to reiterate the commitment of the Government and people of Seychelles to the principles and objectives of Integrated Coastal Zone Management. I am convinced that this Conference, graced by the presence of His Majesty King Carl XVI Gustaf, will provide the impetus for an innovative management process to help us to be aware of the implications for tomorrow, to help us define "How" and "Where do we go from here".

Before concluding, I would like to thank the Swedish Government, the Swedish International Development Cooperation Agency (Sida) and the SAREC Marine Science Programme and last but not least the World Bank Environment Division for contributing and making it possible to organise this important Conference in Seychelles.

Your Majesty, Excellencies,

I now have the pleasure to declare open the Second Ministerial Conference on Integrated Coastal Zone Management in Eastern Africa including Island States.

I wish you all a very successful Conference and a most pleasant stay here in Seychelles.

Thank you.

Statement by HM King Carl XVI Gustaf of Sweden

Mr President, Ministers, Excellencies, Ladies and Gentlemen.

Less than a week ago I was hosting a meeting in Stockholm, the fourth Royal Colloquium, dealing with water environment issues. Our theme was the Baltic Sea and the disturbances caused by agricultural mismanagement.

Coastal areas, if in Africa, Asia or Europe, are of great importance to mankind. They make up less than 10 percent of the surface area of our planet, yet more than 60 percent of its population live in these areas. And the figure is growing dramatically. The migration to and urbanisation of the coast are due to the prospects of jobs and a better quality of life. Tourism, fishing and many other economic activities tend to be concentrated in the coastal areas. And in addition to that, the coastal ecosystems produce valuable food items.

The rapid population growth in the coastal areas increase the pressure on the natural ecosystems. Pollution and physical degradation of habitats contribute to the general decline of productivity and of the diversity of the eco-systems in a most serious way.

A sign of the alarming situation is the world wide dramatic drop in the catches of fish during the last ten years. The reason for this is of course over-fishing in combination with the decline of the environment. Decreasing fish catches have the effect that large groups of mainly poor people are deprived of essential components in their diet. Hundreds of millions of people are facing a life with a decreasing quality of food. The incidence of various diseases as well as the physical and mental health of children will be affected by such a development.

The only chance to stop the decline of the coastal areas is an improved management and protection of stocks and habitats. Sweden is willing to help, through Sida and SAREC, by exchanging knowledge and experiences on how to reach a more balanced utilisation of resources in the areas that are afflicted. The Arusha initiative, in 1993, with discussions leading to a resolution on how to achieve a more sustainable development in coastal areas, was indeed a great step in the right direction.

When we now meet, three years later, on the invitation by the Government of the Seychelles to follow up the result of the Arusha Resolution, the high-level political support is essential. Without that nothing can be accomplished.

Mr President, Ministers, by attending the conferences in Arusha and here in the Seychelles you demonstrate important awareness and commitment. Time is short. We have to decide and act now. Tomorrow may be too late, if we want our children and grand-children to be able to enjoy a decent quality of life. The choices we make today will be the script for the human development in the next century.

Thank you.

Statement by Rolf Carlman, the Swedish International Development Cooperation Agency, Sida

Your Majesty, Excellencies, Ladies and Gentlemen.

On behalf of the Swedish International Development Cooperation Agency, Sida, and as one of the co-sponsors of this meeting, I wish, first of all, to take the opportunity to thank the Government of the Seychelles for its generous offer to host this important meeting, and for the excellent arrangements made for the meeting.

I am very glad to see so many ministers from countries of the region present at the Meeting. Again, as a representative of one of the co-sponsors of the Meeting, I wish to express our deep gratitude to you for taking time to attend this Meeting. I think your presence demonstrates the high level of awareness in the region of the issues before us, and the determination to deal with them.

To end the ongoing destruction of the environment, in all parts of the world, and to find ways to preserve and use our natural resources in a sustainable manner, is one of the most urgent and formidable tasks facing mankind.

As is very evident from the documentation presented at this meeting, the protection and sustainable use of the marine resources, and of coastal zones, is a very important, and so far relatively neglected, part of the overall efforts towards a sustainable development.

To develop sustainable ways of using natural resources in general, as well as coastal resources in particular, presents a dual challenge. First, it is in many areas a race against time, requiring an ability and determination to act upon what we already know and have agreed to do. Secondly, it requires new and innovative ways of dealing with the problems facing us. These problems often transgress national boundaries. They transgress the often narrow sectors in which we are used to view development. They transgress the traditional boundaries between academic disciplines. Hence, there is a need to increase cooperation, regionally and globally, there is a need to address the issues of development in an integrated way, and there is a need for multi-disciplinary approaches in research.

In this perspective, I think it is obvious that the first meeting on Integrated Coastal Zone Management in Eastern Africa and Island States in Arusha, three years ago, followed by the present meeting in the Seychelles, are very significant steps in an emerging joint regional effort to address the challenge of sustainable development of coastal zones in an adequate way. Noting that there were no programmes for Integrated Coastal Zone Management in any country in the region as recently as at the time of the Arusha Meeting, I think it is fair to say that the following three years have seen an impressive initiation and implementation of various measures relevant to Integrated Coastal Zone Management – in the individual countries as well as regards regional cooperation.

As is pointed out in the Report of the Technical Meeting, preceding this Meeting, there is, however, a long way to go, and a need to step up efforts in a number of areas. As also evident from the Report, there is in many areas already a good understanding at the technical level of what needs to be done, and how to do it. This, of course, renders extra significance to this meeting of policy-makers. Your determination to act upon this knowledge, and give clear directives, and targets, for the continued efforts, will be crucial for the success of the continued development of Integrated Coastal Zone Management in the region. You can also play a crucial role in moving the issue of coastal zones high up on the national

development agenda. Intensified and sustained national efforts will also be a precondition for successful regional cooperation.

The Report before us also shows that a growing number of bilateral and international donor organisations now are cooperating with the countries of the region in the field of coastal zone management. In order to utilise this support in an efficient manner it is, of course, important that the donor organisations, in cooperation and consultation with the Governments of the region, increase their efforts to coordinate their activities. I am, therefore, glad to see so many representatives, of the donor organisations concerned, present at this Meeting. I hope the Meeting also will provide an opportunity to address the question of how the donors can cooperate more effectively with the countries of the region in the continued development of Integrated Coastal Zone Management.

A significant part of Sweden's development assistance to the region, relevant to coastal zone management, has, so far, been focused on research cooperation. Support has been provided to the strengthening of research capacity, and to research cooperation through regional and international networks. I am, therefore, very pleased to note the rapidly intensified cooperation between researchers, and research institutions, in the region. Many of the researchers have also played an important and constructive role in promoting a wider cooperation with regard to Integrated Coastal Zone Management, including other issues than research, not least within the framework of WIOMSA*. The researchers have also shown a not so common readiness to join hands in multi-disciplinary research projects, including both natural and social scientists. The research capacity, and networks, thus created, can be an important asset for the Governments of the region in their continued efforts to develop Integrated Coastal Zone Management. Consequently, the continued strengthening of national research capacities, and regional research networks, would most certainly prove to be an important ingredient in these efforts.

Sida attaches great importance to issues related to sustainable use of natural resources in its development cooperation. A strategy and an action plan for cooperation in this area was recently approved by the Swedish Government. Within this larger field of cooperation, one of the areas which will be given special attention is the preservation and sustainable development of marine resources and coastal areas. A strategy document is presently being prepared to guide increased efforts in this area. This document will also include guide-lines for assessment of all development cooperation projects which may have an impact on coastal zones, in order to assure that such projects are designed in a way which does not have a detrimental impact on the coastal environment.

Sweden has for a number of years been a partner in the regional efforts towards preservation and a sustainable use of coastal areas. We look forward to continue that partnership. The ultimate responsibility and ownership, however, for the continued efforts towards a sustainable development of coastal areas, rests, of course, in the countries of the region. The cooperation has so far also been conducted in that spirit. The broad and high-level representation at this meeting bodes well for the future.

Let me conclude by wishing you a fruitful and constructive meeting, and success in your continued efforts to address the issues before us today.

* The Western Indian Ocean Marine Science Association.

Statement by Mr Callisto E. Madavo, Vice President Africa Region, World Bank

In this presentation I will address four questions:

- Why are donors interested in ICZM?
- What are the World Bank and donors doing?
- Issues in collaborative programs
- Where are we going from here?

WHY ARE DONORS INTERESTED IN ICZM?

In the Eastern Africa region including the island states, as much as two thirds of the population live on or near a coast. Urban growth rates in the coastal zone are accelerating in most if not all countries in the region; in some places they are up to twice national population growth rates. The main reason for the population increases are high fertility, in-migration and perceived brighter economic opportunities.

So, why are donors interested in Eastern Africa's coastal areas? At the Arusha conference on Integrated Coastal Zone Management (ICZM) in Eastern Africa Including Island States, the strong commitment made by member nations to further promote sustainable management of coastal resources showed the level of concern that exists regarding the status and importance of coastal resources to the region's socio-economic development. The impressive body of work conducted by practitioners in the field also indicates that the perception in the region is that coastal resources need better management.

Quality of life is declining in many poor coastal urban areas and the ecological services provided by the coasts, such as food security and coastal protection, are also decreasing. Social services and infrastructure are inadequate in most countries, which leads to pollution and poor sanitation, with their consequent negative effects on public health. Many urban households are faced with unemployment and less access to sea-generated protein. These problems lead to social and political unrest, further eroding the economy.

Environmental degradation or overharvesting of resources in rural and peri-urban areas leads to declines in ecosystem productivity, loss of biodiversity and threatened livelihoods. Unregulated growth leaves coastal populations and infrastructure exposed to natural hazards and heightened risks from climate change and sea-level rise. We are involved in a race against time, and new approaches are needed to manage the resources of the coastal zone.

WHAT ARE DONORS DOING IN ICZM?

In the last three years, since the Arusha conference, donors have been increasingly active, supporting large numbers of new projects and programs in all of the countries in the region. Resource assessments and analysis of key problems through twinning arrangements between countries within the region, as well as support from donors, has enhanced the knowledge-base from which decisions are being made.

At the World Bank, we have been steadily building our capacity and knowledge base to serve you, our clients, better in the field of ICZM. Projects have been prepared and implemented. Our work has included formulation of guidance materials such as the Guidelines for ICZM, background studies and options papers such as the report *Africa - A framework for ICZM*, best practice papers and a series of country studies published jointly with Sida.

The Bank has explored opportunities for GEF grant support as well as IBRD and IDA investments in coastal and marine components of projects. This has led to ongoing projects in Eritrea, Madagascar, Mauritius, Mozambique and Seychelles. A regional Project in Seychelles, Mauritius, Comoros and Madagascar for oil spill contingency planning is also being considered. Effort has been put into integration of coastal issues in National Environmental Action Plan (NEAP) analysis, that now exist for all of the countries in the region.

Training of Bank staff and client country practitioners has also been an important focus. Activities in ICZM Training have focused on short-term training, including week long workshops in South Africa, Seychelles, Tanzania, Mozambique and Madagascar. Typically, decision-makers have been invited to some of the sessions, where issues and solutions have been discussed; the remainder of the workshop has focused on training country practitioners in tools for implementing ICZM, from the necessary policy and regulatory framework to the monitoring and evaluation protocols required to assess the efficiency of interventions. The Bank is also supporting transfer of technologies (like GIS and Computer Modeling) for coastal planning and management in order to reach the younger generation and facilitate decision-making.

What is the Bank's ICZM Training Strategy? An immediate strategy has been to raise public awareness about the need for ICZM through production of films and mass-media events, generate political commitment to integrate ICZM into national level development planning and environmental management, and increase the technical capacity of ICZM practitioners.

How can recipients ensure they get the most out of donor assistance? By shifting training to local or regional centers such as the Western Indian Ocean Marine Science Association (WIOMSA), and away from donor-based facilities. If users participate in the design and delivery of training programs they will necessarily be more client-oriented and respond to perceived needs. In addition, by linking training to on-the-job responsibilities and making it more demand-driven, the trained practitioners can implement the lessons learned more readily.

ISSUES IN COLLABORATIVE PROGRAMS

Regional cooperation in coastal and marine management has been making significant progress over the past decade. Experiences to date from other parts of the world include the Mediterranean, Baltic, Black Sea and Caribbean programs. In designing regional environmental management programs, we have learned a few important lessons. First, we need to make decisions on what requires regional cooperation and what is better solved at the national level. An important aspect is to maintain the momentum from regional agreements and ministerial meetings and share experiences of implementation.

Another important lesson is to recognize what makes regional programs fail. If there is little sense of common or shared problems it is often hard to get regional collaboration in addressing such issues. The absence of sustained political and public commitment is another reason why some of the regional programs have been slow to deliver results. Failure to link program priorities with budget allocations can also lead to collapse of agreed initia-

tives. Finally, it is important to have well functioning coordination mechanisms between the different actors, often using existing institutions with somewhat altered mandates, to find solutions and resolve common problems.

WHERE ARE WE GOING FROM HERE?

We are aware that many new projects are being prepared at this time; the World Bank is involved with activities pertaining to coastal zone management in more than half of the countries of the region. We perceive a need for closer coordination between donors and country practitioners to better target our support and help deliver the services to which all parties are committed. From the Bank's perspective, we would like to see more private sector involvement, and experiments with transfer of management responsibilities to local user-groups. Another way forward is the dissemination and exchange of success stories between countries and regions.

In conclusion, much has happened since the Arusha meeting in 1993, but much more remains to be done. ICZM is here to stay and will require efforts to mainstream the work into government policies, local government and private sector activities and to work more directly with local communities. The World Bank is ready to assist in this process and will continue to attach great importance to your efforts. Dissemination of findings will be important to demonstrate results to our constituencies and give us all encouragement to continue our efforts.

The Journey from Arusha to Seychelles

An Assessment of Successes and Failures of ICZM in Eastern Africa and Island States¹

INTRODUCTION

Over 60% of humanity live along a narrow strip about 60 km wide at the edges of the continents. By the year 2025, this number will increase to 75%. Along with coastal space, the majority of humans also depend on coastal resources for basic survival. Close to 2 billion people depend on fish for their protein supply. Tourism, the world's largest "employer", is becoming to a large extent coastal-based and its success is dependent on continued coastal zone integrity. The highly productive ecosystems of the world's coasts play a critical role in the socio-economic development of many countries. Besides providing livelihood and rapidly increasing opportunities to an ever increasing proportion of the world's population, coastal zones are consequently one of the planet's most valuable resources. Yet the degradation of the coastal ecosystems upon which we depend is accelerating on a massive scale. No wonder the coastal zones of the world have in the last several years leapt to the forefront of global environmental attention.

The situation in Eastern Africa is not any different from the rest of the globe. The shoreline of Eastern Africa, including the island states, extends a distance of 11 000 km and is inhabited by 30 to 35 million people. Perceived economic opportunities act as magnets for large numbers of people who migrate to the coast. In some countries, at least 80% of the population can be considered to be coastal. Urbanisation is high in some of these countries. The environmental damage that results as human activity and presence increase forecloses the future sustainability of development. Despite increases in fishing effort, the Food and Agriculture Organisation (FAO) estimates that catches in general in the region have now declined to about 40% of what they were 15 years ago. FAO estimates that about 50% of Eastern African fishermen may lose their jobs in the next ten to twenty years, if the situation continues to deteriorate. Coastal tourism, the pre-eminent foreign exchange earner in much of the region, is also facing unprecedented problems. The region receives an estimated two million visitors per year, bringing in about US\$1 billion. Nevertheless, in some countries tourism has dropped by as much as 40%, partly due to environmental degradation. Not only are peoples' lives in jeopardy but the stability of local, national and regional economies is at stake.

The difficulties experienced by national and international initiatives to manage the coastal zone in Africa are partly related to the need for sufficient effort and support. This is underlined by the fact that our understanding of ecological and economic relationships in the tropical coastal zone is still deficient. Initiatives are challenged by approaches to management which are often compartmentalised and uncoordinated. The diversity of issues within and between countries further complicates national and regional initiatives. The Eastern African region is culturally, politically and ecologically varied. It is made up of the mainland states of Somalia, Kenya, Tanzania, and Mozambique, along with the island states of

¹ This document is based on the outcomings of the Experts' and Practitioners' Workshop on Integrated Coastal Zone Management, held in Tanga, Tanzania, August 1996. It was used as a discussion material at the Conference on ICZM in Seychelles.

Madagascar, Comoros, Mauritius, La Réunion and Seychelles. In addition, from an environmental perspective, South Africa and Eritrea have much in common with the countries of Eastern Africa. The diverse parts of this region nevertheless share one common issue – the increasing importance of the coasts and the level of human-induced impacts in these areas. Similarly, there are coastal areas which continue to exhibit high levels of biodiversity and apparently sound ecological status. Thus, there is still opportunity to correct previous mistakes and to develop sound future practices. Such a situation does not exist in other parts of the world.

In addition to the adoption of the Convention for the Protection, Management, and Development of the Marine and Coastal Environment of the Eastern African Region (1985), the other most encompassing attempt to address these problems at a regional level was by participating ministers and experts at the Policy Conference on Integrated Coastal Zone Management in Eastern Africa and Island States held in Arusha, Tanzania in 1993. This meeting built upon the conclusions of the 1992 UN Conference on Environment and Development in Rio de Janeiro, which recommended that more emphasis should be placed on local action plans (Agenda 21) integrating environmental protection into local economic development. The ministers considered and endorsed a Resolution containing various recommendations dealing with the coastal zones of their countries. Integrated Coastal Zone Management (ICZM) was put forward as the best tool to address the multiplicity of issues involving coastal zones. The view of Integrated Coastal Zone Management accepted at Arusha was that of a dynamic approach to natural resource management which intimately involves and integrates all relevant sectors in the planning, implementation and management of the coastal zone. In particular, this includes the coastal communities, NGOs and the private sector and relies on the coherent application of various management tools derived from their involvement. The several good examples of ICZM being undertaken around the world point to the fact that this approach, as distinguished from other traditional forms of development planning, optimises the social and economic benefits derived from the use of natural resources. This is because in situations where economic sectors and livelihoods depend heavily upon renewable coastal resources, ICZM facilitates multiple use and management, thus maintaining the functional integrity of the ecosystem and allowing continued utilisation of resources.

The Arusha Declaration makes full reference to the need for integrating the specific approaches of ICZM with the broader context of the UNCED Agenda 21. It is important that those links are fully recognised in future work, particularly if, in a different context, the development of a regional Agenda 21 for the Western Indian Ocean is being considered.

TAKING STOCK OF INTEGRATED COASTAL ZONE MANAGEMENT IN THE REGION

Successes and Failures since Arusha

At the outset, it should be noted that since Arusha there has been a considerable increase in awareness of the need for better management of coastal resources and seemingly a more positive attitude towards developing ICZM practices. Hence, there is room for optimism and visionary thinking. The Arusha conference revealed certain glaring impediments and constraints to Integrated Coastal Zone Management in the region. In fact, at the time there were no programs for ICZM in any country of the region. It is obvious that the Conference acted as a catalyst for many countries, and serious commitments were put in place to move

towards a more integrated approach to coastal management. Several of the Recommendations in the Arusha Resolution have been taken up and implemented, or are in the process of being so. However, in some countries, despite good intentions, critical recommendations have not been acted on at all or to a limited extent. Table 1 was developed by national experts at the Tanga Workshop and is based on best available knowledge.

Table 1. Assessment of the status of integrated coastal zone management in the countries of the Eastern African region, including the island states

Recommendation	Status	Effectiveness
1. Establish policies to enhance & promote ICZM	Needs improvement	Poor
2. Establish ICZM programs addressing specific aspects, i.e., fisheries over-exploitation, erosion, protection of biodiversity	Needs improvement	Poor
3. Develop mechanisms for coordination and cooperation among sector agencies	Poor	Poor
4. Clarify jurisdictional mandates of government agencies in relation to integrated coastal management	Poor	Poor
5. Promote further links between scientists and decision makers	Poor	Poor
6. Strengthen management capabilities of relevant agencies	Needs improvement	Poor
7. Implement and rigorously enforce effective legislative instruments and incentives	Needs improvement	Poor
8. Invest in public education and awareness programs	Needs improvement	Needs improvement
9. Promote approaches and strategies to decrease pressure on coastal resources	Needs improvement	Poor
10. Promote involvement of all stakeholders in the development and implementation of ICZM	Needs improvement	Needs improvement
11. Provide appropriate incentives and guidelines for private sector to develop environmentally friendly economic activities	Poor	Poor
12. Promote bilateral and multi-lateral training relationships between countries of the region	Poor	Poor
13. Establish centres of excellence for ICZM in the region to support capacity building	Non existent	–
14. Encourage development and implementation of contingency plans for handling oil pollution disasters	Needs improvement	Poor
15. Establish and strengthen other appropriate institutions, e.g. the Marine & Coastal Biodiversity Centre in Seychelles	Non existent	–
16. Give special consideration to the problems of the island states	Needs improvement	Needs improvement

OVERALL TRENDS

The State of the Coastal Zone

Arusha set the stage for ICZM to become an emerging management paradigm in Eastern Africa and some states have made headway in this direction. Nevertheless, owing to a range of factors including population growth, urbanisation and development pressures, together with lack of political and management awareness and action, coastal systems in the region as a whole are under greater stress than they were in 1993. Increased flows of organic wastes and nutrients are generated from every major urban centre in the region. For many countries only 20% of this, at the most, is treated properly. The expansion of tourism has led to larger-scale infrastructure development in the coastal zone in several countries, without the benefit of environmental assessments. With about 100 000 coastal fishermen follows continued increase in fishing efforts with larger-scale ventures and no abatement of destructive fishing methods, such as dynamiting. Inland activities, such as inappropriate agricultural methods, exacerbate runoff and siltation. Some 500 million cubic meters of sediment are estimated to flow into the Western Indian Ocean every year. Despite these impacts, healthy coastal biodiversity and ecosystems still persist, especially on remote islands and isolated coastlines. Although for how long these will remain so will depend on the conservation measures taken. In any case, large and critical parts of the coastal zones are deteriorating due to erosion, biodiversity loss, ecosystem impoverishment, nutrient flux imbalances, and human competition for coastal resources. In turn, this deterioration is leading to what could become severe social and economic stresses and conflicts in many areas. The factors playing a critical role are multi-faceted and cover a range of issues, as presented below.

Institutional Framework

In general, the institutional framework for sectors such as fisheries, water management, ports and land planning exist, but implementation of sectoral policies and projects is poor. It is commonplace that management responsibilities for coastal issues and resources are still scattered across many different governmental agencies. As a result, lack of adequate institutional arrangements remains one of the most widely cited constraints to effective Integrated Coastal Zone Management in this region. Four key elements to build and reinforce necessary ICZM institutional frameworks are generally lacking, namely, sectoral efficiency and implementation, inter-sectoral integration, public participation and high-level political support. In particular, sectoral efficiency and integration have proven to be difficult. Ministries are said to be bureaucratic, over-centralised, hierarchical and weak in inter-agency coordination and cooperation. "Empire building" has been cited as a key problem in many countries. Furthermore, in larger countries problems of coordination between local and provincial authorities and the central government are common.

Some countries are on the way to either establishing or enhancing institutional arrangements that could potentially service national programs for Integrated Coastal Zone Management. In Seychelles and Mauritius, multi-sectoral arrangements for land planning and development approval have existed for some time and, in at least a few of these countries are in the process of being strengthened. In Kenya, an authority responsible for coastal development has been set up and an integrated Coastal Area Management Plan is being developed for a site near a major urban area. Tanzania is implementing several ICZM pilot programs including one in Tanga. Inter-sectoral mechanisms have also been put in place in several countries for the purpose of coordinating National Environment Action Plans and/or National Conservation Strategies. As regards a specific institutional mechanism for im-

plementing ICZM, Mozambique created the Ministry for Coordination of Environmental Affairs (MICOA) which has initiated a Coastal Zone Unit. Eritrea has also established an inter-departmental Marine Environment Protection Committee.

Legal Framework

The institutional development of ICZM also depends on legal issues and obstacles, such as legislative reviews and revisions undertaken by several countries. In Kenya, powers to coordinate development activities in the coastal zone have been granted to the Coastal Development Authority. Tanzania enacted the Marine Parks and Reserves Act in 1994, which established the Mafia Island Marine Park. The Environment Protection Act 1991 and 1994 of Mauritius and Seychelles, respectively, enshrine the coastal zone as a management unit in these countries. In the Seychelles' Environment Protection (Impact Assessment) Regulations, 1996, the "coastal strip" is defined and a large list of coastal "sensitive areas" are included. The Mauritius Town and Country Planning Act, to be enacted soon, also addresses coastal zone issues. The Comoros enacted a Framework Environmental Law (Loi-Cadre) in 1994, which contains a chapter on the maritime zone. Moreover, the country passed an Environmental Action Plan (PAE) by Presidential Decree in December 1993.

Nevertheless, it must be noted that apart from the exceptions mentioned above, the legal framework for Integrated Coastal Zone Management is absent. Again, sectoral legislation has existed for some time in all countries, addressing issues such as fisheries, ports, biodiversity protection, buffer zones or set-back lines and land planning. In general, however, coordinated legislation specifically addressing ICZM, as well as tools such as Environmental Impact Assessments (EIA) are lacking. The colonial legacy is apparent in most legislative frameworks as they are based on a command and control approach. Institutional constraints and impediments underlie the effective implementation of existing legislation. While much can be achieved with existing laws, sectoral rivalries, insufficient understanding of law by coastal managers and cumbersome court procedures have stifled action in much of the region. A major obstacle is the overall tendency in the region to undermine environmental regulations in order to attract or facilitate private development and investments. In some cases, obscure land tenure and the non-existence of secure marine tenure systems or frameworks continue to complicate management efforts. The peculiarities of the coastal zone and the particular resources it contains also pose problems for legislators. For example, community-owned coral reefs represent common property, but the fish stocks they provide, and which are exploited by artisanal and industrial fisheries, represent an open access situation.

Compliance and Enforcement

Enforcement concerns are amongst the most important in all areas of coastal resource management. In some countries, fisheries regulations, for example, may be effectively enforced in the case of foreign vessels and individuals. In Eritrea, recent patrolling by the Navy has resulted in pursuit of illegal activities by foreign vessels. However, when dealing with citizens, on either the national or local level, successes are few and far between. In the Seychelles, 200 years of legislative and enforcement efforts failed to stop turtle shell exploitation until win-win strategies (artisan rehabilitation and education) accompanied by new legislation were introduced under a World Bank-facilitated GEF project. Similarly, in Kenya and Tanzania, the pilot ICZM programs in Bamburi and Tanga have succeeded in working with local level stakeholders, thus reducing certain violations, such as poaching of protected species and dynamite fishing.

Despite a panoply of command and control legislation and the existence of police forces, the level of compliance by the local populace and high officials in the entire region is low. Enforcement of environmental laws has also been demonstrably poor and very few cases have ever been brought to court. In the island states and other insular areas on the coast, kinship patterns and social familiarity complicate enforcement. In addition, in the case of the so-called "high official violator," police may be unwilling to take action. This creates a downward spiral effect where others will behave similarly.

As a general rule, coastal resource violations do not seem to be taken seriously by the authorities. There are many instances where violators caught in the act have not been arrested or prosecuted. Police and judicial authorities may also not be aware of the breadth of coastal resource protection or its importance to the respective country as a whole. Penalty amounts are too small under most laws. Commonly, the potential penalty for violations such as poaching a protected species is less than the actual gain to the violator. One of the most widely stated difficulties pertain to the institutional weakness and lack of capacity and equipment. Most authorities for coastal zone management have insufficient number of vessels and trained staff for marine monitoring and enforcement. These are often complicated by large coastal territories and more or less inaccessible areas, either due to lack of infrastructure or security.

Poverty and open access to resources are underlying causes of many violations. Basic survival needs in some instances compel local people to contravene laws protecting coastal resources. Command and control legislation and punitive enforcement may not invariably be appropriate and may exacerbate an already precarious situation. Increased participatory approaches with coastal stakeholders and equitable incentive schemes need to be introduced. Community-based resource management and enforcement programs operating with official enforcement agencies elsewhere, such as South-East Asia, should be examined as potential models for this region. Finding models whereby resource users have clear incentives to protect and manage resources can be more cost effective and easier to implement than current enforcement methods and practices.

Investments and Funding

Significant investments in environmental management, in particular through largely donor-driven National Environment Action Plans (NEAP) and National Conservation Strategies, have benefited many countries. Several international organisations, notably the World Bank, UNEP, the European Union, Sida, NORAD, USAID, FAO, UNDP, UNEP, UNESCO and the Global Environment Fund, governments such as France and Japan, and NGOs such as IUCN and WWF, have invested in coast-related projects (Table 2). By way of illustration, total project funding in the framework of the Seychelles' Environmental Management Plan 1990–2000 (EMPS) has to date mobilised some US\$15 million. As regards national budgetary requirements, South Africa has invested large amounts of its own national funds into coastal management efforts, but mainly covering the marine field. Eritrea has also directed considerable efforts towards ICZM programming, in relation to the size and status of its economy. In the Seychelles, the Government has almost matched the level of donor funding for the EMPS projects with national subventions for biodiversity conservation, marine resource management, forestry, pollution and waste management.

Table 2. Donor funding in coastal zone management in Eastern Africa

Capacity Building	EU, Sida, UNDP, UNEP, NORAD, CIDA, USAID, JICA, British Council, Government of the Netherlands, DANIDA, FINIDA, URI, World Bank, BADDC, COI, WWF
Research	Sida, NORAD, CIDA, IOC, UNEP, BADDC
Pilot Programs	Irish Aid, IUCN, EU, COI, UNEP, NORAD, Sida, USAID, WWF
Legislation	IUCN, FAO, USAID, IUCN, CFTC, GEF, UNEP, COI.
Biodiversity and Protected Areas	IUCN, GEF, COI, WWF, CIDA, Government of the Netherlands, EU, Frontier, Sida, World Bank, USAID, UNEP
Marine Resources Management	Government of Japan, European Union, NORAD, CIDA, FAO, World Bank, ODA, COI
Pollution Management	GEF, European Union, UNEP
Infrastructure Development	UNDP, World Bank, GEF, European Union, FINIDA, Government of the Netherlands, ODA
Participation	FINIDA, Irish aid, NORAD, USAID, BADDC

Some of the larger regional level ICZM programs are mentioned below.

- The EU has channelled substantial funds for a regional ICZM project through the Commission de l'Océan Indien, a regional organisation dealing with the islands states. The total funding for this project, which started with the recruitment of National Coordinators in 1993, is US\$16.8 million. In terms of scale and funding, this project, which is to be implemented largely by nationals with support by expatriate experts, is a significant regional initiative in coastal zone management.
- One of the largest single projects supporting ICZM-oriented activities throughout most of the Eastern Africa region is the Sida-SAREC regional marine program which has a total budget of approximately US\$18 million. The program supports implementation of activities, including higher education (M. Sc. and Ph. D.), technical training, and ICZM-oriented research projects, most of which involve national and regional experts. The program has also co-sponsored a number of Regional and National ICZM workshops. These workshops have proven to be vehicles for building awareness and integrating information relative to ICZM.
- UNEP, through its East African Action Plan, has also implemented several projects in the region, including the EAF 5, EAF 6 and EAF 14 Projects. EAF 5 concerns the management and protection of coastal areas, EAF 6 the control of marine pollution, and EAF 14 is a regional data base and atlas of coastal and marine resources. These Projects have very modest funding and much is dependent on the individual countries to allocate staff and resources for implementation. Nevertheless, in a few countries, implementation is under way.

In general, it must be noted again that investment in ICZM has not been sufficient. Most funding assistance has been allocated towards sectoral projects. This is not to say that sectoral activities do not benefit coastal management, but simply that the impediments and constraints associated with a strictly sectoral approach, as mentioned previously, should be addressed. Future funding, at both donor and national levels, should take into consideration the complex and diverse aspects of coastal management and be directed towards integrated and participatory activities, rather than projects based on a single issue.

Participation

Case studies from all around the world indicate that stakeholder inclusion is paramount to the success of ICZM. In Kenya and South Africa in particular, there are numerous NGOs and other public groups working in coastal management and related fields. NGOs in these countries have in some cases significantly affected decisions relating to the coastal zone. In Tanzania, government interaction with stakeholders on the coast has in some instances resulted in activities benefiting the local communities. Advisory environmental councils and steering committees have been instituted in many countries and could become keystones in the development of stakeholder participation. On a regional level, the Western Indian Ocean Marine Science Association (WIOMSA), which organised the Tanga Workshop, was created in 1992.

One of the factors perhaps underlying the difficulties in launching ICZM programmes in the region has been the historic governance structure which, by and large, did not encourage participation in national decision-making. Many of the countries' National Environmental Action Plans clearly illustrate this fact, as the majority, if not all, of the projects are implemented by the governments concerned. Command and control institutional and legal structures inherited from colonial times only exacerbate the circumstances. Nevertheless, many policy makers still regard public and NGO participation tedious and a hindrance to decision-making, and the public is usually only brought in as a last resort. While this is now changing, many of the countries have inadequate experience in involving coastal stakeholders in meaningful decision-making. There is a concomitant need to develop the skills and methods required for this.

Working models of community-based management of resources, or co-management, are rare in the region. Empowering local people to manage coastal resources adjacent to their communities by controlling use and excluding outsiders has proven to be successful in South-East Asia. For the Eastern African region, there are lessons to be learned.

With the exception of Kenya and South Africa, NGOs are still small in number and their institutional frameworks are typically weak. The technical experts largely agree that there are ample entry points for NGO involvement in ICZM in their respective countries and, in fact, point out that NGO and public inclusion in management could relieve pressure on government organisations. However, NGOs need national and international assistance to augment and sustain their capacity, skills, and programming in this field.

In most countries also, there is a profound lack of understanding in the private and public sector regarding the value of ICZM and the implications of certain behaviour and development patterns. Although the media in some cases generate environmental programs, national experience and skills in the design and assessment of public awareness campaigns on the environment are generally needed. Skills in conflict resolution, coordination and cooperation are also missing.

Capacity and Awareness

Capacity building has registered many successes in the field of training and higher education. Training programs have been instituted nationally as well as internationally. Also, foreign funds have been made accessible for a copious number of scholarships in many countries. In South Africa, universities have been made more accessible to the general public. In the mainland states especially, more staff are now trained to the level of M. Sc. and Ph. D. than in 1993. In the island states, Mauritius and La Réunion in particular have rein-

forced their university faculties dealing with environmental and marine affairs. Similarly, in Tanzania, the staff capacity at the Institute of Marine Sciences has been augmented. Likewise, policy instruments and other tools that can be utilised for ICZM capacity building and decision-making exist in many of the countries. A National Mangrove Management Plan has been initiated in Tanzania, while in other countries such as Kenya, Management Plans for Marine Parks have been produced. As mentioned previously, most countries have National Environment Action Plans and Conservation Strategies. Coastal Geographical Information System (GIS) and mapping systems are operative in Kenya and Mauritius. In Seychelles, a comprehensive Land Use Plan was concluded some years ago and plans are ongoing to initiate a land-use GIS.

Nevertheless, the translation of improvements in technical know-how into more sustainable coastal management is often difficult to demonstrate. Lack of skilled human resources remains a stumbling block to coastal management in many countries. The "brain drain" is very real and most countries continue to experience flight of some of their best staff. Relatively low salaries, difficult working conditions and poor career opportunities are mostly to blame. In a few countries where this is rampant, there is subsequent heavy dependence on expatriates and on non-technical, administrative personnel.

Perhaps one of the more critical issues overall with regard to effective ICZM is the lack of well trained managers. Despite the obvious growth in preparedness and good intentions among managers, many of them still seem to be largely unaware of the issues, requirements and skills needed for ICZM. Critical skills missing include, for example, techniques for problem solving, research planning, program evaluation and analysis, and conflict resolution. The scarcity of effective managers constitutes a potential bottleneck for ICZM development, since effective management is the channel through which many otherwise separate factors are integrated and actualised.

A critical gap which is not being bridged is "moving from knowing to doing", good plans do not necessarily lead to good development. A rather unfortunate situation often seems to exist, where technical knowledge, advice and findings are often not supported or incorporated into decision-making. This dichotomy leads to policy decisions that are often founded on personal beliefs and opinions and not on the best available technical information. Instruments such as Land Use Plans and Environment Action Plans which should be used to support decision-making are, in many cases, left aside or only selectively used. In addition, in some cases, policy makers are ill equipped to deal with pressures associated with development project decisions.

Most of the substantial donor funding in the field of coastal management has not, with one or two notable exceptions, led to significant strengthening of national management capacity or to the fulfilment of ICZM through indigenous efforts. For example, a large ongoing regional project was critically examined by national experts at the Tanga Workshop because of its top down approach and the comparatively inadequate attention given to reinforcing indigenous abilities for long-term sustainable management.

Research, Monitoring and Information Exchange

Integrated Coastal Zone Management requires a sound knowledge of numerous relevant factors in order to achieve the best possible solutions. This makes it essential to invest in monitoring systems and training of technical and scientific personnel. Historically, there has been considerable research conducted in some areas of coastal science and there certainly is a better understanding of some ecological processes now than a few decades ago.

The emphasis on specific research projects has even far exceeded the importance of capacity building in many countries.

Undoubtedly, South Africa has the largest and most outstanding research institutions in the entire region. It possesses governmental, academic and private research organisations and NGOs. In other parts of the region, the Institute of Marine Sciences (IMS) in Tanzania, and the Kenya Marine Fisheries Research Institute (KMFRI) are two of the more developed national facilities solely dedicated to marine research. A number of university departments have also ventured into marine-related research, including both the natural and social sciences. This development has been augmented by the twinning of some of these bodies with institutions outside the region. Similarly, the establishment of the Regional Cooperation in Scientific Information Exchange in the Western Indian Ocean (RECO-SCIX-WIO) system of regional documentation collation and dissemination is a step forward and, although the material it supplies is currently available to only a few organisations in each country, it serves well as a further support to capacity development.

Critical issues in the region are related to the nature of the research, its coordination and integration, and the ultimate use of the information generated. Much of the research to date has been sector-oriented or of an academic nature and may thus not be applicable to the perceived needs of management. Similarly, there remains a tendency in some countries to engage expatriates to offset a local shortage in human resources. Although this may be warranted in some cases, it is usually not executed in a way to make information transfer effective. Consequently, there are still significant gaps in baseline knowledge of ecosystems and human activities in the coastal zones. There is a clear need to encourage and strengthen multi-disciplinary research. Principally, economists and sociologists need to work much closer with natural scientists, in order to address needs such as that of alternative livelihoods for fishermen. It is also necessary to devise mechanisms to elicit and utilise indigenous knowledge.

A lack of understanding among policy makers of the value of appropriate research and monitoring still persists. Research results are often dismissed when they conflict with widely held opinions and beliefs. To some extent this is because research is seen as being academic and research institutions in the region are usually divorced from management organisations. Researchers need to become more active in informing decision makers and the public about the results of their work through more accessible publications, the media or public talks.

Conclusions and Recommendations

There is reason to be positive about the basis for Integrated Coastal Zone Management in Eastern Africa, as certain fundamental conditions now exist which make effective management possible. There is, for example, a clear awareness of the basic issues at the political level, as well as among many of the other actors. Nevertheless, much remains to be accomplished.

The Technical Meeting of regional ICZM experts held in the Seychelles in October 1996, and the gathering of regional technical experts in ICZM at Tanga in August 1996, both examined the benefits of ICZM and the national and international commitments to furthering and supporting the ICZM process. Being aware that serious impediments to successful implementation of ICZM remain, as described in the preceding pages of this document, the experts concluded that the implementation of the following actions by the countries of the region would greatly facilitate effective ICZM. This would improve sustainable livelihoods and quality of life, and enhance local and national economies.

Institutions

There is a need to counteract the persistent tendency of institutions to pursue sector-specific interests instead of addressing broader ICZM goals; be they for the local community, for the nation, or for the region. There is a further need to enhance the ICZM decision-making process, and to firmly encourage the tendency to mainstream ICZM activities, in order to increase efficiency and effectiveness. One way of addressing this is to encourage maximum transparency in the different processes and decision-making steps by better involving the various stakeholders who may be affected by the intended activities or policies. Such results can be encouraged by increasing transparency and clarity regarding roles and responsibilities, by supporting inter-agency ICZM bodies and working groups, and by expanding the institutional base for ICZM.

Recommendations

- Undertake to fulfil the Arusha Resolution and the provisions of the Nairobi Convention in view of its coming into force, particularly the establishment of the Regional Coordinating Unit initially with the interim unit in 1997, and the updating and implementation of the East African Action Plan.
- Establish a multi-sectoral coordinating mechanism for ICZM activities and streamline procedures at all levels, to facilitate participatory and collaborative decision-making, planning and implementation.
- Ensure that the planning of land and sea resource use harmonises development with the conservation of natural habitats and biodiversity.

Capacity and Awareness

Human resource limitations continue to be a challenge in the development of ICZM in the Eastern African region. More efforts must be made to increase the retention of technical expertise, and partnerships forged with the private sector may provide one means of assisting this. Also, there still appears to be scope for more targeted or focused training in some sectors. In addition to this, there is growing recognition that many ICZM issues are hindered or complicated by the need for better management and a more inter-disciplinary approach to the handling of issues. This highlights the need to not only continue supporting the established lines of training related to the sciences, but to provide training to managers so that they can better deal with the issues that are specific and intrinsic to ICZM, for example, eliciting and integrating indigenous knowledge and multi-disciplinary approaches to problem solving.

Recommendations

- Develop and implement a strategy for capacity building and identify institutional needs for ICZM that ensures establishment of a critical mass of personnel and appropriate incentives to retain them.
- Promote awareness, education and continuing training at all levels, incorporating indigenous knowledge and using local expertise.
- Optimise use of existing expertise and training facilities in the region including intra-regional sharing of experience, and establishment of centres of excellence in ICZM.

Participation

Legitimate stakeholders and interest groups need to be involved in the process of decision making related to the multiple use of the coastal zone and the distribution of benefits

resulting from it. To ensure balanced representation of the diverse interest groups involved, and to facilitate the resolution of conflicts that may come from competing uses, broad participation of stakeholders should be encouraged. This may require the empowerment of marginalised but legitimate stakeholders – such as traditional users of coastal resources – through training, formalisation of rights, legal action, and mediation by NGOs. Where such rights are foreclosed, alternative benefit giving options must be developed. Ongoing pilot projects in the region are working to turn these principles into practice. These pilot projects require continued support and a *learning* based approach to develop successful models that are appropriate in the Eastern African context.

Recommendations

- Provide stronger political support and commitment to ICZM.
- Ensure the long-term sustainable use of the coastal zone through the empowerment of legitimate stakeholders whilst taking into consideration the requirements of public interest, and maintaining a balance between local, regional and national interests.

Legislation

Numerous governments in the region have generated or are presently developing legislation addressing issues related to the coastal zone and its resources. However, there is still a need to continue legislative development to better address the special conditions found in coastal regions, such as common property and open access, and to more actively address problems related to law enforcement. Also, more attention needs to be paid to uniform interpretation of laws by the different stakeholders, and better information dissemination on the content, implications, and application of relevant laws. There is also an apparent need to amend command and control legislation, and to specify processes for pro-active, non-regulatory initiatives among coastal stakeholders and with consideration to the coastal setting.

Recommendations

- Harmonise ICZM-related legislation across sectors.
- Harmonise ICZM-related legislation in conformity with existing multi-lateral international conventions and agreements.
- Upgrade and strengthen all existing enforcement measures.

Compliance and Enforcement

Compliance to existing laws and regulations related to ICZM within the region is not sufficient to achieve ICZM objectives. Reliance on a command and control regulatory approach to ICZM issues including the over-exploitation of coastal resources is being questioned. Enforcement at its current level is ineffective. The most widely cited difficulties pertain to institutional weaknesses and the lack of capacity and equipment. Police and judicial authorities often do not consider coastal resource protection to be important enough, and in many cases violators are not arrested or prosecuted. In dealing with local communities, compliance could be enhanced by augmenting enforcement activities with more participatory, win-win strategies and incentive-based approaches.

Recommendations

- Strengthen enforcement mechanisms and capacity such as the cessation of dynamite fishing and other destructive uses of marine resources, as well as the establishment and implementation of EIA procedures.
- In order to gain the cooperation of local communities in conservation of marine resources, attempts should be made to include stakeholders in participatory management and incentive-based approaches, rather than relying solely on command and control enforcement measures.

Research, Monitoring and Information Exchange

Overall research capacity continues to be insufficient and largely unsustainable in most of the region. In addition, the potential gains from research are often minimised by an approach that is too sector-specific or academic, and not oriented towards the needs of management. This warrants more active support for multi-disciplinary research, the elicitation of indigenous knowledge, and better communication between scientists and managers. There are significant gaps in basic environmental and social knowledge needed for effective ICZM. Finally, since few countries in the region have coherent historic data on their environment, and there is a great need to assess trends in the condition and use of coastal ecosystems, *long-term monitoring stations and programs should be established and maintained.*

Recommendations

- Establish mechanisms to monitor and evaluate progress towards sustainable development, carefully balancing short-term needs versus long-term costs and benefits.
- Develop a strategy that will improve the knowledge of coastal ecosystem functioning in the region and establish mechanisms for applying scientific knowledge to optimise and sustainably manage, *coastal resources.*
- Establish protocols and codes of conduct for gathering, processing, exchanging and sharing information, including vertical and horizontal integration and communication between and within institutions and between scientists and coastal managers.

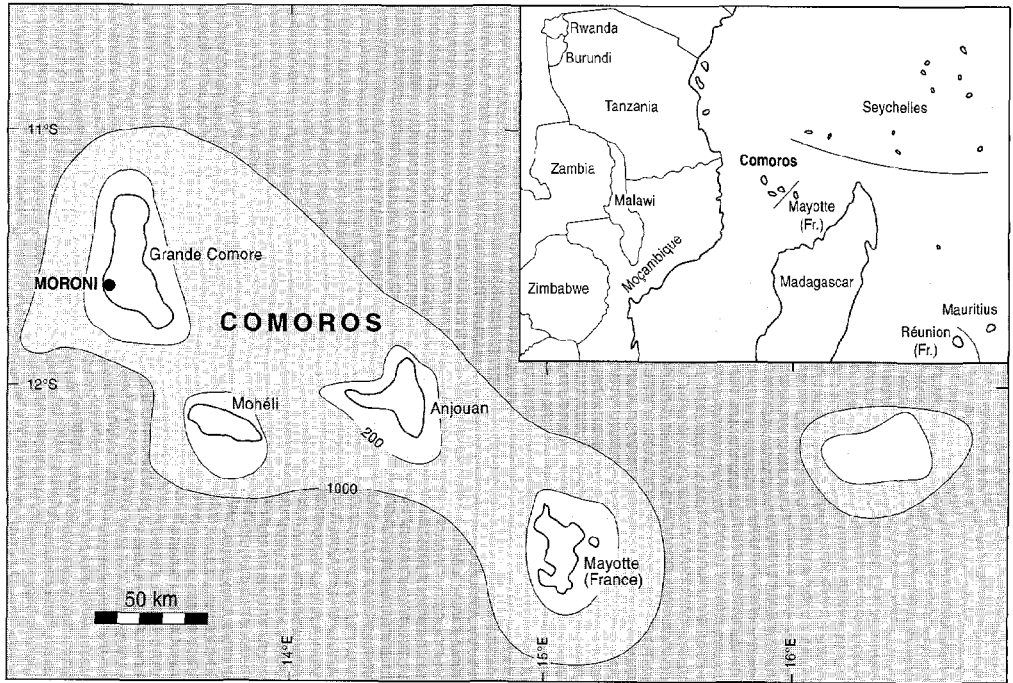
Financing

ICZM is a long-term iterative process that requires a sustained commitment of resources. Financing the myriad of interventions needed to establish ICZM over the short, medium and long term will require a strategic approach and the involvement of many players. Public sector resources are usually insufficient, and external financing may not always be relied on to meet these needs. *Complementary financing through a range of mechanisms, including public-private partnerships, user pays, trust fund and economic instruments, should be explored to diversify the funding base and ensure its sustainability over the long term.*

Recommendations

- Encourage the allocation of additional budgets for ICZM planning and implementation at all levels of government.
- Call upon donors to coordinate, review, revise and update programmes of support for ICZM in a participatory approach that builds on progress to date, identifies gaps, and allocates resources as effectively as possible.

Country reports



Integrated Coastal Zone Management in Comoros

MOHAMED BACAR A. DOSSAR

SUMMARY

The Comoros Islands, situated at the entrance of the Mozambique Channel, are composed of the islands Grande Comoro, Anjouan, Mohéli and Mayotte. Whereas Mayotte remains under French control, the other three islands constitute the Federal Islamic Republic of the Comoros. The archipelago is of volcanic origin and of particular interest for its biological diversity, hosting numerous threatened species such as turtles, dugong and the famous coelacanth. However, the fragile equilibrium of the natural habitat is threatened by human activities. Overfishing, poaching, degradation of the coastal plateau through siltation, collection of coral sand and corals, and dumping of solid waste and waste water all endanger the coastal and marine ecosystem of the archipelago.

In 1994, with a view to integrated and sustainable management of the ecosystem, the Comoros Government established an institutional administrative and legal framework to address these issues. On an institutional level, the Government prepared a National Policy on Environment and an Environmental Action Plan. There is also a legislative framework on the environment which defines the limits of human activities in different areas. However, to be effective, these legal instruments should be accompanied by alternative solutions to mitigate any negative effects on the subsistence of the local population.

Several socio-economic and ecological projects have been undertaken to study the marine and coastal areas. These include the UNEP's EAF/5 and EAF/14, the regional environmental project of the Indian Ocean Commission and the UNDP/GEF project on island biodiversity. The research carried out within these projects should result in the elaboration of the first development plans for the marine and coastal zones, as well as pilot activities. Human and technical capacities are limited in the Comoros. Despite a growing number of professionals, the country is lacking high level specialists in the field of environmental sciences. In addition, there is no research centre specialising in oceanography.

In order to make integrated management in the marine and coastal zones effective in the Comoros, the following actions should be carried out:

- Strengthen the administration responsible for the management of marine and coastal areas.
- Standardise a development and management plan of the coastal and marine areas.
- Operationalise the legal framework.
- Establish a research framework for the marine and coastal zones.
- Develop priorities in the research programme for the marine and coastal zones.
- Train specialists in key areas of marine and coastal management.
- Carry out pilot activities.
- Strengthen the cooperation and exchange of experience in the Eastern African region.

RESUMÉ

Les îles Comores (Grande Comore, Anjouan, Mohéli et Mayotte) composent un archipel situé à l'entrée du canal de Mozambique. Alors que Mayotte reste sous dépendance française, les trois autres îles forment la République Fédérale Islamique des Comores. L'archipel est d'origine volcanique. Il présente un intérêt évident du point de la diversité biologique comme le témoigne la présence de nombreuses espèces menacées telles que les tortues marines, dugong et coelacanthe.

Cependant les pressions exercées sur le milieu mettent en péril le fragile équilibre. Parmi les effets néfastes des activités humaines qui menacent l'équilibre des écosystèmes côtier et marin, on peut citer notamment la pression de la pêche, le braconnage, l'envasement du plateau côtier, le ramassage du sable corallien, le prélèvement des coraux et le rejet des ordures et des eaux usées.

Dans la perspective d'une gestion intégrée et durable des écosystèmes, le Gouvernement comorien a mis en place, depuis 1994, un cadre institutionnel, administratif et légal approprié. Sur le plan institutionnel, les Comores sont dotées d'une Politique Nationale de l'Environnement et d'un Plan d'Action Environnemental. Ces Politique et Plan sont mis en oeuvre par la Direction Générale de l'Environnement. Sur le plan légal une Loi-Cadre de l'Environnement définit les limites des activités humaines dans les différents milieux. Néanmoins les instruments juridiques, pour être applicables, devraient être accompagnés de solutions alternatives permettant d'atténuer leurs effets négatifs sur la subsistance des populations locales.

Un certain nombre de projets commencent des investigations socio-économiques et écologiques dans les milieux côtiers et marins. Il s'agit des projet EAF/5 et EAF/14 du Programme des Nations Unies pour l'Environnement, du Projet Régional Environnement de la Commission de l'Océan Indien et du Projet de Biodiversité insulaire du PNUD/FEM. Les investigations conduites par ces projets doivent aboutir à l'élaboration des premiers plans d'aménagement des zones côtières et marines, ainsi qu'aux premières actions pilotes.

Les capacités humaines et techniques sont limitées. En effet, malgré le nombre croissant de cadres, le pays manque de spécialistes de haut niveau dans le domaine des sciences de l'environnement. Par ailleurs, il n'existe pas, dans le pays, de Centre de Recherche spécialisé dans la domaine de l'océanographie.

En vue de rendre effectif, une gestion intégrée des zones côtières et marines, dans l'archipel des Comores, il convient de:

- Renforcer les administrations chargées de la gestion côtière et marine.
- Généraliser les plans d'aménagement et de gestion de l'espace côtier et marin.
- Rendre opérationnel le cadre légal.
- Créer une structure de recherche sur les zones côtières et marines.
- Développer un programme prioritaire de recherche sur les zones côtières et marines.
- Former des spécialistes dans les domaines clefs de la gestion côtière et marine.
- Mettre en oeuvre des actions pilotes.
- Renforcer la coopération et les échanges dans la région d'Afrique Orientale.

INTRODUCTION

Les îles Comores forment un archipel d'origine volcanique situé à l'entrée du Canal du Mozambique. L'archipel comporte quatre îles dont trois, la Grande Comore, Anjouan et Mohéli, constituent la République Fédérale Islamique des Comores. La superficie de la République est de 1 659 km.

L'archipel des Comores comporte 350 km de côtes diversifiées et composées de plages de sable corallien ou terrestre, de mangroves, de récifs coralliens et d'herbiers sous marin. Les mangroves sont présentes d'une façon variable d'une île à l'autre. Elles sont développées à Mohéli (91 ha), réduits à Grande Comores et à Anjouan (environ 8 ha). Les récifs coralliens sont en général de type frangeant. Ils varient en extension littorale autour de chaque île; environ 60% en Grande Comore, 80% pour Anjouan et près de 100% à Mohéli. Les fonds marins, autour des îles, arrivent rapidement à des grandes profondeurs supérieures à 3 000 m. Le plateau continental est très étroit entre 200 et 1 200 m.

Ces milieux abritent une grande diversité biologique souvent insuffisamment connue. Certaines espèces menacées sont signalées. Il s'agit essentiellement des tortues marines à écailles *Eretmochelys imbricata*, des tortues vertes *Chelonia mydas*, des dugongs *Dugong dugon* et du coelacanthe *Latimeria chalumnae*.

Les milieux côtiers et marins sont actuellement soumis à forte une pression anthropique qui s'accroît avec la croissance démographique (2,7%). La population est concentrée sur le littoral; plus du trois quart de la population vit sur la côte. La plupart des grandes villes, y compris la capitale Moroni (30 000 ha), s'y trouvent. L'ensemble des hôtels et des activités touristiques se situe sur le littoral.

Malgré l'effort consenti ces dernières années pour mettre en place un cadre institutionnel et légal approprié, en matière de protection de l'environnement, des problèmes cruciaux demeurent. Parmi ceux-ci il faut citer le prélèvement des matériaux du littoral (sable, galets et coraux), l'envasement du plateau côtier suite à l'érosion des bassins versants, la surpêche des zones littorales et les pratiques destructives telles que la pêche à la dynamite ou aux filets maillants. Par ailleurs le développement des villes du littoral occasionne une pollution de la mer par le rejet des ordures et des eaux usées.

Par ailleurs, avec la croissance démographique, le développement du tourisme et d'autres activités économiques sur le littoral, des conflits risquent d'apparaître entre les différentes utilisations. Cela a déjà été le cas entre l'usage de plage comme lieu de villégiature ou comme accès à la mer pour les pêcheurs.

DESCRIPTION DES ACTIVITÉS D'AMÉNAGEMENT CÔTIER

Le Cadre Institutionnel

La Direction Générale de l'Environnement

Du point de vue administratif, le Ministère de la Production, de l'Élevage, de la Pêche, de la Forêt et de l'Environnement est le principal responsable de la Politique nationale en matière d'environnement, tant en milieu terrestre que côtier et marin. Le Ministère a pour principal mandat la définition de la Politique sectorielle. Il assure aussi la programmation ainsi que l'exécution des actions non réservées au secteur privé et la société civile. Il s'agit surtout du suivi et du contrôle, ainsi que la mise en œuvre de la réglementation en vigueur. Deux directions générales sont concernées par les problèmes de l'aménagement côtier, il s'agit de la Direction Générale de l'Environnement (DGE) et de la Direction Générale de la Pêche (DGP). Il faudrait aussi considérer le Ministère d'État chargé de l'Aménagement

du territoire, de l'Urbanisme et du Logement qui a compétence en matière de planification, coordination et supervision des travaux publics et en matière d'établissements humains.

Le Ministère des Transports, du Tourisme, des Postes et Télécommunication quant à lui assure la supervision des installations portuaires et aéroportuaires, ainsi que l'administration des activités touristiques. Placé sous la supervision du Ministère de l'Urbanisme, le Laboratoire des Travaux Publics joue un rôle important dans la recherche de matériaux alternatifs au sable des plages.

La DGE est responsable de la mise en oeuvre de la Politique Nationale de l'Environnement (PNE) à travers un Plan d'Action Environnemental (PAE). La coordination des actions multisectorielles en faveur de l'Environnement doit se faire à travers un Comité Interministériel Consultatif pour l'Environnement (CICE).

La DGE est composée de quatre services:

- le service des ressources naturelles
- le service de l'aménagement du territoire
- le service de la réglementation et du contrôle
- le service éducation et documentation

Le Comité Interministériel Consultatif pour l'Environnement (CICE)

Le CICE a été créé par Décret n°93-148/PR du Président de la République en date du 15 septembre 1993. La mission principale du CICE est d'analyser et émettre un avis sur toutes les questions relatives à l'environnement sur le territoire national et de soutenir toute initiative pouvant concourir à la sauvegarde de l'environnement aux Comores.

Le CICE est composé des représentants des ministères et institutions impliqués dans des activités touchant à l'environnement, de représentant de l'assemblée fédérale et de représentants des ONG. Du fait de sa composition, en plus de son rôle consultatif, le CICE doit jouer un rôle de concertation entre les différents acteurs qui interviennent dans le domaine de l'Environnement.

La Direction Générale de la Pêche (DGP)

La DGP est responsable du développement du secteur de la Pêche dans le cadre d'une utilisation durable des ressources halieutiques. Ainsi l'objectif de la DGP est d'améliorer l'organisation professionnelle et sociale de la pêche. Il est chargé d'améliorer la production, la distribution et la commercialisation des produits de la mer en assurant la connaissance et l'exploitation rationnelle et durable des ressources halieutiques.

La DGP est composée de trois services:

- le service de la pêche
- le service étude et planification
- le service de la réglementation et des lois

La DGP est doté d'un centre polyvalent pour la Pêche.

Trois institutions interviennent directement, à travers des projets, dans les activités touchant le milieu marin et côtier. Il s'agit de la Délégation de l'Union Européenne, du Programme des Nations Unies pour l'Environnement (PNUE) et du Programme des Nations Unies

pour le Développement (PNUD). La première institution soutient le secteur de la pêche à travers deux projets; Projet Thonier Régional et Projet Pêche artisanale, et la protection de l'environnement côtier et marin à travers un Projet Régional Environnement de la Commission de l'Océan Indien et du Fonds Européen de Développement (PRE ENV/COI FED). La seconde institution (PNUE) développe deux projets; EAF/5: Protection et gestion des zones maritimes et côtières dans la région de l'Afrique orientale, EAF/14: Base de données et atlas des ressources du milieu côtier et marin de l'Afrique orientale. Enfin la troisième institution (PNUD) est entrain de finaliser un projet de conservation de la biodiversité, comportant une aire protégée côtière et marine.

Le Cadre Légal

La Politique Nationale de l'Environnement

Depuis décembre 1993, les Comores se sont dotées d'une Politique Nationale de l'Environnement (PNE) et d'un Plan d'Action Environnemental (PAE). La PNE a été adoptée par décret Présidentiel n°93-214/PR en date du 31 décembre 1993.

A la suite de ce décret, la PNE doit inspirer et guider l'action du Gouvernement.

La PNE est basée sur le principe de l'intégration de la dimension environnementale dans la politique et dans le développement social et économique des Comores. Ce principe est développé au travers des objectifs de gestion durable, ainsi que de définition et de renforcement des politiques sectorielles.

La PNE insiste sur la nécessité de sauvegarder la diversité biologique terrestre et marine de Comores. Elle met l'accent sur la grande richesse de la biodiversité et souvent sur son importance mondiale. Il convient donc, de mieux connaître les écosystèmes afin de les protéger.

Un des axes essentiels de la PNE est la mise en place d'une gestion appropriée de l'espace marin et côtier. L'espace côtier, en tant que lieu de rencontre de toutes les influences terrestres et marines, subit une forte pression humaine et de multiples dégradations. Les activités humaines telles que les infrastructures, l'urbanisation, le dépôt d'ordure, le rejet des eaux usées, le prélèvement du sable et des coraux, la pêche à la dynamite, l'érosion terrestre et le transport de sédiments qui envasent les récifs mettent en péril la qualité et l'intégrité de ces milieux. Cependant les potentialités de ces milieux demeurent en de nombreux endroits et mériteraient une attention particulière.

C'est pourquoi la PNE réitère la volonté du Gouvernement comorien d'élaborer une politique d'aménagement visant à assurer le maintien de la qualité de l'espace côtier en prenant en compte son potentiel touristique.

A ce propos, la PNE relève l'urgence de:

- Mettre en place un plan d'aménagement et de gestion appropriée de l'espace côtier. Ce plan devant faire partie intégrante de la politique nationale d'aménagement du territoire.
- Gérer et exploiter de manière rationnelle les ressources marines. Etant donné l'importance que revêtent les ressources côtières et marines dans le développement économique des Comores, il convient d'en assurer la pérennité à travers une gestion durable.
- Assurer le contrôle et le suivi de la pollution en milieu marin. La mise en place des instruments de suivi et de contrôle de la pollution marine, ainsi que les normes de qualités à appliquer se présente comme une urgente nécessité.

Le Plan d'Action Environnemental (PNE)

Le Plan d'Action Environnemental se présente comme un ensemble de Programmes visant la mise en oeuvre de la PNE. Parmi ces Programmes, certains concourent directement à l'amélioration de la gestion de la zone côtière et marine. Il s'agit, dans le cadre du Programme de recensement et d'étude du patrimoine national, du sous-programme d'étude des écosystèmes marins et côtiers. Il s'agit également, dans le cadre du Programme de conservation et de valorisation de la biodiversité, du sous-programme de création d'un parc côtier et marin à Nioumachoua (Ile de Mohéli).

Le premier sous programme "Etude des écosystèmes marins de la zone côtière" est conçu comme un préalable aux actions de gestion. Il vise une connaissance préalable de ces milieux à travers des investigations écologiques et des enquêtes socio-économiques dans les villages côtiers. Le sous-programme s'attacherait à mieux connaître la morphologie du littoral, à y décrire les écosystèmes et à dresser un bilan des espèces menacées.

La Loi Cadre sur l'Environnement

L'Assemblée Fédérale des Comores a adopté le 22 juin 1994 une importante Loi-Cadre n° 94-018 relative à l'Environnement. Les objectifs de cette loi sont affirmés dans son chapitre premier relatif aux définitions, objectifs et principes.

En vertu de l'article 2, la Loi-Cadre vise à :

- Préserver la diversité et l'intégrité de l'Environnement de la République Fédérale Islamique des Comores, partie intégrante du patrimoine universel, que l'insularité rend particulièrement vulnérable.
- Créer les conditions d'une utilisation, quantitativement et qualitativement, durable des ressources naturelles par les générations présentes et futures.
- Garantir à tous les citoyens un cadre de vie écologiquement sain et équilibré.

Un chapitre a été consacré aux eaux maritimes. Les dispositions des articles qui composent ce chapitre visent à préserver les zones maritimes des Comores de toutes sortes de dégradations. Ainsi en vertu de ces dispositions il est interdit, sous peine d'amende prévue par la loi, de jeter dans les eaux maritimes toutes substances susceptibles de :

- Détruire la faune et la flore du milieu marin.
- Comporter un danger pour la santé de l'homme.
- Porter atteinte à la valeur esthétique et touristique de la mer et du littoral.
- Nuire à toute autre utilisation légitime de la mer.

Par ailleurs la dite loi interdit, sous peine d'amende, à tout navire présent sur la zone maritime comorienne, de déverser ses eaux usées ou ses ordures.

Les Conventions Internationales

Les Comores sont signataires de la Convention de Nairobi sur la Protection, la Gestion et mise en valeur du milieu marin et des zones côtières de la région de l'Afrique orientale.

La mise en oeuvre

Projet RE ENV COIFED

Il s'agit d'un Projet Régional d'Appui aux Programmes environnementaux dans les pays membres de la Commission de l'Océan Indien qui regroupe Madagascar, Maurice, La Réunion, les Seychelles et les Comores. Le Projet a pour objectif global de contribuer à la promotion d'une politique régionale de gestion durable des ressources naturelles.

Il vise notamment la sauvegarde et la gestion intégrée de la zone côtière. Le projet a une durée de vie de cinq ans et a démarré, il y a environ un an.

Le projet s'articule autour de trois phases. La première est une phase d'évaluation, de bilan écologique et socio-économique aboutissant à un audit environnemental.

La seconde phase vise la synthèse et la validation des résultats par des Plans Nationaux de Gestion Durable des zones côtières.

La troisième phase se caractérise par des actions pilotes.

Projet EAF/5

Il s'agit d'un projet de Protection et de gestion des zones côtières et marines en Afrique Orientale mis en oeuvre par la FAO en collaboration avec la COI, le PNUE, l'UICN et SIDA. Il a été financé par le PNUE et l'USAID/REDSO. Le projet vise à établir un profil côtier et mettre en place un plan de gestion intégrée de la zone côtière. La Grande Comore a été choisie comme site d'essai. Actuellement un groupe de travail de consultants a achevé une enquête de base et une ébauche de plan d'aménagement.

Projet EAF/14

Le Projet de base de données et atlas des ressources du milieu côtier et marin de l'Afrique Orientale est mis en oeuvre par le Centre d'activités du Programme pour les Océans et les zones côtières (CAP/ZOC) du Programme des Nations Unies pour l'Environnement (PNUE) à Nairobi (Kenya). Il est financé par le Gouvernement Belge. Le Projet a pour objectif de rendre disponible des renseignements sur le milieu côtier et marin sous une forme facilement accessible, soit sous formes de cartes et de base de données (Système d'information Géographique). Aux Comores, le projet vient de démarrer.

Un groupe de travail a été constitué et du matériel a été acheminé à la Direction Générale de l'Environnement. Un certain nombre de thèmes a été identifié pour figurer dans la base de données. Les gestionnaires de la base de donnée vont être formés prochainement.

Projet "Biodiversité insulaire et conservation participative: un réseau d'aires protégées aux Comores" (PNUD/FEM)

Ce projet, identifié par le PNUD Comores et financé par le Fonds Mondial pour l'Environnement, se propose essentiellement de (i) apporter un appui institutionnel à la Direction Générale de l'Environnement, (ii) renforcer la participation des communautés à la gestion de l'environnement, (iii) développer un réseau d'aires protégées. En ce qui concerne les aires protégées, il faut citer, notamment, l'importance de la sous région de Nioumachoua (Mohéli). Il s'agit essentiellement de la zone du Sud-Ouest de l'île de Mohéli, comportant une bande côtière et des îlots. Cette sous région revêt une importance considérable du point de vue de la diversité biologique.

Projet Thonier Régional

Le projet thonier régional est un programme financé par la Commission de l'Union Européenne sur le 5^{ème} FED (LOME II) et par les Etats de la Région du Sud-Ouest membres de la Commission de l'Océan Indien; Réunion (France), Madagascar, Maurice, Seychelles et Comores.

Le projet a achevé une première phase (1987–1990) dont les principales composantes étaient l'assistance au développement d'une pêche thonière dans les pays concernés, l'acquisition des connaissances scientifiques nécessaires à une gestion durable de la ressource et la formation. Afin d'assurer la gestion du projet, une ASSOCIATION THONIERE a été créée en 1986, son siège se trouve à Antananarivo (Madagascar).

Projet Pêche Artisanale

Financé par le Fonds Européen de Développement (FED), le projet "Pêche artisanale" s'est déroulé sur deux phases, de chacune trois ans, depuis 1987. Le projet avait pour objectif principal d'augmenter la production de poissons pélagiques par l'amélioration du matériel de pêche et de la commercialisation. Ce projet a permis de diminuer la pression de pêche sur la zone côtière en déplaçant une partie de l'effort de pêche vers le large grâce à l'amélioration des embarcations et des techniques de pêche.

Le projet a pu développer les activités principales suivantes:

- Mise en place d'un atelier de fibre de verre pour la construction des embarcations.
- La pose de Dispositifs de Concentration de Poisson (DCP) en face des principaux villages de pêcheurs.
- L'approvisionnement en moteurs hors bord, pièces de rechanges et matériel de pêche.
- La formation des pêcheurs aux techniques appropriées de pêche des espèces pélagiques.
- La formation en mécanique pour l'entretien des moteurs hors bord vendus dans le cadre du projet.

Investissements et Financements

Les investissements et financements du secteur de la gestion intégrée de la zone côtière et marine sont essentiellement ceux qui proviennent des projets cités ci-dessus. Les principaux bailleurs de fonds sont l'Union Européenne et les organisations onusiennes.

Participation des Partenaires

La mise en oeuvre de la PNE se veut participative. Au niveau des populations, un effort a été consenti pour mener des enquêtes de base dans les villages. Un certain nombre de diagnostics socio-économiques ont été entrepris dans le cadre des projets, d'autres sont prévus, notamment par le Projet RE ENV/COI. La société civile est assez active. Il faut noter l'existence d'un réseau associatif qui prend une part active aux activités de protection de l'environnement. A ce sujet les actions menées par les associations, surtout à Mohéli, pour protéger les tortues contre le braconnage méritent d'être cités. Le secteur privé participe de façon quasi-marginal dans les activités de gestion de l'environnement, mise à part les activités de pêche et la consultation privée.

Capacités (techniques et humaines)

Les capacités techniques et humaines sont assez limitées mais en constante augmentation avec le retour au pays de jeunes cadres formés à l'étranger. Il existe des spécialistes comoriens dans les domaines suivants: Agronomie(y compris la Pêche et l'Élevage), Génie Rural, Génie Civil, Botanique, Ecologie, Biologie, Chimie, Biochimie, Océanographie, Géographie, Cartographie, Météorologie, Démographie, Sociologie, Droit, Anthropologie, Histoire et Santé (Hygiène et assainissement).

La plupart sont des jeunes du niveau licence ou maîtrise. Il existe peu de cadre du niveau doctorat.

Recherche et Suivi-évaluation

Il y a actuellement deux instituts de recherche aux Comores; le Centre National de Documentation et de Recherche Scientifique (CNDRS) et l'Institut National de Recherche pour l'Agriculture, la Pêche et l'Environnement (INRAPE).

Le CNDRS est une institution autonome sous tutelle du Ministère de l'Education Nationale.

Il abrite un centre de documentation, un musée (Histoire, Anthropologie, Sciences de la Nature) ainsi que des départements de recherche. Les principaux départements de recherche du CNDRS sont l'archéologie, la tradition orale, la linguistique et l'histoire. Le CNDRS dispose d'un herbier, d'un laboratoire d'analyse chimique de plantes et d'un centre de surveillance du volcan Karthala. Le CNDRS a développé un certain nombre de programmes de coopération dans la recherche avec des institutions étrangères. Il faut citer par exemple l'Université de la Réunion pour les recherches sur le Karthala, le Centre d'Océanographie d'Endoume (France) et l'Institut Max Planck (Allemagne) pour les recherches sur le coelacanth.

L'INRAPE est un jeune institut à caractère scientifique et technique placé sous la tutelle du Ministère de la Production. Une des missions principales de l'INRAPE est de concevoir et animer des programmes, des recherches et des études dans les domaines agricole, halieutique et environnemental. L'INRAPE entend mener une recherche adaptative et participative.

ANALYSE CRITIQUE

Cadre Institutionnel

La Direction Générale de l'Environnement

Il s'agit d'une jeune institution avec des capacités assez limitées. Malgré une réelle volonté des cadres qui dirigent cette institution, l'efficacité de la DGE est limitée par l'insuffisance des ressources humaines et matérielles. La DGE ne dispose pas de ressources propres, elle doit compter sur l'appui institutionnelle que lui apportent les projets.

En ce qui concerne la gestion côtière, la DGE est l'institution coopérante du PNUE pour les deux projets EAF/5 et EAF/14 ainsi que pour le projet RE ENV/COI. Ces trois projets vont permettre à la DGE de disposer des premières données de base sur les milieux côtiers et marins et de se doter des premiers instruments de suivi. En ce qui concerne la mise en oeuvre d'action de terrain, il faudra attendre que les projets RE ENV/COI et Biodiversité insulaire du PNUD/FEM soient arrivés à ce stade.

Cependant ces actions apparaissent plus comme des opportunités que le résultat d'une démarche interne à la DGE. Celle-ci n'a pas encore conçu de programme cohérent, dans le cadre d'une démarche progressive visant la gestion intégrée des zones côtières.

Le Comité Interministériel Consultatif pour l'Environnement (CICE)

L'environnement touchant à de nombreux secteurs, il était en effet opportun qu'une structure de concertation soit mise en place. Cette structure devrait pouvoir harmoniser les interventions. Dans le cas de la gestion côtière, il serait par exemple judicieux que les plans d'aménagement des zones côtières soient concertés entre les services de l'équipement, de l'environnement et les populations concernées. Le secteur privé n'est pas représenté au niveau du CICE.

L'un des handicaps du CICE est le fait qu'il ne soit pas doté de structure exécutive fon-

tionnelle qui en assure le secrétariat. Il résulte de cette situation que le suivi n'a pas pu être assuré et donc la structure n'a pas été fonctionnelle. Actuellement, une réflexion est menée pour remplacer le CICE par un Comité National pour le Développement Durable (CNDD). Cette nouvelle structure pourrait être dotée d'un secrétariat permanent.

La Direction Générale de la Pêche (DGP)

La DGP connaît les mêmes contraintes que la DGE, les ressources humaines et matérielles sont limitées. Du fait de son implication dans l'exploitation des ressources côtières et marines, la DGP serait appelée à jouer un rôle important dans l'élaboration et l'exécution des plans de gestion intégrée de la zone. Notamment, la DGP n'a pas les moyens d'assurer un suivi de l'évolution des ressources marines.

Le Cadre Légal

Les Comores sont actuellement dotés du cadre légal de base en matière de protection de l'environnement, notamment une Loi-Cadre sur l'environnement. Ce cadre représente les grandes orientations légales. Cependant celles-ci n'ont pas été suffisamment traduites en terme de textes d'application.

Il manque une politique spécifique et cohérente en matière de gestion côtière. Les textes existant pour le moment sont généraux. Par ailleurs, un aspect important concernant le statut du foncier et de l'urbanisme en zone côtière mériterait une attention particulière. Actuellement l'occupation de cette zone par des particuliers ne répond à aucune législation.

Par ailleurs les études d'impact font défaut. Les mécanismes institutionnels de soumission des projets aux études d'impact et d'examen des conclusions de ses études ne sont pas encore mis en place.

La Mise en Oeuvre

Dans le cadre de la gestion côtière et marine, les trois projets cités ci-dessus; EAF/5, EAF/14 et PRE ENV/COI représentent l'essentiel des interventions en cours dans ces milieux. Le projet de protection de la biodiversité du PNUD/FEM entrera bientôt dans sa phase d'exécution. Le projet EAF/5 permettra de réaliser un premier plan d'aménagement sur l'île de la Grande Comore. Ce travail pourra être complété par une seconde phase qui portera sur les deux autres îles; Anjouan et Mohéli.

Par ailleurs l'audit environnemental entrepris par le projet RE ENV/COI se concrétisera par une synthèse sous forme d'un Plan National de Gestion des zones côtières.

La mise en oeuvre des lois existantes sur l'environnement fait actuellement défaut. Notamment le prélèvement des matériaux sur la zone côtière et le braconnage des tortues marines continuent. En réalité ces interdictions ne seront applicables que dans la mesure où des activités alternatives auront été trouvées.

Investissements et Financements

En matière d'investissement et de financement de la gestion intégrée de la zone côtière et marine les besoins sont importants, mais pas suffisamment évalués. Les plans d'aménagement et de gestion, en cours d'élaboration, devraient permettre d'arriver à une évaluation plus fine des besoins en matière de financement.

Mis à part les investissements consentis dans les années 80, en vue de réaliser les installations portuaires de Mutsamudu et de Moroni, l'Etat n'a pas encore beaucoup investi ses

dernières années dans l'aménagement et la gestion de la zone côtière et marine. Les investisseurs et les bailleurs de fonds ne sont pas suffisamment diversifiés aux Comores, notamment dans les domaines de la formation et de la recherche.

Participation des Partenaires

Pour le moment la participation des populations concernées par les questions de protection de l'Environnement se limite aux enquêtes et divers diagnostics effectués par les projets dans les villages. Il faut noter que les actions de terrain n'ont pas encore démarré, mais devraient l'être bientôt.

Parmi les partenaires de l'administration, les associations villageoises sont les plus actives dans la protection de l'environnement en général. Cependant cette participation reste marginale, pas suffisamment organisée. En matière de gestion côtière, il faut noter les efforts des associations de l'île de Mohéli dans la protection des tortues marines. Les associations villageoises ne sont pas assez intégrées dans les activités des projets. Par ailleurs, il n'existe toujours pas de structure de concertation à l'échelle régionale, bien que prévu les Comités Interministériel Régionaux pour l'Environnement n'ont pas vu le jour.

Le secteur privé est très peu impliqué dans la protection de l'environnement. En particulier, en matière de gestion de la zone côtière, il n'existe pas de structure formelle de concertation entre l'administration, la société civile et le secteur privé.

Il existe un jeune syndicat des pêcheurs comoriens. Pour le moment, cette organisation n'est pas suffisamment perçue comme un partenaire par l'administration.

Les Capacités Techniques et Humaines

Comme mentionné précédemment il existe aux Comores les capacités techniques et humaines de base, mais il manque des spécialistes dans des domaines précis. Dans la perspective d'une gestion intégrée de la zone côtière et maritimes, des spécialistes, entre autres, dans les domaines suivants sont à former; écologistes marins, spécialistes de la faune et de la flore marine, sédimentologues, chimistes des eaux de mer, gestionnaires des parcs marins et gestionnaires de base de données. Par ailleurs, il est urgent que des spécialistes comoriens soient formés en matière de suivi des espèces menacées en particulier dans le domaine de la dynamique des populations.

Recherche et Suivi-évaluation

Les Comores, pays pourtant insulaire, ne possèdent pas d'institut ou de centre de recherche océanologique. Les deux institutions de recherche cités ci-dessus, à savoir le CNDRS et l'INRAPE, sont trop généralistes. Les capacités humaines et techniques propres à assurer le suivi et l'évaluation des ressources et des écosystèmes côtiers et marins sont limitées, faute d'institution nationale permettant d'accueillir des travaux de recherche.

Les besoins les plus urgents s'expriment en matière d'équipements (laboratoire, instruments de mesure et de surveillance) et en matière de spécialisation des cadres existants. Des spécialistes en faune et flore marine devraient être formés, ceci tant pour les inventaires que pour assurer un suivi régulier des espèces menacées (tortues, coclakanthe, dugong...). Les problèmes liés à l'envasement des côtes sous l'effet de l'érosion des sols et leurs effets sur les récifs coralliens sont peu connus. De même les problèmes liés à l'évolution physico-chimique des eaux et les éventuels conséquences en matière de prolifération d'algues sont soupçonnés sans qu'une véritable évaluation ait pu être menée.

Il ne serait pas superflu que le pays soit doté d'un système de surveillance des eaux territoriales.

Résumé de l'Analyse

Les structures administratives en charge de la mise en oeuvre de la Politique Nationale de l'Environnement et de la coordination des activités en faveur de l'environnement, y compris la gestion de la zone côtière et marine, devraient être renforcées dans le cadre d'un appui institutionnel.

La société civile est assez active, notamment les ONG et les associations villageoises. Par contre le secteur privé n'est presque pas impliqué. Il n'existe pas suffisamment de structure de concertation entre les différents acteurs, surtout à l'échelle des îles.

La mise en application de lois fondamentales, telles que la Loi-Cadre sur l'environnement et les conventions internationales, se heurte à l'absence de textes d'application et de mesures d'accompagnement. Il n'y a pas de recourt aux études d'impact comme préalable aux projets de développement.

Les partenaires internationaux des Comores en matière de gestion côtière et marine sont très peu diversifiés. Notamment le pays bénéficie très peu de la recherche à l'échelle internationale. Les investissements consentis sont assez limités.

Les capacités humaines existent mais souffrent d'un manque des structures d'accueil adéquats qui auraient permis l'approfondissement des connaissances et la spécialisation.

Les Comores n'ont pas d'Institut ou de Centre de recherche spécialisé dans les questions touchant la zone côtière et marine.

RECOMMANDATIONS

- Renforcer les administrations chargées de la gestion côtière et marine: Les administrations ont la charge de la planification, de la programmation et du Suivi-Evaluation des actions de gestion intégrée de la zone côtière et marine. Il importe de renforcer les capacités humaines et techniques de ces administrations. Ce renforcement passe par l'appui institutionnel, notamment la formation et l'équipement.
Les administrations devraient aussi renforcer leurs capacités de coordination entre-elles et avec les autres partenaires de la société civile et du secteur privé. Il serait opportun de doter le Comité National du Développement Durable (CNDD) d'un sous comité de coordination des activités en zones côtières et marines.
- Généraliser les plans d'aménagement et de gestion de l'espace côtier et marin: Sur la base de l'expérience acquise à la suite des projets en cours (EAF/5 et PRE ENV/COI) généraliser les plans d'aménagement à l'ensemble de l'espace côtier et marin du territoire national. Afin de dépasser le stade des interventions dispersées, il serait utile de définir une politique nationale globale et une démarche méthodologique logique de gestion intégrée des zones côtières et marines.
- Rendre opérationnel le cadre légal: Le cadre légal n'est pas une fin en soit, c'est un outil qui n'a de signification que s'il est opérationnel. Il convient de rechercher tous les mécanismes permettant cette opérationnalisation. Entre autres, les principaux rouages de ces mécanismes sont une meilleure adaptation du cadre légal au contexte socio-économique et aux traditions locales, la recherche des solutions alternatives visant à atténuer le poids des mesures de protection et leur impact négatif sur les économies locales, la sensibilisation des populations concernées, et le renforcement des structures juridiques. Par ailleurs il convient de rendre effectif l'obligation de recourt aux études d'impacts.

- Créer une structure de recherche sur les zones côtières et marines: En ce qui concerne les Comores, il est urgent que le pays se dote d'une structure, dont le statut et la localisation reste à déterminer, mais qui soit capable de centraliser la recherche et le suivi de l'évolution des écosystèmes côtiers et marins. Cette structure, dotée du matériel de base, serait chargée de la recherche sur les écosystèmes, le suivi de l'évolution des ressources et des espèces menacées. Par ailleurs, elle pourrait pérenniser les acquis des projets en cours et accueillir les travaux de recherche universitaire.
- Développer un programme prioritaire de recherche sur les zones côtières et marines: En matière de recherche et dans un domaine aussi vaste que la gestion côtière et marine, il est nécessaire que l'on s'accorde des priorités. Celles-ci sont à déterminer par une concertation à l'échelle nationale. Parallèlement, à une recherche basique classique, il serait intéressant de développer une recherche appliquée visant à diversifier les systèmes d'exploitation des ressources côtières et marines (utilisation des algues, ostréiculture, élevage des tortues de mer, gestion durable des mangroves etc.).
- Former des spécialistes dans les domaines clefs de la gestion côtière et marine: Au fur et à mesure que se développe le secteur, des spécialistes seront nécessaires dans les domaines touchant la zone côtière et marine. De tels spécialistes peuvent être formés en partie dans le cadre de la coopération régionale. L'identification de pôles d'excellence dans les institutions de recherche de la région permettra de faire jouer la complémentarité.
- Mettre en oeuvre des actions pilotes: Les investigations dans la zone côtière et marine doivent rapidement déboucher sur des actions concrètes sur le terrain, il en va de la crédibilité des interventions. Les différents partenaires perçoivent mal l'utilité de longues études qui ne se concrétisent pas par des actions visibles sur le terrain et surtout qui n'ont pas un impact positif sur leur vie de tous les jours. Il est évident que toute connaissance ne peut obligatoirement déboucher sur des actions de terrain, c'est pourquoi il convient d'accorder une certaine importance à la recherche appliquée.
- Renforcer la coopération et les échanges dans la région d'Afrique Orientale: La coopération régionale est à renforcer, notamment entre les pays de la côte Est africaine et les îles de la zone (Madagascar, Seychelles, Comores etc.).

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ANNEXES: liste des projets

Projets en cours

A. Projet Régional Environnement COI/FED

Intitulé du Projet: Appui aux Programmes environnementaux dans les pays membres de la Commission de l'Océan Indien.

Organisation: Coordination Régionale à Maurice et Coordinations Nationales dans chaque pays.

Agence de financement: Fonds Européen de Développement (FED).

Montant du financement: 17 millions US \$, pour l'ensemble des pays.

Durée du projet: cinq ans.

B. East African / 5 (EAF/5)

Intitulé du Projet: Projet de Protection et de Gestion des zones côtières et marines en Afrique Orientale.

Organisation: Exécution du projet par la FAO en collaboration avec le PNUE à Nairobi; Aux Comores, le suivi est assuré par la Direction Générale de l'Environnement (DGE) et un groupe d'experts.

Agences de financement: PNUE, (USAID/REDSO).

Montant du financement: 32, 500 US \$ pour le projet Comores.

Durée du projet: environ une année.

C. East African /14 (EAF/14)

Intitulé du Projet: Base de données et atlas des ressources du milieu côtier et marin de l'Afrique orientale.

Organisation: Projet du Centre d'activité du Programme pour les Océans et les zones côtières (CAP/OZC) du PNUE; Aux Comores, exécution est assurée par la DGE et un groupe d'experts.

Agence de financement: Le Gouvernement Belge.

Montant du financement: (?)

Durée du projet: cinq ans.

Projet en cours de préparation

D. Projet Biodiversité insulaire et conservation participative

Intitulé du Projet: Biodiversité insulaire et conservation participative: un réseau d'aires protégées aux Comores.

Organisation: PNUD Moroni et Ministère de l'Environnement.

Agences de financement: Fonds pour l'Environnement Mondial (FEM).

Montant du financement: 3. 279. 000 US \$.

Durée du projet: cinq ans.

Projets achevés

E. Projet Pêche artisanale

Intitulé du Projet: Projet Pêche artisanale (Phase II).

Organisation: Exécution sous la supervision d'un directeur national.

Agences de financement: Fonds Européen de Développement (FED) et Gouvernement comorien

Montant du financement: FED: 2,000,000 écus et Gouvernement comorien: 60, 000 écus.

Durée du projet: trois ans; Août 92 à Juin 95.

F. Projet Régional thonier

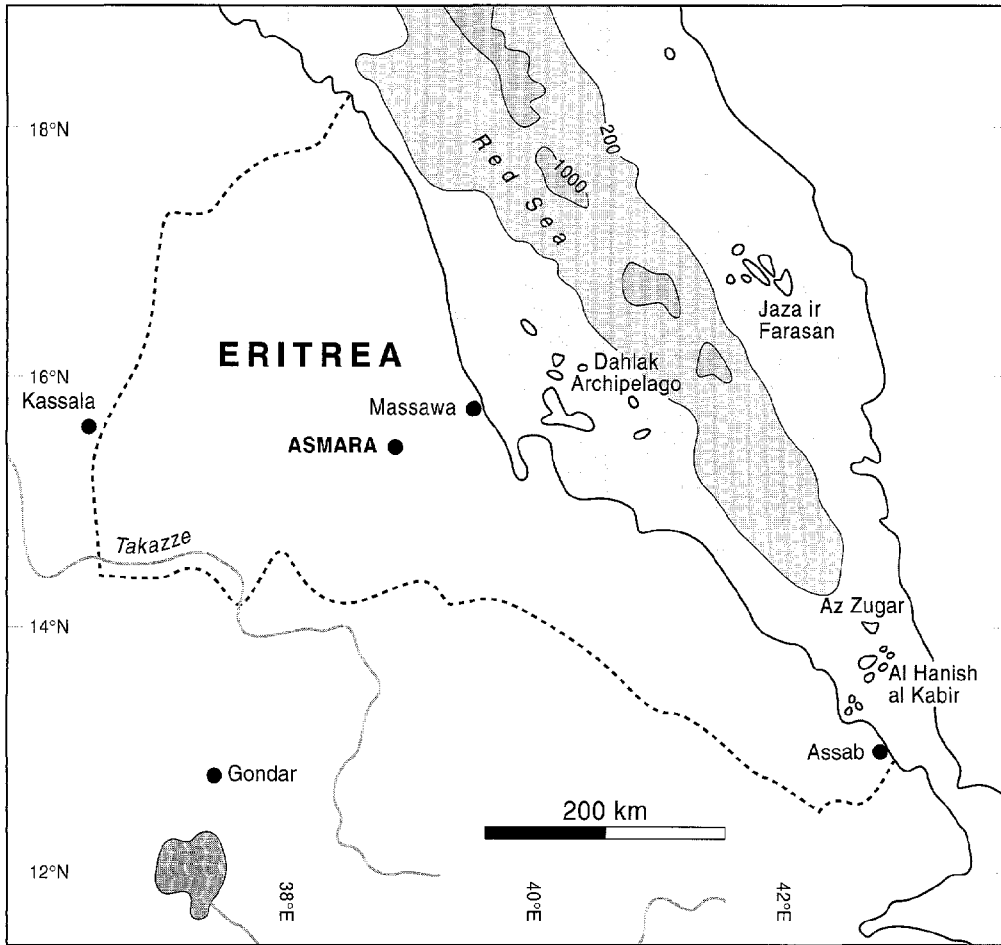
Intitulé du Projet: Projet Régional Thonier.

Organisation: Exécution par l'Association thonière en collaboration avec les Centres d'Appui Nationaux (CAN).

Agences de financement: Union Européenne; Fonds Européen de Développement.

Montant du financement: Iere Phase : 7.5 millions d'écus.

Durée du projet: trois ans.



Integrated Coastal Zone Management in Eritrea

KIFLE WOLDESELASSIE

INTRODUCTION

Eritrea was liberated in May 1991 and became an independent and sovereign nation in May 1993, after an internationally supervised referendum was held and the Eritrean people overwhelmingly voted for independence. Although the Provisional Government of Eritrea (PGE) was formed immediately after liberation, it was reorganised as the Government of the State of Eritrea after independence, with most of its constituent departments reorganised and upgraded to Ministries.

The Ministry of Marine Resources (MMR), established in October 1991 as the Department of Marine Resources and Inland Fisheries, has until now been the lead organisation in the country to oversee the activities of coastal zone management, with other Government agencies, fishing and fish trading companies, oil companies etc., having played important roles. With changes likely to happen soon as a result of the on-going process of reorganisation of the central Ministries, the roles of various Ministries related to coastal zone management are likely to change accordingly.

The last five years since liberation have seen the growth of development activities, such as fishing, tourism, industry, ports and urban settlement, that directly or indirectly affect the marine environment on the one hand, and the establishment and growth of a number of public, community and private institutions that are involved to varying degrees in the management of coastal areas, on the other hand. Awareness among public and private enterprises of protecting the coastal environment from pollution and safeguarding coastal resources from over exploitation and excessive use is growing. Experiences from neighbouring as well as more distant countries has benefited Eritrea to some extent.

The tendency among policy makers is to maintain the right balance between sustainable exploitation of coastal resources for current development of the Eritrean economy, and protection of the coastal environment for future generations. With this in mind, the ideals of Integrated Coastal Zone Management (ICZM) have been introduced and are already being practised in the strategic planning of fisheries, tourism, ports and coastal industries, urban planning and free economic zone policies. As institutional and legal frameworks were not as yet in place, the integration of these activities has to date taken place through *ad hoc* coordination committees of the various concerned public agencies and private enterprises. This provisional situation is now being replaced by more formal arrangements with regard to the establishment of legal frameworks and the institutional organs to enforce them.

The coastal and island areas of Eritrea have been, and remain, a source of income for the coastal communities of the country whose main economic activities are fishing and related activities and commerce with countries across the Red Sea. With the economic reconstruction of Eritrea in full swing after long years of stagnation due to war and instability, diversi-

fied utilisation of the coastal and island resources of the country is now in process. Government agencies and private companies involved in development activities in the coastal areas are intensively engaged in development activities, while at the same time coastal ecosystem protection issues are being addressed through the concerted efforts of all these concerned agencies. Hence the need for Integrated Coastal Zone Management.

Eritrea is not party to the East African Action Plan and therefore is neither signatory to the Nairobi Convention nor did it participate in the Ministerial Conference of April 1993 held in Arusha, Tanzania.

By virtue of its geographical location, Eritrea falls into UNEP's Regional Seas Programme and PERSGA (Regional Organisation for the Conservation of the Environment of the Red Sea and Gulf of Aden) which was established under the Jeddah Convention of 1982. Contacts are underway on finding means to work together with the Action plan towards the protection and conservation of the marine environment of the Red Sea, to the benefit of all its littoral countries. The MMR has been represented in two workshops held in Jeddah (1994) and Amman (1995).

As a representative of Eritrea's Ministry of Marine Resources, the author participated in the Experts and Practitioners Workshop on ICZM in Tanga, Tanzania, 12–16 August 1996. This paper, an analysis of the status of ICZM in Eritrea, was prepared for the Seychelles Ministerial Meeting on ICZM, in October 2325, 1996, at the request of the meeting organisers, since the MMR was invited to represent Eritrea as an observer. As a new country with brief experience in coastal zone management, Eritrea can benefit from what has been achieved in ICZM since the Arusha conference.

DESCRIPTION OF COASTAL ACTIVITIES

Institutional Framework

In Eritrea at present there is not yet an institution as such that specifically deals with coastal zone management issues. The management of coastal areas has thus far fallen under the auspices of the Ministry of Marine Resources (MMR) through its Resources and Environment Division. While the MMR has played a leading role in the management of coastal zones, other public institutions that directly or indirectly interact with the management of the coastal areas include:

- Eritrean Environment Agency
- Ministry of Local Government
- administrations of Massawa and Assab Towns
- Ministry of Tourism
- Ministry of Agriculture
- Ministry of Trade and Industry
- Ministry of Energy, Mining and Water Resources
- Land Commission
- ports authority
- Eritrean navy

Vital coastal zone management issues in the last three to four years have been coordinated through inter-agency ad hoc committees on a provisional basis. Such committees were or-

ganised to address specific issues in specific time frames. Three important occasions where such committees are worth mentioning:

- The formation of an inter-agency steering committee with the MMR as the lead agency organised, to coordinate the activities of the Marine Environment Protection Conference of October 1994.
- The establishment of an inter-ministerial coordination committee with the Ministry of Agriculture as the lead agency, formed with the objective of organising the National Environment Management Conference of February 1995, which culminated in the establishment of the Eritrean Environment Agency for coordination of national environmental issues.
- The formation of an inter-ministerial coastal management task force in mid-1995, aimed at coordinating the planning of the Massawa urban area and a free economic zone in the Massawa coastal area, with the Ministry of Energy, Mining and Water Resources as the lead agency.

The growth of development activities along the coastal and island areas of Eritrea poses a threat to coastal resources. To counter this threat, a more organised and well equipped institution (both with human and material resources) and a better coordinated approach to develop a dependable coastal zone management plan are needed. The Government of Eritrea (GoE) is now in the process of reorganising and streamlining the central Ministries to allow them to perform their functions effectively and efficiently. In this process of restructuring, Integrated Coastal Zone Management is institutionally likely to be reorganised and relocated. However, no matter the form it takes, an integrated approach to coastal zone management is vital to sound coastal and island area development.

Legal Framework

As mentioned above, Eritrea is a young nation, it has only been three years since it officially acquired sovereignty. The evolution and establishment of a legal and political system of governance is still at an early stage. Although most of the legal codes of the former Ethiopian regime have been adopted with some modification, new legislation and regulations have been developed since independence. The Constitution Commission of Eritrea is in the last stage of its mandate to draft a new Constitution and a first draft has been produced and distributed for public debate. A more decentralised system of government is being constituted, with the provincial administration restructured into six more autonomous regions (*Zobas*), two of which are coastal. In the last three to five years, legislation that in one way or another influences management of coastal areas has been promulgated. Among these are:

- land use proclamation
- mining legislation
- legislation on the formation of regional administrations
- maritime and ports regulation, etc.

The following legislation is either being drafted, awaiting approval of drafts, or is ready to be ratified by the central Government:

- national biodiversity legislation
- national environment legislation

- fisheries legislation
- foreign fishing vessels regulation (in operation)
- ICZM legislation
- tourism legislation
- oil spill contingency plan
- ornamental fish harvesting regulation
- small tourist boat operating regulation

Eritrea is also in the process of undertaking the necessary studies to determine the demarcation of its maritime boundaries. This, of course, is a long process which also involves transboundary coordination and consultations.

Enforcement

Even though required legislation has not yet been put into force, the GoE intends to monitor sustainable use of the marine resources of the country and to control mismanagement. It is in the process of enforcing draft legislation and regulations issued by the relevant authorities. Given the present human and technical capacity of the country, instruments for enforcing protection of the marine environment have not yet taken their final forms. However, on the basis of draft legislation and regulations, infractions in Eritrean Territorial Waters are being dealt with, and a number of foreign trawlers and boats found poaching there have been confiscated while their crews were sent back to their respective countries. Observers of the Ministry of Marine Resources functioning as "Fisheries Officers" are accompanying foreign vessels fishing in Eritrean waters under licenses issued by the Ministry. These "Officers" have received training and their duty is to make sure that the fishing vessels operate within the framework of the draft regulations governing such vessels. The MMR intends to strengthen and equip this inspection unit.

Investment and Funding

At present, investment in and funding for the Eritrean marine environment are at a very low level. The following industrial fisheries and urban activities – both public and private – are operational along the 1 200 km mainland coast and the 350 islands.

- fishery centre and port facilities in Massawa and Assab
- urban settlements in Massawa and Assab
- salt works in Massawa and Assab
- diving
- small boat tourism
- cement factory in Massawa
- oil refinery in Assab
- hotels in Massawa and Assab

The different sectors have concluded agreements with various investors for installation of many facilities along the coastal areas, namely:

- fisheries – industrial fishing and fish processing plants
- tourism – hotels, marine tours and diving
- industry – power plant, cement expansion, salt expansion etc.

- ports – expansion of facilities and increase in handling
- energy – oil and gas explorations and mining

All these investment opportunities will no doubt play an important role in the development of the coastal areas and in the economic revival of the country. On the other hand, they will also have a negative environmental impact and put additional pressure on the environment and resources of the coastal zones.

Several donor-supported activities to counteract these effects, are underway in the main fishing centres of the country, mainly Massawa, Dahlak and Assab. These are:

- Semhar/Assab fisheries rehabilitation project in Massawa, Dahlak and Assab, supported by UNCDF/UNDP/FAO
- fisheries community development projects in Wekiro/Halibai and Zula, supported by Dutch/Canadian NGOs
- conservation of coral reef through community-based management project, assisted by GEF/UNDP
- marine resources assessment and information management project, supported by ODA
- capacity building project, funded by UNDP
- construction of six fish shops/restaurants in five towns, funded by GoE
- marine resources stock assessment, supported by the French Development Fund (CFD)

A number of donor/GoE supported projects in the pipeline are expected to begin implementation by 1997. These include:

- artisanal fisheries development in Assab and the nearby fishing villages, supported by JICA (Japan)
- fisheries infrastructure development in central Denkalia, supported by the African Development Bank
- construction of a marine research centre in Massawa, supported by GoE
- construction of inland fisheries centre near Asmara, supported by GoE
- construction of branch offices in four coastal villages by GoE
- building and equipping of a fisheries training centre in Hirghigo, by co-funding

With the implementation of these fisheries development projects and other investments, utilisation of marine resources will increase. This in turn will lead to other development activities, thus increasing the threat to the marine environment if appropriate measures are not taken.

Stakeholder Participation

The main stakeholders active in the coastal zone of Eritrea can be categorised as public institutions, the private sector and the coastal communities. The main public stakeholders in the development and management of the coastal zones are:

- Ministry of Marine Resources: fisheries, marine environment (CZM)
- Ministry of Tourism: tourism, hotels, diving
- Ministry of Trade and Industry: cement, salt works
- Ministry of Energy: power station, oil/gas exploration
- Ministry of Agriculture: spate/diversion, irrigation, fertiliser, pesticides, forestry

- ports authority: ports expansion, maritime transport
- Eritrean navy: enforcement
- urban settlements: sewage effluents, land reclamation, new settlements

The main private sector stakeholders could include:

- hotel owners and tour operators
- fishing companies, fish processing plants, fish traders, artisanal fishermen
- small-scale salt producers, factory owners
- merchant vessels, passenger boats
- oil companies – storage, transportation and distribution
- village communities etc.

Coastal communities play important roles in coastal zone management and development. They include:

- fishermen/fisherwomen cooperatives
- people's assemblies, or *baitos*
- youth and women's associations

The main activity of public institutions, private companies, NGOs and coastal communities related to CZM during the last three to five years has been their own development, leading to an increase in their size and functions and a concomitant growth in their activities in the coastal and island areas. While this growth has laid the foundation for concerted development of the coastal economy, tangible results are yet to be realised.

However, coordinated actions were taken to organise a fisheries conference in 1993 and a marine environment conference in 1994. At these conferences, there were discussions of sectoral and national issues; educational and awareness seminars on fisheries and the environment; and audio/visual demonstrations and tours to expose participating officials to the islands and fishing villages. Discussions in the seminars and sessions included issues related to coastal zone management and the marine environment in general. This helped to raise the awareness of all participants. Draft legislation on fisheries legislation was produced after the 1993 conference.

These meetings/conferences brought many stakeholders together and opened the way for their future participation in CZM issues. This momentum must be maintained, so that all stakeholders become equally responsible for the protection and conservation of coastal marine resources and their sustainable utilisation.

Capacity (technical and human)

Eritrea emerged from the long years of war badly incapacitated technically and financially, with regard to human resources. This obstacle was immediately identified by the GoE, and in the years that followed independence a study was carried out on the human resource potential of the country. Since the financial resources of the country were not sufficient to absorb the work force (both military and civilian), a process of demobilisation or reduction was enforced in phases, thus laying off about 45 000 military and 10 000 civilians.

In the restructuring process that followed, the MMR in particular and other public institutions in general streamlined their ministries with clearly defined structures and functions, thus enabling them to operate effectively and efficiently.

An assessment of human resources development plans for all sectors, including the private sector, carried out over a period of five years indicated the need for a continuous process of training both within and outside the country. As a result the Eritrean Management Institute was established for medium level managers and a course on business administration is now underway for senior Government officials. The University of Asmara has also increased its regular and *ad hoc* courses in all fields of study. Short and long term overseas training is underway for civil servants. This nation-wide endeavour in the capacity building process will have a long-term effect on raising the capability for management of coastal resources, among others.

Another way to improve capacity in both public and private institutions is to employ returning Eritrean refugees, some of whom are coming back with skills and experience, and others with capital (although the majority will need to be cared for and resettled in rural areas, including the coast).

With regard to the capacity of the MMR to manage fisheries and coastal zones, three points are worthy of mention:

- Hirghigo Fisheries Training Centre. While training of fishermen began in 1994, construction of facilities is still in process. When completed, the training centre is expected to play an important role in building the capacity of the staff of the Ministry, the private sector and the fishing communities.
- Expatriate staff working with the MMR who are either affiliated to projects or volunteers from Holland, Australia, UK, Germany, etc., are training their counterparts on-the-job. This will also have an impact in the short and long term.
- Short or long courses conducted in-country or overseas are also important, as they give exposure through transfer of technology.

Research and Monitoring

Over the last four years, the Resources and Environment division of the Ministry has been engaged in research on fisheries and the marine environment. A database system has been developed for the islands and the fisheries catch is being monitored in order to assess the stock. At present, research activities are underway in Massawa and Assab. There is a plan by the GoE to build a marine research centre in Massawa or its vicinity and an inland fisheries centre near Asmara. With the completion of the research centre, it would be possible to install monitoring stations in Dahlak and Tio in the first phase and other stations in the coastal areas at a later phase. Some research activities are now underway through GEF/UNDP, ODA and Government assistance. A French marine research institute will assist in stock assessment with their own vessel and by equipping an Eritrean research vessel. A number of expatriate volunteers are involved in assisting local staff.

A program of cooperation in marine research is underway with the University of Asmara, which will lead to the coordination of activities and resources – both financial and human. In addition, the MMR has established cooperation with various research institutions overseas. These include the University of Rome Expedition on the marine geology of the Dahlak Islands in 1994 and 1995, the Inter-University Institute (IUI) of Israel Expedition on fisheries resources and coral reefs in May 1995, the University of Wales (UK) Expedition on coral reefs in August 1994, the University of Southampton (UK) and the USNS Oceanographic Expeditions, etc.

The physical growth of research activities and their geographical expansion along the coasts and islands will assist in collecting fisheries and environment data, monitoring pollution and controlling of resources for their sustainable use and equitable exploitation.

CRITICAL ANALYSIS

Institutional Framework

It is difficult to provide a comprehensive analysis, critical or otherwise, of the institutional framework for CZM in Eritrea, given the country's short history of independence. Little can be said of the last five years as they were a transitional period, following many years of intensive warfare also in the coastal areas. It is not surprising that no measures were taken to institutionalise management of the coastal zone, given that the former military regime saw no economic value in the Red Sea environment, other than as a conducive venue for building a huge navy to smash the liberation struggle and to threaten neighbouring countries.

It follows that very little has been achieved so far regarding CZM since independence. On the other hand, it should also be noted that overall during the past five years, the country has made progress towards creating nation-wide institutions that have direct or indirect influence on the coastal and marine resources and which in the long run should have positive implications for CZM. The reorganisation of the regional/provincial administrative system into a more autonomous one in which the Red Sea coast falls into two of six new regions, the on-going process of establishing independent judiciary system which should strengthen enforcement organs, the efforts to streamline the Ministries and other Government organs and finally, the constitutional process underway, are all expected to have a direct impact in institutional strengthening of coastal zone management.

As Eritrea was not a party to the 1993 Arusha conference on CZM, it is not possible to raise issues of follow-up to the recommendation of the Conference. It did, however, participate in the 1993 World Coast Conference in Nordwijk, the Netherlands, and has taken part in two World Bank/PERSGA organised workshops. Learning from the experience of others, Eritrea in its early stage of development activities is taking measures to reduce pressures on coastal resources by avoiding over-exploitation of fishery resources, excessive tourism, etc.

In a bid to strengthen the capacity of its various agencies, the GoE has recently taken measures to reorganise and streamline them. As a result a new ministry dealing with land, water and the environment is in the process of formation, thus detaching the management of the coastal areas from agencies that are themselves users of the coastal resources. This is expected to avoid conflict of interest, thus keeping the management of the coastal zones in neutral hands. This is a recent change that has not yet been implemented, but it will give an impetus to the small success so far achieved regarding CZM.

Three important events of national character that involved various sectoral agencies can be mentioned with respect to the institutional aspects of the CZM. The first was the convening of the Marine Environment Protection Conference held in October 1994, which involved all sectoral agencies active in the coastal zones. The second, a similar activity, brought eight agencies together in the form of a task force to organise a National Environment Conference as a result of which the Eritrean Agency for the Environment (EAE) was established. The last event brought together many of the public agencies – all stakeholders in

the coastal arena – in a steering committee which had the form of an *ad hoc* ICZM committee.

Attempts have thus been made to organise the coastal zone management process. However, complete success has yet to be achieved in institutionalising ICZM. Two reasons can be mentioned as impediments to this process. First, all attempts, though positive in intention, were only provisional in character. While the formation of the EAE had more of an institutional character, as a coordinating agency, its activities, for practical reasons, concentrated more on terrestrial environment management and so had little impact on the coastal zone. The second and main impediment was the fact that all the lead agencies involved in organising the conferences, steering committees and task forces were themselves stakeholders in the development of the coastal and marine resources. As beneficiaries of these resources, it is difficult to expect them to use objectivity in ICZM. For optimal management of the coastal zones, ICZM as an institution should fall under a neutral authority. It is on this basis that the GoE has now taken steps to institutionalise the country's environment agency, including CZM, under a separate ministry. Such a ministry is expected to be established soon.

Legal Framework

The country's legal framework before independence was in a poor shape. Not only had it been inefficient and too bureaucratic but the system also was so corrupt that military and party officials were influencing court cases, and on many occasions court decisions were taken to favour official sides. As a result, land, housing and various commercial issues were so complicated that separate commissions were formed to look into cases and to resolve issues.

During the last five years, tremendous efforts have been made to correct past misdeeds. Most of that time has been taken up in addressing issues inherited from the colonial past. However, the necessary legislative instruments and tools have also been enacted, the Land Use Proclamation and the regional administrative legislation being the most important ones with respect to CZM. These are only in their early stages of implementation, and so time is needed to gauge their results. With the legislative organs being institutionalised, it may take several more years to have all the laws governing ICZM enacted and the administrative set-up and legal frameworks realised.

Enforcement

Most of the rules and laws governing the marine environment/resources are not yet enacted and many are still in draft form, but some are operational on an *ad hoc* basis while in draft. Three of these worth mentioning are the national fishing vessels regulation, the foreign fishing vessels regulation, and the oil spill contingency plan. A draft provisional tourism regulation is also in action. Strict measures are being taken to enforce these regulations and protect Eritrean marine resources and the environment from illegal fishing and tourism practices.

During the last five years, up to a dozen foreign fishing trawlers and more than 75 small fishing boats were caught illegally fishing in Eritrean waters and sent back home. Another dozen trawlers that had repeatedly violated fishing regulations, all illegally fishing and using fishing gears or methods detrimental to the marine environment, were confiscated and their crews sent home. These actions have to some extent deterred illegal fishing. A small unit of surveillance officers (fisheries officers) with another group of inspectors overseeing

their activities are active at the Resources Protection and Enforcement Division of the MMR to observe onboard foreign fishing vessels. Though the unit lacks qualified personnel and dependable equipment, with the limited training and resources at hand they are able to control the activities of the fishing companies. Though they may not be as effective due to a lack of professionalism and shortage of equipment, their presence in itself is a deterrent.

The role of the coastal and island communities and fishing cooperatives in providing information on illegal fishing vessels (poachers) and unusual circumstances in the marine environment is not to be underestimated. On many occasions they have been cooperative with the enforcement units.

Tourists and tourist vessels found to use illegal practises have also received warnings, fines or been expelled, depending on the seriousness of the offence.

With regard to the enforcement of existing laws on ICZM and marine areas, coordinated action has been taken by the concerned Government agencies to deter illegal practices (fishing, tourism, etc.) These actions are taken on a provisional basis until the necessary laws and regulations are enacted and formal agencies set-up to enforce the laws.

Given its recent independence and the limited experience and meagre resources that the young nation has at its disposal – financial, material, and human resources – it has nevertheless been possible, in the absence of relevant laws and formal enforcement agencies, to at least protect the marine resources of the country to some extent. Though on a provisional basis, this has been possible only through the concerted efforts and commitments of all the state organs that are directly or indirectly concerned with the protection of the marine environment and its resources. With the enactment of relevant laws and regulations and the establishment and equipping (with training and materials) of the enforcement agencies expected to be realised in the foreseeable future, the enforcement capability of the country should improve significantly.

Investment and Funding

As was mentioned earlier, most of the donor funded activities in the coastal areas began only in 1993, when the country acquired official sovereignty and the donor community had the blessing of the UN to assist in the development of the war-torn economy of Eritrea. What has come since then has been not only late, but thus far, too small. Since 1993, only about US\$ 10 million worth of donor assisted development activities related to fisheries and the marine environment, have been either implemented or are in process of implementation in the coastal areas. A total of approximately US\$ 30 million has been committed by donor agencies either as grants or loans and is expected to commence implementation in 1997. Most of these funds involve support to fisheries infrastructure development projects. A similar amount is also involved in the development of tourism, ports facilities expansion schemes, and community development programmes etc. by various donors. Little attention has been given by the donor communities to marine environmental protection activities. A proposal was submitted in 1993 to UNDP/GEF on coral reef biodiversity conservation, but after a long process only a PRIF phase has, so far, been realised while the main project has not yet been approved. Given the closed nature of the Red Sea and the frequency of international traffic, especially oil cargo, along this narrow waterway, donor assistance in marine protection and regional cooperation among the Red Sea and Indian Ocean littoral states is very important, indeed.

In the absence of donor funding, the Government of Eritrea has allocated, from its own meagre resources, funds equivalent to approximately US\$ 1 million to construct a marine research centre and office facilities along the coastal areas that will serve, among other things, as monitoring stations for marine environmental pollution and data collection centres, as well as providing development activities and extension services to artisanal fishermen.

Investment in marine and coastal areas has been minimal to date. The last three to five years have seen a large number of investors both national and foreign. However, practical steps have not yet been taken, mainly due to the absence of infrastructure facilities in the coastal and island areas. A total absence of roads, communication, power and water supply remains the main stumbling block for investment in these areas.

In the fishery sector a number of agreements have been concluded with various investors. A requirement for such agreements includes the construction of on-shore infrastructure facilities, such as processing plants, ice factories and cold storage. In investment, long-term benefits are preferred to short-term earnings that have detrimental effects on the marine environment.

In the tourism sector the demand for hotels and marine tourism in the coastal and island areas is considerable. However, by learning from the experience of neighbouring countries, great care is being taken to avoid pollution and marine degradation due to excessive tourism.

The few industrial activities along the coastal areas today pose little or no threat to the marine environment. However, this may not continue to be so. In the coming few years greater investment in fisheries, tourism, salt works, cement production, ports expansion, power generation, oil and gas exploration and exploitation, oil refineries, and growing urbanisation etc., could increase the threat tremendously. Greater awareness and preparedness to fight marine degradation is thus already a necessity.

Stakeholder Participation

Three instances could be mentioned, when conferences on fisheries, the marine environment and national environmental issues were discussed, and in which all the stakeholders, including the private sector and the fishing communities, were involved. The first two instances were initial planning conferences on fisheries and the marine environment in which fishermen cooperatives, fishing and oil companies participated, although they were both small in number and young in experience. The last three years have seen little development in private sector activities in the marine and island areas. However, the continuous expansion of the fishermen and fisherwomen cooperatives and their growing awareness should allow for their future active participation in the ICZM process. In general, the participation by the private sector and NGOs in planning and management of coastal zone issues has been minimal, since they are still in their early stages of development, as are most of the public sector institutions. However, the fact that the participation of the people's assemblies, or *baitos*, in the affairs of the regional administrations is growing, is a positive trend that will give impetus to their active role in ICZM processes in the future.

Capacity (technical and human)

Given the loss of its human and technical capabilities in the last years of struggle for independence, the country in general, and coastal zone management in particular, are experi-

encing a critical shortage of both. Because CZM issues were never addressed by the former regime in Eritrea, not a single working institution nor any tangible experience with respect to coastal management was inherited from the colonial past. On the contrary, there is a legacy of past misdeeds that has to be rectified now. Things have to start virtually from scratch. As there were other burning issues to be tackled immediately after independence, the management and development of CZM capacity was not a priority. However, because Eritrea has a considerable part of the Red Sea coast, the development of the potential coastal and marine resources will play an important role in the national economy in the near future. The fact that few development activities are currently taking place means that there is less concern for possible environmental degradation. CZM is therefore seen as an issue of the future. From this it follows that the capacity to develop it is expected to grow in coming years.

The GoE considers human resources to be the most important with which the country is endowed. The development of the capacity of this resource is given top priority. The fact that many higher Government officials are attending a three year management course, and the opening of a management institute to provide courses for lower level civil servants are proof of this. At present the main source of trained personnel for the marine sector are the Marine Biology and Fisheries Department of the University of Asmara and counterpart training by expatriate experts assigned in development projects. The Hirigo Fisheries Training Centre under construction is expected to contribute towards the development of human resources for the marine sector.

Research and Monitoring

Research and monitoring activities are carried out on the coast and islands with home bases in Massawa and Assab, with possible expansion to Tio and Dahlak Island in the coming few years. Major research activities are collection of basic information on habitats and organisation of the information in easily understandable formats. Research activities in the marine sector were initiated on a national scale on a continuous basis after 1993, although some elementary activities had been carried out by the University of Asmara much earlier. Marine research is an expensive venture for an economically weak country like Eritrea. With the meagre resources that the country has, and the absence of trained researchers, it is difficult to carry out research and monitoring for coastal areas of over 1 200 km, as well as 355 offshore islands with an additional 1 300 km of coastline.

The absence of marine scientists is compounded by both a lack of prior basic knowledge and equipment. This makes coverage and outcome rather limited. However, valuable information on fisheries has been collected from artisanal landing centres in Massawa and Assab. Foreign trawlers are being accompanied by biologists to collect information. Due to lack of transport and communication it is difficult to reach coastal, island and deep sea areas to conduct regular monitoring and surveys, but all available opportunities are used to record any changes. In the case of emergencies, such as an oil spill or tank wash from a passing vessel, it is difficult to determine what has happened, its extent and corrective measures. These and other shortcomings are issues to be addressed over the coming years if reliable and dependable research and regular monitoring activities are to be conducted. One strategy found to be important is collaborative research with other international institutions. These efforts include:

- MMR – Tel Aviv University: Dahlak Islands coral communities study and extraction of secondary metabolites as pharmaceutical compounds. The field collection was conducted for three weeks in October 1993.
- University of Wales, Aberystwyth collaboratively with MMR made a survey of coral reef communities in a number of islands for six weeks.
- Israeli Inter University Institute (IUI) in collaboration with MMR and University of Asmara made an expedition to the Dahlak Islands to make a study on coral metabolism, ichthyology and oceanography for six weeks in May 1995 and the second phase was organised for November 1996.
- Two cruises of sedimentological studies were conducted by University of Rome and MMR, both for three weeks in 1994 and 1995.
- The relation and impact of water circulation and exchange through the Strait of Bab al Mandeb is being monitored by MMR and Louisiana State University.
- A two year hydrological (bathymetric) survey is at the verge of completion to produce a better detailed bathymetric map of the territorial waters of Eritrea by MMR and the United States' Government.

Overall, in spite of impediments, encouraging progress has been made towards improving the research and monitoring capability of the country.

Summary of Analysis

The most important factors inhibiting effective coastal management and the protection of marine resources in Eritrea are numerous indeed. In the absence of a separate institution to address coastal zone management, the lack of a coordinated approach to coastal management could pose a serious problem in the future when coastal activities will have increased to a greater extent.

The protection of marine resources cannot be guaranteed when all pertinent legal instruments, as well as trained and organised enforcement organs, are missing. Even if all the laws and enforcement organs are in place, if the local communities are not involved, then the protection of coastal resources cannot be guaranteed.

A shortage of financial, material and human resources has so far been an impediment to Eritrea's success in ICZM. With the country's economic development in its infancy, it is not in a position to allocate financial and material resources to coastal management, particularly when there are more pressing social problems. The role of foreign funding in economic reconstruction and coastal zone development, however, is not to be underestimated. But since foreign assistance has also its negative sides – among them it creates perpetual dependency – the emphasis in Eritrea is now on foreign investment. With the absence of vital infrastructure, however, little investment is expected in the coming few years. Therefore, during an initial phase, funding of vital development programmes is quite necessary.

Marine scientific research and monitoring of the coastal and island areas provide an important input for the planning process of coastal zone management. Due to the fact that the marine sector has been neglected for many years as an economic resource, there seems to be little awareness of the importance of marine and coastal resources to the national economy. A campaign is now underway to introduce this awareness in the school population by including marine knowledge in the national curriculum.

Several actions are being taken to encourage people to work in and to live on the resources of the coastal areas. Some of these are a campaign to introduce fish as food into the urban centres and the highland areas, the construction of fish retail shops and sea food restaurants in the urban centres of the country, the promotion of marine tourism among the Eritrean population, and the campaign to involve as many people as possible in the coastal settlements.

WHAT NEEDS TO BE DONE?

Eritrea has resources as yet unknown. The fact that the country has inherited a sector where no basic data exists is a challenge that demands a dependable stock assessment study on the potential of marine and coastal resources. Such a study and its outcome could give a clearer picture whether investment – national and foreign – would be worthwhile. The work already started through international cooperation, namely, the French CFD, should continue with the task eventually transferred to national capacity.

On the basis of the results of the fish stock assessment it would be possible to determine a sustainable level of annual catches. The amount of effort in terms of number of licenses would in turn provide information as to amount of investment. This means that a well planned allocation of manpower, human resources development and infrastructure input along the coastal and island areas is a possibility.

As is the case in other parts of the world, the maritime areas of Eritrea – a little less than half the total land area of the country – is of utmost importance and so deserves utmost attention. Creation of awareness among the population will help in the dissemination of knowledge about the coastal zone. The fish promotion and consumption campaign, the introduction of a marine component in the school curriculum, the dissemination of information through the mass media on the role of marine resources and the need to protect the marine environment etc. should be supported through financial and material resources.

Even though the reorganisation of the public sector institutions is underway, including that for coastal zone management, it is crucial that the management of the coastal zone be administered by a separate entity so its importance is not diluted. If the activities of all the concerned public and private sector institutions are to be coordinated and integrated, then an agency with the necessary authority is vital to a sustainable ICZM process.

CONCLUSION

The newly independent nation of Eritrea is at present occupied by the grandiose task of reconstruction and nation-building. As is the case with all the other sectors of the country, the marine sector had been badly damaged during the long years of war.

The development of the coastal areas is still in its early stage, where development activities are influenced by many factors not least the lack of infrastructure, water supply and roads. The development of ICZM has started, but the limited human, material and financial resources at hand make it a slow process.

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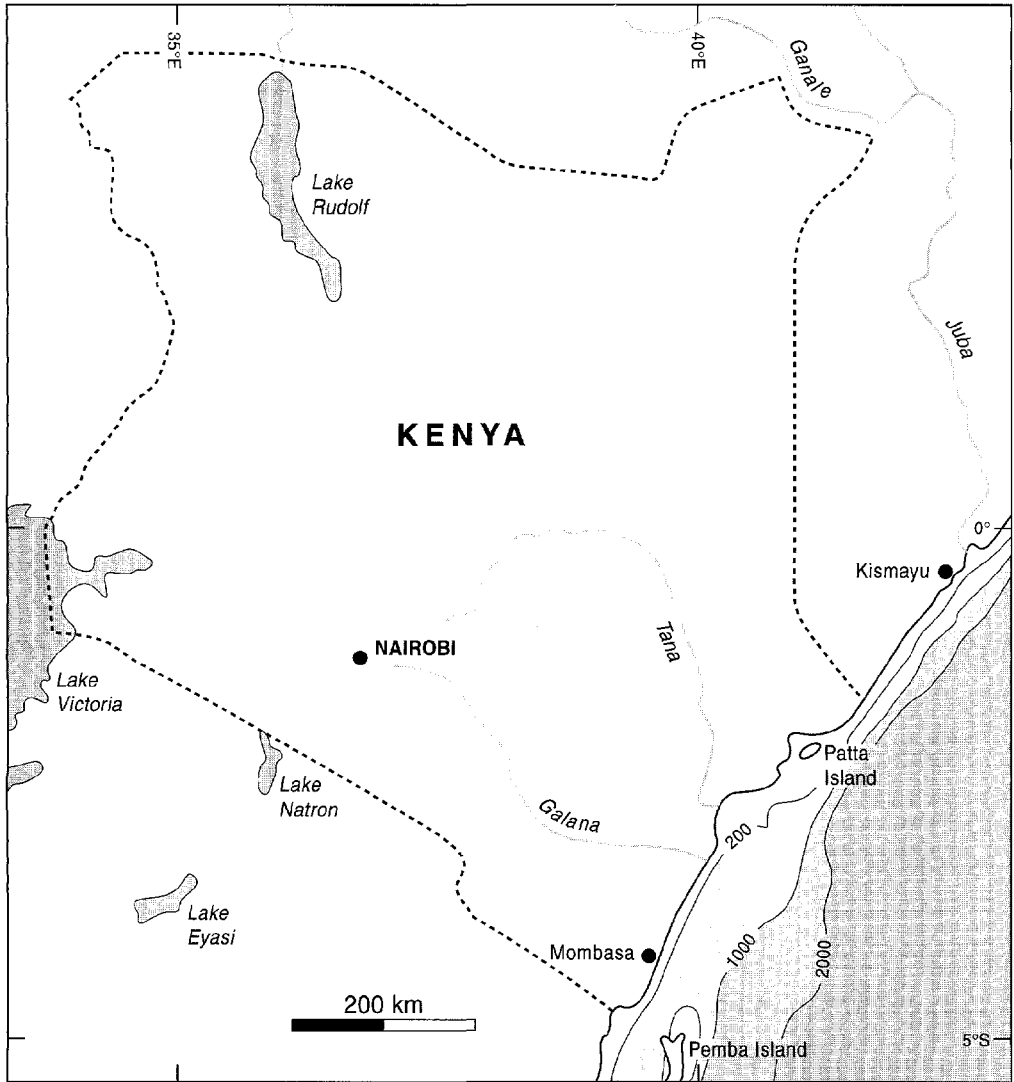
ANNEX

Ministry of Marine Resources – assistance projects 1992–1995

Ministry of Marine Resources – assistance projects 1992–1995			
<i>Projects already completed</i>			
Assistance to fisheries development, planning and resource management MMR	Fisheries sector review, planning national fisheries strategy and development programme, strengthening fisheries unit and service	FAO, US\$ 1 68 000	Massawa
Support to the research section of MMR through field research and assistance MMR	On-the-job training of MMR research staff, provision of equipment and partial running costs, technical assistance	Wildlife Conservation Society, US\$ 200 000	Massawa
Fish stock assessment training	Training MMR research and university staff, provision of computers and textbooks	USAID, US\$ 24 699	Massawa
Fisheries surveillance training MMR	Training MMR fisheries observers, provision of computers and GPS	USAID, US \$ 24 699	Massawa
MMR-University of Wales joint expedition to southern Dehalak Islands	Baseline data on coral reefs, establishment of monitoring sites, on-the-job training of MMR staff	private, UK£ 14 000	Dehalak Archipelago
MMR-Israel Inter-university Institute joint expedition in the Dehalak Archipelago MMR	Shallow water fishing investigations, deep sea fishing investigations, coral reef metabolism, on the-job training of MMR staff, provision of used computers and chemicals	IUI, not determined	Dehalak Archipelago
Provision of fishing nets MMR	Supply of fishing nets to fishermen, enhance fishermen's production capacity, assist in technology transfer	Korean Embassy in Addis, US\$ 100 000	Massawa, Tio, Assab
Provision of research boat and satellite imagery MMR	Develop infrastructure of the Resources and Environment Division	British Embassy in Addis, UK£ 60 000	Massawa

Title and executing agency	Objectives	Funding	Project location
<i>Projects under implementation</i>			
Research on the growth parameters of mangroves and in the Massawa area MMR	Mangrove distribution, mangrove growth parameters, significance of mangroves to local population	Wildlife Conservation Society, US\$ 3 350	Massawa
Semhar Assab fisheries rehabilitation project MMR	Rehabilitation of fisheries infrastructure in Massawa, Assab and Dehalak, organisation of fisheries cooperatives and their support through credit and loan facilities.	UNCDF/UNDP, US\$ 6 970 000	Massawa, Assab, Dehalak
Red Sea fisheries project (Dutch) MMR	Training of fishermen/women	ISEE (UK) and Dutch Government, US\$ 1 081 700	Wekiro, Mersa, Kubaa
Zula Fisheries community development project MMR	Fishing community development	OXFAM (Canada)/CIDA and others, Can \$ 561 000	Zula
Capacity building for the national marine resources programme MMR	Institution building	UNDP, US\$ 787 550	Massawa
Red Sea fisheries project (Belgian) MMR	Training of fishermen/women, providing necessary fishing inputs	BHKE and Belgian Government US\$ 291 769	Wekiro, Mersa, Kubaa
GEF conservation of coral reef biodiversity through community-based resources management MMR	Conservation and protection of the marine environment, community environmental awareness	UNDP/GEF, US\$ 3 11 800	Massawa, Assab, Dehalak Archipelago, coastal areas
Fisheries Training Centre MMR	Co-fund the construction of a training centre for Fisheries, assist the construction of a female dormitory	UNHCR, US\$ 50 000	Hirghigo
Assessment of markets, water supply, roads and power for fisheries infrastructure development project in Dankalia MMR/FAO	Make detailed studies of the project site, prepare a compiled report for the funding agency ADB, make preparation for a project formulation mission	FAO, US\$ 188 000	Asmara, Massawa, Tio
Marine resources assessment and information management MMR	Marine resources advisor TCO, establish data management system, assist in data collection, analysis and reporting	ODA, UK UK£ 387 300	Massawa
Fish promotion and consumption campaign MMR	Introduce fish as reliable food security system source, enhance local diet with marine products, help increase fish production/consumption, secure long-term nutritional benefits for women and children	UNICEF/UNDP and BKHE, US\$ 194 800	Asmara, Massawa

Project name and implementing agency	Objectives	Funding	Project location
<i>Projects in the process of approval and for design</i>			
Artisanal fisheries development in south-eastern Eritrea MMR/JICA	Fishing port construction in Assab, fisheries infrastructure development, support to artisanal fishermen	Japanese Government US\$ 10 million	Assab, Barasole, Ras Tema
Establishment of fish marketing corporation MMR	provide technical assistance to the management of the corporation, assist with the development of domestic and export marketing of fish and marine products	FAO, US\$ 250 000	Asmara, Massawa, Assab
Stock assessment of Eritrean marine resources MMR/IFREM ER	Carry out stock assessment expedition in Eritrean waters, equip a vessel for stock assessments, train Eritrean scientists, follow up stock assessment process	CFD, France, Ff 13 million, together with project below	Massawa
Feasibility study for export market development of Eritrean marine products MMR/French consulting company	Feasibility study, determine export potential of Eritrean marine resources, determine export markets, establish a quality control laboratory, train Eritrean staff, advice on export standards	CFD, France, Ff 13 million, together with project above	Asmara, Massawa
Fisheries infrastructure development project MMR	Construction of fisheries infrastructure in Tio, Eddi and Gelalo, support to artisanal fishermen, road improvement and supply to those areas	African Development Bank, US\$ 16 million	Tio, Gelalo, Eddi
PROFERI fisheries component MMR/CERA	Training of refugee fishermen, settlement of 400 fishermen in coastal areas, provision of necessary fishing inputs, construction of needed fisheries infrastructure	CERA/donor agencies, US\$ 2 930 000	Hergigo, Mersa, Kubaa
Training and credit schemes for trades people in artisanal fisheries MMR	Training of artisanal fishermen in cooperatives and boat building, provision of credit	EEC/IGADD, US\$ 905 415	Massawa
Artisanal fisheries project in Massawa and Dehalak Islands area MMR	Increase fish production, help increase fish supply to the population, promote fish export, contribute to the industrial development in the fisheries sector	Italian Government, Lire 4 billion	Massawa and Dehalak area



Integrated Coastal Zone Management in Kenya

MIKA ODIDO AND EZEKIEL OKEMWA

INTRODUCTION

The Kenyan coastal zone has a very diverse physical, social and economic environment. A number of government bodies have management authority over resources and environment, as shown in Annex II. There are also several associations that represent a wide range of interest groups operating in coastal areas. The Coast Province is divided into six districts: Mombasa, Kwale, Kilifi, Tana River and Lamu border the sea, while Taita Taveta is inland. Kenya's coastal environment and its resources are increasingly under pressure from human settlements and related socio-economic activities. These activities range from tourism and trading to food production. Kenya has not developed a national Integrated Coastal Zone Management programme.

In 1995 a pilot programme for Integrated Coastal Zone Management of the Nyali-Bamburi-Shanzu area was developed by an Integrated Coastal Area Management team, which was created for this purpose, composed of representatives from the Coast Development Authority (CDA) – team leader and Kenya Marine & Fisheries Research Institute (KMFRI), Kenya Wildlife Services (KWS), Fisheries Department, Mombasa Municipal Council and the Kenya Association of Hoteliers and Caterers (KAHC). The team has come up with a management plan concerning a number of issues in the pilot area. The major issues and concerns in the management of coastal areas in Kenya include over-exploitation of resources, poor land use practices leading to erosion and sedimentation, pollution from land-based and maritime activities. Most of these have also been covered in the management plan of the Nyali-Bamburi-Shanzu study site.

DESCRIPTION OF COASTAL ACTIVITIES AND CRITICAL ANALYSIS

Institutional Framework

There is no overall framework that integrates the activities of the various institutions involved in different aspects of management of the coastal areas. The National Environment Secretariat (NES) within the Ministry of Environment and Natural Resources is the coordinating body for matters related to the environment. The multiplicity of institutions dealing with management of the coastal area requires a sound coordinating mechanism, to avoid duplication which will only lead to resource waste and institutional conflicts.

The Coast Development Authority, which became operational in 1992, plans and coordinates the implementation of development projects in the whole of the Coast Province and the Exclusive Economic Zone (EEZ). CDA has limited resources and most of its professional personnel are on secondment from other government institutions.

The Provincial Administration which has personnel from provincial, district, divisional and local levels is also involved in various aspects of coastal zone management. District Commissioners chair the District Development Committees which approve development projects within their respective districts. There are District Environment Officers, and some districts also have District Environment Management Committees. The move to have the districts as the unit for development planning was meant to ensure greater participation of local communities in identifying their priorities. This should make the institutions within the districts more responsive to the needs of the residents. However, participation in the deliberations of the District Development Committees has been mainly by heads of government departments. The limited budgets allocated, and the fact that most institutions still have separate budgets controlled centrally by the parent ministries, limit the effectiveness of this mechanism.

Local government authorities (municipal, township and county councils), with elected representatives, provide services including construction of roads, markets, garbage collection and effluent treatment and disposal within their areas of jurisdiction. However, their technical and human resources capacity is rather limited, due to the many services they are expected to provide on limited budgets. They have found it difficult to attract and retain technical personnel because of the poor terms of service. Though the local government Authorities are supposed to provide waste management services and facilities, few do this, and in most cases domestic and industrial effluents are discharged into the sea untreated.

The experience earned in developing the Nyali-Bamburi-Shanzu ICAM activity will be very useful for working out an institutional framework for ICZM. The initial mistrust that existed between individuals and institutions dissipated as they continued to work together. The CDA has been the lead institution for the ICAM activity and chaired the Coastal Management Steering Committee (CMSC). This committee could act as a coordinating mechanism for development of a national ICZM programme, relying on the other institutions specialising in specific locations or aspects of coastal management. The Kenya Marine and Fisheries Research Institute (KMFRI) has entered into collaborative agreements with the key players in the management of the coastal environment to enable the institute to provide support for research activities they may be interested in. The institute has signed Memorandums of Understanding (MOU) with KWS and CDA, and is already negotiating similar agreements with the Fisheries Department and the National Museums of Kenya. KMFRI also has close collaboration with the local universities which use its facilities for training purposes.

Other than the ICAM activities, several institutions have come together to develop the Coastal and Marine Environment Database and Atlas within the framework of the EAF/14 project of the Regional Seas Programme of UNEP. The National Oceanographic Committee has been revived as one of the committees of the Kenya National Commission for UNESCO. This committee brings together institutions with an interest in the marine environment.

Coastal Land Use

There are three broad categories of land ownership in Kenya, namely government land, trust lands and privately owned land. Trust land is managed by the local government authority under whose jurisdiction it falls. These authorities can lease out the land for devel-

opment and must approve development plans. The government land can be leased out for development by the Commissioner of Lands. Ownership of beach properties extends to the high water mark, though in areas adjacent to marine parks and reserves, the Kenya Wildlife Services can enforce a 100 ft setback. A similar setback can be enforced by the local government authorities in areas under their jurisdiction.

The increase in soil erosion due to deforestation and poor agricultural practices has led to heavy silting of the Sabaki River. The silt has caused accretion of the beach area in Malindi where the river discharges into the ocean.

Environment and Conservation

The National Environment Secretariat in the Ministry of Environment and Natural Resources, has prepared a National Environment Action Plan (NEAP), and reports on the state of the environment in several of the coastal districts. The NEAP is aimed at providing a broad framework for sound management of natural resources and environments, including the coastal environment. A NEAP Secretariat was established to oversee its development and implementation.

Environment and conservation matters are handled by a large number of institutions including: provincial administration, local government authorities, Kenya Wildlife Services (marine and terrestrial parks and reserves in the coastal area) and the National Museums of Kenya (museums, conservation of national monuments – including the old town areas of Mombasa and Lamu).

Erosion and accretion of the shoreline have been of particular concern to those who have invested along the Kenyan coast. Attempts to stabilise coastal features through shoreline protection works alters the natural shoreline process, often making the downstream or long-term erosion problem worse. Most of the local communities are not able to afford expensive coastal protection structures. The Ministry of Public Works has constructed a sea wall on part of Lamu island and is now working on similar walls on Ndau and Pate islands.

Pollution of the coastal areas and waters is another area of concern. The large number of industries located in Mombasa, and the vessels plying the waters of the Kenyan coast, pose a threat of pollution to the environment. Most of the urban centres along the coast do not have waste water treatment plants and dispose of both domestic and industrial effluent in at sea. With the Kenyan coast being close to major sea lanes from the Middle East, there is always a threat of pollution from oil, should a tanker capsize off the coast. The Makupa Creek has already suffered from effects of an oil spill when a storage tanker was ruptured by a crane. In some areas of the coast the coral reefs are already suffering from the effects of sedimentation or interference from boat anchors or people stepping on them. Marine pollution is handled by several institutions including the Kenya Ports Authority, Kenya Wildlife Services, local government authorities, Ministry of Health and the Ministry of Land Reclamation, Regional and Water Development.

The Ministry of Land Reclamation, Regional and Water Development is also responsible for provision of water and preservation of water catchment areas. The National Water Conservation and Pipeline Corporation, in the Ministry, has only been able to supply 44 percent of the demand for water in Mombasa from Mzima Springs, Sabaki River (Baricho), Marere Springs and Tiwi boreholes. To supplement these, extra boreholes will be dug in Baricho (Sabaki) to increase the Baricho output. The expansion of salt ponds in the Malin-

di-Ngomoni area has had adverse effects on water wells dug by the local communities, which have become saline. The communities have also complained that harvesting of sand is having similar effects on the wells.

Tourism

Tourism is currently the main foreign exchange earner, having surpassed coffee and tea exports. Coastal tourism accounts for 60 to 70 percent of the national tourism industry. Tourism and the related sub-sectors generate nine percent of the total employment in the country. The Tourism Department is responsible for licensing and regulating the growth of the tourism industry. The local government authorities in the region also make some regulatory bylaws affecting tourism. By the end of 1995, the Utalii College had trained 16 385 people for the tourism industry, most from Kenya, but with a significant number from other countries of Africa.

Shipping and Commerce

The second major economic resource on the Kenyan coast is the Kilindini harbour in Mombasa. It derives its viability not only from its strategic position as a natural harbour, but also from the existence of an extensive and reasonably productive hinterland which in addition to Kenya includes the East and Central African countries of Rwanda, Uganda, Burundi and parts of Zaire and Sudan. The port is managed by the Kenya Ports Authority (KPA). Other ports managed by the authority are Vanga, Shimoni, Funzi, Mtwapa, Kilifi, Malindi, Lamu and Kiunga. The smaller ports serve mainly coastal trade, leisure and fishing.

KPA also owns the Kenya Ferry Services which runs ferry services across the Kilindini Channel at Likoni and Mtongwe, and is the largest share holder in Kenya National Shipping Lines. It is estimated that three quarters of the goods exported and imported through the port of Mombasa are conveyed by road, underlying the critical importance of this mode of transport. The oil pipeline from Mombasa to Eldoret and Kisumu (through Nairobi) is gaining importance in the transport of oil products previously handled by road and rail.

Industrial Development

The location of the port has attracted many industries to Mombasa, including Kenya Oil Refineries Ltd. There are plans to develop Export Processing Zones in Kipevu and Kokotoni with investor tax incentives, so as to encourage increased production for the export market. Other commercial, trading and industrial activities in the coastal area include cement manufacture, textiles, food processing, salt extraction, metal and steel works and lime production. Most of these are run by private investors.

The District Development Committees review and approve all proposals for establishment of industries. They are supposed to take environmental considerations into account in this process. The industries have also to be licensed by the local government authorities. Other institutions and organisations involved in development of industries include the Kenya Industrial Estates, which assists small scale entrepreneurs in obtaining equipment, funds and managerial skills, the Export Processing Zone Authority, which develops infrastructure within the Export Processing Zones and the Coast Development Authority.

Agriculture and Forestry

Most of the land in the coastal area is of low agricultural potential. The following agricultural products are important in the coastal region: horticultural products, particularly vegetables and tropical fruits, sisal, cotton, coconuts, cashew nuts and bixa. There is also substantial livestock production such as poultry, beef, dairy cattle, goat and sheep in the region.

The Ministry of Agriculture and Livestock Development is responsible for development of agriculture.

The main forests in the coastal zone are the Arabuko-Sokoke forest in Kilifi District, Shimba Hills in Kwale and the Lungu and Boni forests in Lamu. The Arabuko-Sokoke forest is an important biodiversity area. A butterfly rearing project, the Kipepeo project, provides income to more than 200 homesteads on the outskirts of the forest. There are also mangrove forests all along the coast. Mangrove forests provide poles, timber and building materials for the construction industry. Mangroves support a variety of flora and fauna, and also prevent soil erosion and trap sediment. The export of mangrove poles was banned in the early 1980s. This ban arrested the rapid depletion of mangrove forests. However, large expanses of mangrove have been cleared to give way to aquaculture activities and salt ponds. Other important forest areas in the coast region are the "Kaya" forests which are considered sacred areas by the coastal communities. The Forestry Department is responsible for the development and management of Kenya's forests. Mangrove forests, however, are administered by several different departments. The Forestry Department, KWS, and Fisheries Department all have different management interests in mangrove ecosystems. The Forestry Department is concerned with the mangrove trees, the KWS with the habitat as a sanctuary for birds and other terrestrial fauna, and the Fisheries Department with the habitat as a nursery and fishing ground. The Coastal Forest Conservation Unit of the National Museums of Kenya manages the Kipepeo project and is also in charge of the "Kaya" forests which are protected under the Antiquities and Monuments Act.

Fisheries and Aquaculture

Marine fisheries are an important source of protein for coastal populations. The main fishery along the Kenyan coast is still artisanal. Most of the fishing is done in creeks, reefs and shallow inshore waters. During the past decade the total annual fish landings have varied from 5 000 to 8 000 tonnes, in an increasing trend. Approximately 80 percent of the landings are from reef and shallow coastal waters and 18 percent from offshore trawlers. Near-shore fisheries are at or near maximum sustainable yields, while offshore areas are considered under-exploited.

The Fisheries Department in the Ministry of Land Reclamation, Regional and Water Development is charged with promoting the development of traditional and industrial fisheries, fish culture and related industries and the proper management of any fisheries. The Department is responsible for issuing fishing licenses, gear regulations, and actual administration of the fisheries acts in the country.

There are several aquaculture activities along the coast of Kenya, including prawn farming in the Malindi-Ngomeni area, *Artemia* culture, *Tilapia* farming at Baobab Farm Ltd in Mombasa and an oyster culture project run by the Shirazi women's group in Gazi, with support from the Belgian government through the Coast Development Authority. The pilot study for this project was done by KMFRI within the framework of the Kenya-Belgium Project in Biological Oceanography.

Legal Framework

Kenya is a party to several international conventions, including the Law of the Sea Convention, Climate Change Convention, Biodiversity Convention and the Ramsar Convention. Kenya has also ratified the Convention for the Protection, Management and Develop-

ment of the Coastal Environment of the Eastern African Region (Nairobi Convention). It is the Depository for the Nairobi Convention. Currently there is no single legislation or policy paper addressing Integrated Coastal Zone Management. The National Environment Action Plan identifies 77 statutes relating to the management and conservation of the environment (see Annex III), most of which apply to the coastal environment. The National Environment Secretariat was not created by an Act of Parliament and relies on administrative mandate and the good will of other departments and ministries.

In the last few years there have been several actions aimed at reforming the legal system in Kenya. Several policy documents related to marine areas have recently been finalised or are currently under review. The new Environment Policy and Forestry Policy documents were finalised earlier this year, while the Wildlife Conservation and Management Policy is under review. Following these revisions, amendments to the relevant statutes, including legislation on the Environment, will be tabled in Parliament in the course of 1996. In all the legislation, community participation in the management of resources will be emphasised.

The Maritime Zones Act of 1989 consolidates the law relating to territorial waters, provides for the establishment and delimitation of the Exclusive Economic Zone of Kenya and provides for the exploration, exploitation, conservation and management of resources in the maritime zones. The Continental Shelf Act of 1975 vests the rights in the government with respect to the continental shelf and the resources thereon, therein and thereunder. Whereas the holder of a title to land is free to use resources on the land, the "... water of every body of water... is vested in the government" under the Water Act. Similarly all unextracted minerals, other than common minerals (e.g. clay, murram, limestone) are vested in the government by the Mining Act (Cap 306 of the Laws of Kenya). Sand extraction is governed by local bylaws.

Land ownership and land use is a particularly difficult subject in the coastal region because of the relatively large number of squatters (people staying illegally on land which they do not own). In the Policy Framework Paper, the government recognises this and indicates that a Land Use Commission will be created for land tenure and land use policy issues. The Government Land Amendment Bill of 1994 was withdrawn before being passed by Parliament, due to disagreements over some of its provisions. The Bill dealt with allocation of government land and renewal of leases. It sought to prohibit allocation of land created by recession of the sea, while permitting owners of adjoining properties to use the additional land as licensees. It also sought to legalise the practice whereby the government insists that for security reasons, it must approve sales of all sea front properties, although there is no law empowering the government to do this. Such approval would be additional to other consents that may be required, such as the Commissioner of Lands' consent for leaseholds, or Land Board consent for agricultural properties. In some areas of the coast like Malindi, following substantial recession of the sea, land created therefrom has been allocated to people other than the owners of adjoining properties. The investors who originally put up beach hotels have suddenly found themselves two or three rows behind the beach front. Other controversial allocations include the "Kaya" forests which have traditionally been used as shrines by local communities. The Land Bill also sought to address the issue of government land leases which are due to expire soon. There is a need to review land laws to address such conflicts. Another issue that needs to be addressed is the squatter problem. There are many squatters on both government land and land owned by absentee landlords in the coastal areas. Since their sojourn is temporary, squatters usually do not care much about development, conservation or protection of the environment.

The Fisheries Act (Cap 378 of the Laws of Kenya) provides for the development, management, exploitation, utilisation and conservation of fisheries and for related purposes. Under the Act the Department, in collaboration with other appropriate agencies and government departments, shall promote the development of traditional and industrial fisheries, fish culture and related industries, and may impose measures necessary for the proper management of any fishery. The Act also declares Kenyan fishery waters a pollution prevention zone for the purposes of protecting the aquatic environment and ecology.

Regulations on pollution and its control are still spread over several acts, with different enforcing agencies. These include the Factories Act, the Public Health Act, the Merchant Shipping Act and the Local Government Act. The environmental legislation currently being prepared should try to consolidate statutes on pollution of the environment, especially the coastal environment.

Other regulations governing access, use and management of environment and resources in the coastal area are listed in Annex IV.

According to the Policy Framework Paper 1996–1998, comprehensive environmental legislation will be presented to Parliament before the end of 1996. The policy on Wildlife Conservation and Management is also being reviewed to take into account the conservation of biological diversity and representative indigenous ecosystems, the promotion of environmentally sustainable tourism; promotion of compatible land use in priority biodiversity areas and channelling the benefits thereof to the local communities. The Wildlife Conservation and Management Act (Cap 376 of the Laws of Kenya) will be amended in line with the revised policy.

Enforcement

The laws relating to the coastal areas have not been adequately enforced by the relevant authorised institutions, owing to a number of reasons such as poor or weak administrative structures, absence of standards of performance, inadequate deterrence or incentives, generally low levels of active and participatory awareness among a majority of the population, preference for short term gains at the expense of more sustainable alternatives in policy making and planning, gaps and overlaps in the institutional responsibilities making enforcement difficult, and poverty, which promotes unsuitable use of resources. Some of the agencies do not have the necessary resources to adequately enforce regulations and follow-up on complaints and violations.

Whereas the KWS, for example, can call upon armed rangers to enforce regulations within marine park areas, the local government authorities have not enforced local government bylaws which contain enabling clauses that make it possible for them to intervene in cases of environmental degradation. The Fisheries Department has also not had enough resources to patrol and enforce regulations governing the management of fisheries.

Enforcement also becomes difficult when groups of unequal power are in conflict. Political or economic pressures and corrupt practices can hamper the enforcement of laws and regulations in such cases.

Investments and Funding

Various institutions and organisations (governmental, non-governmental and private) have invested in or funded different aspects of coastal zone management.

The local authorities provide services using funds raised from rates, service charges and licenses. Some of them have also received external assistance to enhance their ability to provide such services.

The central government, through the District Development Committees, has also funded some programmes for management and protection of the coastal environment. One such programme is construction of sea walls by the Ministry of Public Works on the northern Kenya coast, where serious erosion problems have threatened coastal structures, including houses.

The Kenya Wildlife Services manages the marine parks and reserves from revenue received from charging park entry fees and also budgetary allocation from the Treasury. In addition, they have received substantial assistance from other countries and organisations such as the Netherlands, UK, World Bank and IUCN.

In order to assist artisanal fishermen, fish depots, including cold storage facilities, have been put up at several landing beaches with support from the International Fund for Agricultural Development (IFAD). The depots are run by the local fishermen's cooperative societies.

The Nyali-Bamburi-Shanzu integrated coastal management activity was initiated within the framework of the Action Plan for the Protection and Management of Marine and Coastal Areas in the Eastern African Region (UNEP- EAF 5 programme) with funds and technical assistance from FAO, USAID and University of Rhode Island, USA. The Kenyan institutions that participated in the development of the programme included CDA, KMFRI, KWS, Fisheries Department, Mombasa Municipal Council and the Kenya Association of Hotelkeepers and Caterers.

Most of the institutions involved in coastal activities receive very limited funding from the government. They therefore have to rely heavily on donor funding which is not always assured. Some of the projects recently completed or ongoing are listed here.

- The Nyali-Bamburi-Shanzu ICAM activity received funding and technical support from various organisations, including FAO, USAID, UNEP and CRC. The management plan is ready and a few demonstration projects are underway.
- The KWS-Netherlands Wetlands Conservation and Training Programme, which is providing support for improved management of marine parks and reserves.
- The Coastal Atlas and Database, prepared with support from the Belgian Government and UNEP within the framework of the Eastern African Database and Atlas project of UNEP (EAF 14).
- The WIOMSA research grants, which have greatly assisted in supplementing the resources available for coastal research, especially for small projects run by individual scientists.

For sustainability, ICZM-related strategies must be incorporated into national development plans and budget and sufficient funds allocated for implementing them. On the northern coast of Kenya, a project is underway to construct sea walls on the coasts of Ndau and Pate islands, to arrest serious beach erosion.

Some of the stakeholders have shown a willingness to fund activities which will lead to an improvement in their sector. For example, the stakeholders from the tourism sector who participated in the Nyali-Bamburi-Shanzu ICAM activity developed a beach management programme for the beaches adjacent to the Mombasa marine park and reserve areas, to be

implemented in collaboration with the Kenya Wildlife Services. This will be funded wholly by a US\$0.50 surcharge per bed night on tourists staying in beach hotels. Some of the hotels now have programmes for managing their effluent.

Stakeholder Participation

In recent years there has been increased involvement of stakeholders in managing the coastal environment and resources, through the formation of lobbying groups. This is especially so in the tourist industry where the interest groups have formed associations like the Mombasa and Coast Tourist Association, Kenya Association of Hotelkeepers and Caterers, Kenya Association of Tour Operators, Kenya Association of Travel Agents and other smaller associations for boat owners, beach traders etc.

There are also other non-governmental organisations involved in conservation which have an interest in the coastal environment. These are the East African Wildlife Society (EAWLS), Wildlife Clubs of Kenya (WCK), Kenya Green Belt Movement, and the Society for the Protection of the Environment in Kenya (SPEK). Groups formed for specific concerns include the Friends of Mangroves and Friends of Fort Jesus. These organisations have arranged activities such as beach cleaning exercises, lectures and seminars on the environment, and have even sponsored research programmes on coastal environment.

Recent downturns experienced by several sectors of the coastal economy have led to more active involvement of stakeholders in trying to identify solutions to problems plaguing their respective sectors, through lobbying and pressure groups. This is an encouraging trend, as they will bring into the process the immense experience and local knowledge which they possess.

Tourism

The number of visitors arriving in Kenya dropped from 863 400 in 1994 to 690 500 in 1995. This decline was blamed on negative international publicity on the local security situation, the falsely reported outbreak of dangerous diseases like Ebola, the decline in infrastructure such as roads, water and power, and competition from newly emerging tourist destinations like South Africa. Coming at a time when the number of hotels on the coast had increased significantly, the impact was serious enough to bring stakeholders together to work out initiatives to address the situation, and to make presentations to the government. The Mombasa and Coast Tourist Association and the Kenya Association of Hotelkeepers and Caterers have been at the forefront of these campaigns. Several initiatives have resulted, including the establishment of a Tourist Police force to address security concerns, the formation of a tourism board with representatives from the industry to promote and market Kenya as a tourist destination and the implementation of the beach management plan discussed above. The beach management program will be run by KWS and involve patrol of beaches bordering Mombasa marine park and reserve by KWS rangers, training of boat owners in basic skills – especially marine ecology, snorkelling, life saving etc. It is hoped that through the program, beach security will improve. MCTA has also made requests to the provincial administration and local government authorities for improvement of services and infrastructure like roads, water and power.

The initiatives of the tourism lobby groups have not had the unanimous support of all stakeholders, however. Political leaders on the southern Kenya coast recently opposed the creation of the Diani-Chale marine reserve and the beach management programme, arguing that the local communities will not benefit from the project. Such arguments are bound

to surface more frequently if the local communities feel that they are not getting meaningful returns from the tourist industry.

Agriculture and Forestry

The problems in the agricultural sector along the coast have not elicited as much publicity, due in part to the fact that agriculture in the area has no significant impact on the national economy, and also that the farming community on the coast does not have any active lobby groups. The previously lucrative sugar industry based at Ramisi has collapsed following the closure of the Ramisi Sugar Factory. Bixa and cashew nuts have registered very poor outputs. These have been blamed in part on poor management of the processing factories and low volumes of production from farmers. The inadequate use of inputs like fertilisers has also contributed to the poor performance of the agricultural sector.

The establishment of settlement schemes in the coastal area (Lake Kenyatta, Hindi/Magogoni, Magarini and Witu settlement schemes) has led to increases in agricultural production in the region, especially for cotton and horticultural products. Several agencies have provided support for developing infrastructure in the schemes and provision of water.

Fisheries and Aquaculture

The fisheries sector has also stagnated for the last few years. The fishermen's cooperative societies have not provided a strong lobby, unlike the tourist industry. The number of artisanal fishermen has declined over the years. The development of residential and hotel establishments along the sea front, and the resultant fencing off of access points, have led to a reduction in fish landing sites, especially in the highly populated areas adjacent to Mombasa and Malindi.

Environment and Conservation

Conservation and protection of the coastal environment is another area where there has been active participation of stakeholders and their pressure groups. The increasing population in the coastal area has given rise to competition for land space, pitting conservationists against private developers and local residents in some areas. The East African Wildlife Society spearheaded opposition to the allocation of land earmarked for the development of the Tana Delta National Park, which would be the only wetlands park in the region, to a private developer who intended to use it for aquaculture. They also joined other conservation groups in lobbying against the de-gazetting and allocation of Mama Ngina Drive in Mombasa and parts of the Arabuko-Sokoke forests.

Kenya Wildlife Services has recognised the need for greater participation of the local communities in conservation projects. The new Wildlife Conservation and Management Policy, currently being prepared, will emphasise community participation to avoid situations like the stalled Diani-Chale marine reserve, mentioned above, which is opposed to by local leaders.

The Wildlife Clubs of Kenya, in collaboration with KWS, have organised beach cleaning exercises. KWS, together with other institutions and groups of stakeholders, has organised activities to sensitise the coastal populations to conservation issues, such as a Dugong Festival in Lamu, and a Turtle Walk along the coast. Other groups which have been active in this sector include the Society for the Protection of Environment in Kenya and the Malindi Greentown Movement.

Following the experience of the oil spill in Makupa Creek, which led to destruction of marine life and the drying up of mangroves in the creek, and some cases when oil tankers almost capsized on the Kenyan coast, a National Oil Spill Response Committee was formed. The committee has members drawn from the oil companies operating in Kenya, the Ports Authority, Kenya Oil Refineries, the Navy, KMFRI, KWS and other departments. The committee has a pollution boat equipped with fire fighting equipment from KPA. Two aircraft from the KWS are also used for oil spill surveillance duties and during emergencies. However, they need better communication equipment and night watch facilities.

Capacity (technical and human)

In 1993, the United Nations Environment Programme (UNEP) held the first regional workshop on the development of coastal area management plans, surveying techniques, and marine resources assessment. Since then several institutions have sent their staff to the Rhode Island University Coastal Zone Management training programme. These include KMFRI, KWS and CDA.

There is no institution in Kenya that provides training on Integrated Coastal Zone Management. However, various institutions have courses in managing specific resources or aspects of the coastal environment. Moi University has a degree course in Wildlife Management, including fisheries and forestry. The university also has a School of Environmental Sciences (MUSES) offering postgraduate courses in all aspects of environmental sciences. Kenyatta University also has a department of environmental science, while Egerton University offers courses in aquaculture. The institutions involved in different aspects of management of the coastal environment have also had their personnel trained in universities and colleges abroad in their areas of specialisation. This is, however, costly and depends on the availability of scholarships.

For the tourist industry, Utalii College in Nairobi is the main training institution. The college provides training for all cadres of personnel required in the industry including hotel personnel (managers, cooks etc.) and tour guides. There are plans to open a branch of the college in the Coast Province.

A knowledge of the environment and resources is important for developing an effective management programme. Kenya has prepared a Coastal Resources Database within the framework of the EAF 14 project of UNEP. This will have to be updated and maintained through collection of more data by the institutions involved in the different aspects of coastal management.

It is necessary to take an inventory of the capacity required for coastal zone management, and what is available. For example, the limited capacity available at the start of the Nyali-Bamburi-Shanzu ICAM activity was one frustrating obstacle. Several institutions had their staff trained within the project. The process of developing the ICAM activity was itself a learning experience.

Most of these institutions still do not have sufficient trained and skilled personnel to handle coastal zone issues. There is a need for a sustained capacity development programme to ensure a critical mass of personnel. The institutions are also affected by a high level of staff mobility. Trained personnel are able to attract better remuneration in the private sector and frequently leave for "greener" pastures. In some instances the lack of supporting infrastructure (equipment and funds) to enable them to discharge their duties after training has also contributed to the departures.

There has been a tendency to concentrate training at the medium and high levels, in the process forgetting to cater for technician training and public awareness at the grassroots levels. The introduction of marine resource and environment issues in the school curriculum, and the training of trainers is one way of addressing this problem. However, to achieve sustainability it is necessary to broaden the base of trained manpower, and to increase the level of public awareness on coastal environment and resources issues. This is especially so due to the high level of staff mobility. There is a need to train trainers and introduce a wider public awareness programme, to realise a critical mass of trained people.

The lack of sufficient equipment and financial resources continues to affect most of the institutions. None of the institutions has an ocean-going research vessel. The institutions have therefore learnt to share capacity and resources available to address problems of mutual interest. For example, Government Chemists, KMFRI and KWS have put together their resources in a pollution monitoring programme in several places along the coast. Several institutions have signed "Memorandums of Understanding" to facilitate such collaboration (e.g. KMFRI/KWS, KWS/CDA, KMFRI/CDA KWS/Forestry Department), while others are in the process of negotiating similar arrangements (KMFRI/NMK, KMFRI/Fisheries Department).

Research and Monitoring

Research and monitoring are key elements of any coastal management strategy. It is through them that feedback is obtained on effectiveness of policies being pursued, and other areas that need to be addressed are identified. The Kenya Marine & Fisheries Research Institute was established in 1980 under the Science and Technology Act of 1979 (Cap 250 of the Laws of Kenya), to undertake research in marine and freshwater fisheries and all aspects of aquatic research, including environmental and ecological studies, limnology, chemical and physical oceanography. The institute is also the main advisory body for the government on all matters related to aquatic sciences. KMFRI has established collaborative arrangements with the Kenya Wildlife Services, the Coast Development Authority and the local universities.

Other organisations involved in monitoring and conservation of the coastal environment include the Kenya Wildlife Society (marine parks and reserves), Kenya Forestry Research Institute (forests and mangroves), and National Museums of Kenya (coastal archaeology and biodiversity). The University of Nairobi and Moi University have field stations at Diani on the south coast and Malindi on the north coast, respectively. Egerton University plans to develop facilities at Lamu. Kenya Agricultural Research Institute has several field stations in the coastal region dealing with various aspects of agricultural research. The Kenya Meteorological Department in the Ministry of Transport and Communications has weather monitoring stations along the coast. Each of these institutions has a legal mandate covering specific aspects of coastal zone conservation or management. The Department of Remote Sensing and Resource Surveys (DRSRS) has also mapped mangrove areas and other forests in the region.

The work of these institutions would be better focused if they were operating within an ICZM process. They would then be able to address issues which are of concern to the stakeholders.

Some of the recent or ongoing research and monitoring programmes on coastal environment and resources are listed here.

- KWS, KMFRI and Government Chemists are implementing a joint pollution monitoring programme within the Mombasa Marine Park and Reserve area.
- The Coral Reef Conservation Project begun in 1988 conducts research on the status of and threats to coral ecosystems, in collaboration with scientists from KWS and KMFRI. The project also organises training programmes in coral reef ecology and monitoring techniques for scientists from the Western Indian Ocean region.
- The European Union sponsored a three year study on the "Inter-linkages of Coastal Ecosystems" which was carried out in Gazi on the southern coast of Kenya by KMFRI, Vrije Universiteit Brussels (Belgium) and DIHO in the Netherlands. The study considered the inter-linkages between the mangrove, coral and seagrass bed ecosystems.
- Results of research on oyster farming, undertaken in Gazi by KMFRI, has led to the launching of a pilot oyster farm by the Shirazi women's group, with support from the Belgian government.
- The National Environment Secretariat is coordinating the Biodiversity Database Management project of the Global Environment Facility (GEF), which has a marine/coastal component.
- KMFRI and Moi University's School of Environmental Sciences have an ongoing programme for monitoring erosion and siltation along the Kenyan coast, especially in the Malindi and Diani areas.

A list of all projects is provided in Annex I.

Summary of Analysis

The experience Kenya has acquired in developing the Nyali-Bamburi-Shanzu management strategy will be useful for preparing a National Coastal Zone Management Plan. The issues dealt with in this study site recur in most places along the coast, only the emphasis changes.

The major factors preventing effective coastal management and protection of marine resources include weak legal framework and lack of or poor enforcement of existing regulations. The development of a national ICZM will help focus attention on these shortcomings. The Nyali-Bamburi-Shanzu ICAM activity has shown that institutions and stakeholders can come together and develop a working program for management of the coastal environment and resources. The implementation by some of the stakeholders of parts of the program demonstrate their willingness to fund activities which will lead to an improvement in their sectors.

There are bound to be conflicts of interest between different uses of the coastal area, e.g. seaweed farming and tourism, fishing and conservation, farming and conservation. Mechanisms should be put in place to handle such conflicts when they arise so as to ensure that the stakeholders who are better placed financially or politically do not always win even in situations when their activity is detrimental to the overall good of society.

Though donor support is essential for developing capacity for coastal area management, it is important that provisions are included in institutional budgets to ensure sustainability of the programmes in the long term. Stakeholders should be encouraged to contribute to the implementation of programmes. The sharing of capacity resources by different institutions should also be encouraged to ensure optimal use of available resources.

The development of the Coastal Resources Database and Atlas will greatly assist in the

process of developing a national ICZM. This database should be up dated continuously and information from it made readily available.

WHAT NEEDS TO BE DONE?

- A national integrated coastal area management plan should be developed. As in the case of the Nyali-Bamburi-Shanzu ICAM activity, a participatory approach should be used where the community and stakeholders are involved from the start.
- An inventory of the capacity available for ICZM activities should be prepared in order to identify financial, manpower, equipment and training requirements.
- A public awareness and education programme to inform policy makers and stakeholders on the benefits of ICZM is needed.
- Mechanisms for institutional cooperation should be strengthened to encourage the sharing of available capacity and resources.
- Education and training should be undertaken at all levels to ensure that a critical mass of skilled personnel is achieved. Coastal and marine issues should be included in school curriculum to increase awareness.
- Personnel should be provided with the necessary equipment, resources and infrastructure after training to enable them use the acquired knowledge effectively.
- ICZM activities should be incorporated in both District and National Development Plans and also in the national budget, to ensure sustainability of the activities even in the absence of external donors.
- More efforts should be made to secure funding for ICAM activities from local sources, especially stakeholders.
- Legislation on management of coastal areas should be rationalised and enforcement mechanisms should be strengthened.

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ANNEX I

List of recently finished, ongoing or planned initiatives and projects in the area of coastal resources and environmental protection

Development Review of National Environment Policies and Legislation	
1. National environmental action plan	COMPLETED
2. Environmental policy	COMPLETED
3. Environment legislation	ONGOING
4. Forestry policy	COMPLETED
5. Amendment to forestry legislation	ONGOING
6. Wildlife conservation and management policy	ONGOING
7. Amendment to wildlife conservation and management legislation	ONGOING
8. Establishment of Land Use Commission	PLANNED
Development of National ICAM strategy	PLANNED
Beach Management Program	ONGOING
East African Regional Seas Programme	
1. Protection and management of marine coastal areas (EAF 5): FAO & national institutions/IOC/UNEP/IUCN/University of Rhode Island/USAID. Nyali-Bamburi-Shanzu ICAM activity.	ONGOING
2. Assessment and control of pollution in the coastal and marine environment (EAF 6): FAO UNEP/IOC/WHO/AEA/SAREC & national institutions	COMPLETED/ONGOING
3. Coastal resources database and atlas project (EAF 14) UNEP/Belgian government & national institutions	COMPLETED
SAREC Marine Sciences Regional Program	
1. Physical oceanography training	ONGOING
2. Nutrient analysis	ONGOING
3. Social and cultural aspects of ICZM	ONGOING
Kenya Belgium Programmes in Marine Sciences	
1. Mangrove restoration project (KMFRI/UON/VUB)	PLANNED
2. Oyster culture project (CDA/KMFRI/Shirazi Women's Group)	PLANNED
3. Ecological marine management program (KMFRI/VUB/UDSM)	PLANNED
4. Fundamental and applied marine science certificate course	PLANNED
WIOSMA supported projects (Marine research grants etc.)	ONGOING
IOC supported programmes	
1. Regional cooperation in scientific information exchange in the Western Indian Ocean region RECOSCIX-WIO	ONGOING
2. Sea level monitoring	ONGOING
3. National Oceanographic Data Centre etc.	ONGOING
National Museums of Kenya	
1. Coastal forests conservation programme	ONGOING
2. Kipepeo project	ONGOING
3. Preservation and rehabilitation of the Old Towns of Mombasa and Lamu	ONGOING
4. Coastal archaeology	ONGOING
Biodiversity Database Management/NES and others	ONGOING
Coral Reef Conservation Project (Wildlife Conservation International)	ONGOING
Kenya Sea Turtle Conservation Project	ONGOING
Interlinkages of Coastal Ecosystems- STD 3 (Training component)	COMPLETED ONGOING
Ministry of Public Works	
1. Lamu Sea Wall	COMPLETED
2. Pate-Ndau Sea Wall Project	ONGOING
Ministry of Land Reclamation, Regional and Water Development	
1. Upgrading of Baricho water supplies	ONGOING
2. Expansion of Mzima water supplies	PLANNED
KMFRI/KWS Cooperative programmes (funded under KWS-Netherlands Wetlands conservation and training programme)	
1. Mida biodiversity study	ONGOING
2. Pollution assessment programme (Mombasa Marine Park, Kizite Mpunguti Marine Park)	ONGOING
3. Environmental impact study (Makupa Creek Oil Spill)	ONGOING
Kenya Dutch Indian Ocean Expedition	
Training and analysis of samples and data	ONGOING
Dynamics and Assessment of Kenyan Mangrove Ecosystems KMFRI/VUB/CEMO/EU	COMPLETED

ANNEX II

Organisations participating in coastal resources management

Institution	Main coastal management function
Government agencies	
Coast Development Authority	Coastal planning and coordination of development
Kenya Marine & Fisheries Research Institute	Research on marine environment and resources
Kenya Wildlife Services	Conservation of biodiversity (biotopes), flora and fauna in protected areas and critical habitats and species in general
Fisheries Department	Fisheries licensing, monitoring and policing
Local authorities (municipalities, township and county councils)	Approval of structures and delivery of services, such as waste management
Tourist Police Unit	Security of tourists
Kenya Navy	Military surveillance in territorial waters
Forest Department	Licensing, reforestation and policing use of forest products
Kenya Ports Authority	Ports management and administration of maritime traffic
National Environment Secretariat	National advisory secretariat with coordination of environmental policies
Physical Planning Department	Provides physical plans, but does not execute the plans
Water Department	National planning for both surface and ground water
Water Conservation and Pipeline Corporation	Water reticulation and servicing
Tourism Department	Tourism planning and licensing
Government Chemists Department	Quality control, such as service to the government and the private sector
Cooperative Department	Facilitates self help and income generating community groups

Hotel and Tourist Industry

Kenya Association of Hotelkeepers and Caterers	Hotel marketing, quality control and bargaining at national and regional levels
Mombasa and Coast Tourist Association	Coast hotel and tourist operators marketing group and forum
Watamu Boat Operators Association	Common bargaining, facilitation of members and lobbying forum
Malindi Boat Operators Association	Common bargaining, facilitation of members and lobbying forum
Mombasa Boat Operators Association	Common bargaining, facilitation of members and lobbying forum
NGOs	
Wildlife Clubs of Kenya	Youth conservation and education group
East African Natural History Society	
East African Wildlife Society	Research, conservation and education
Baobab Trust	Environmental conservation
Others	
Green Belt Movement	Planting of trees
National Oil Spill Response Committee	Action at oil spill
Beach Management Task Force	Organisation of beach trade, environment and security
Coastal Forest Management Team	Advise and coordination for issues on coastal forests
Friends of Fort Jesus	Public awareness
Turtle Conservation Committee	Turtle conservation and education
Kenya Wetlands Working Group	
Fishermen's Association	Common bargaining, assistance to members and lobbying forum
Safari Sellers Association	Common bargaining, assistance to members and lobbying forum
Mangrove Cutters Association	Common bargaining, assistance to members and lobbying forum

ANNEX III

Statutes relating to the environment

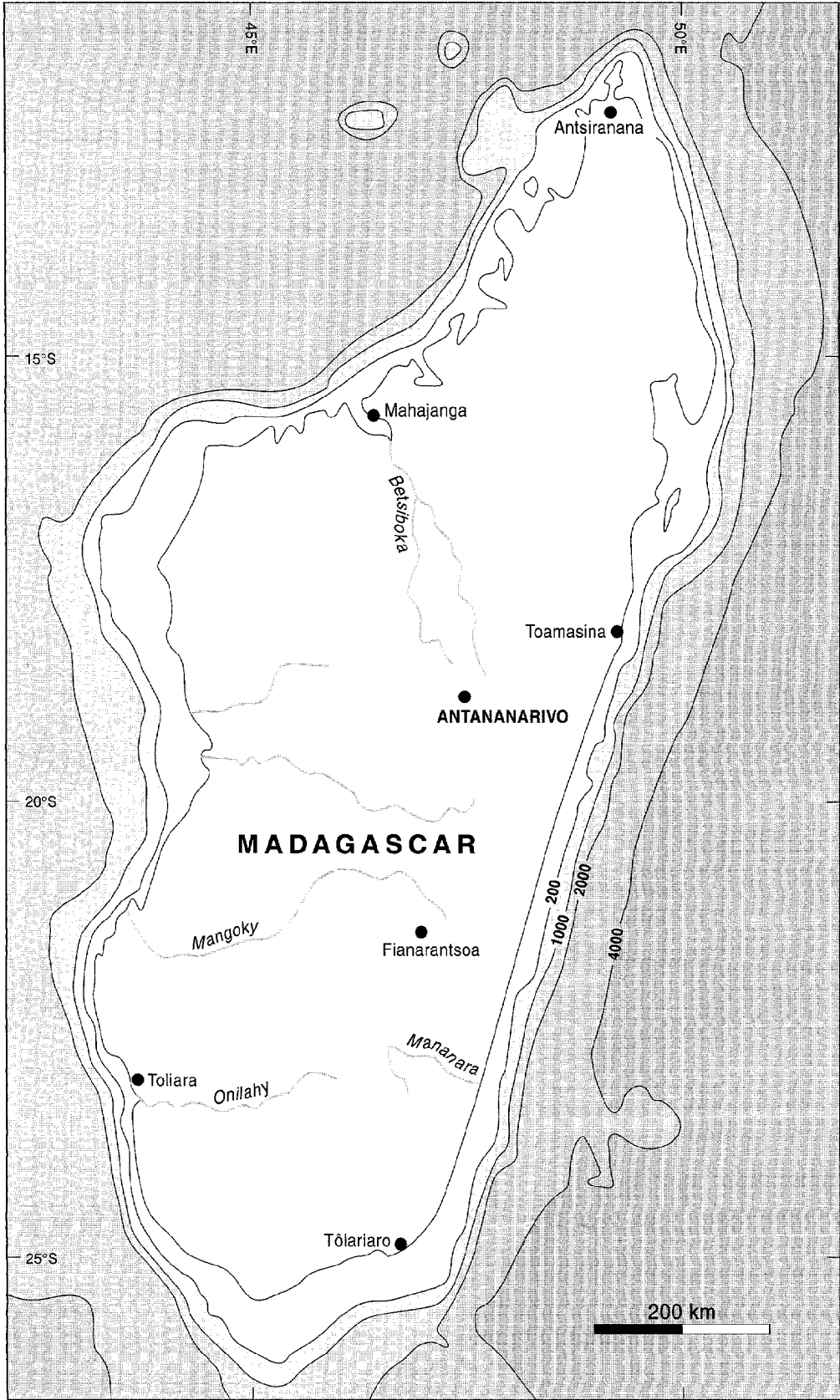
The Constitution
The Penal Code, cap. 63
Chief's Authority Act, cap. 128
Public Health Act, cap. 242
Radiation Protection Act, cap. 243
Local Government Act, cap. 265
Trust Land Act, cap. 288
Land Planning Act, cap. 303
Mining Act, cap. 306
Petroleum (Exploration and Production) Act, cap. 308
Agriculture Act, cap. 318
Water Act, cap. 372
Wildlife (Conservation and Management) Act, cap. 376
Tourism Industry Act, cap. 385
Forests Act, cap. 385
Merchant Shipping Act, cap. 389
Traffic Act, cap. 403
Tourism Development Corporation Act, cap. 382
Lake Basin Development Authority Act, cap. 442
Kerio Valley Development Act, cap. 441
Tana and Athi Rivers Development Authority Act, cap. 443
Factories Act, cap. 514
Coast Development Authority Act, N0. 20 of 1990
Fisheries Act, No. 5 of 1989
Maritime Zones Act, cap. 371
National Water Conservation Pipeline Corporation Act, L/No. 270 of 1988
Carriage of Goods by the Sea Act, cap. 392
Timber Act, cap. 386
Government Lands Act, cap. 280
Registration of Titles Act, cap. 281
Land Titles Act, cap. 282
Land Consolidation Act, cap. 283
Land Adjudication Act, cap. 284
Registration of Documents Act, cap. 285
Land (Group Representatives) Act, cap. 287
Mazui Land Trusts Act, cap. 288
Equitable Mortgages Act, cap. 291
Way Leaves Act, cap. 292
Distress for Rent, cap. 293
Land Acquisition Act, cap. 295
Rent Restriction Act, cap. 296
Survey Act, cap. 299
Registered Land Act, cap. 300
Landlord and Tenant Act, cap. 301
Land Control Act, cap. 302
Mortgages (Special) Act, cap. 304
Lakes and Rivers Act, cap. 409
Grassfires Act, cap. 327
Crop Production and Livestock Development Act, cap. 321
Local Authorities (Recovery of Possession of Property) Act, cap. 215
Occupier's Liability Act, cap. 34
Plant Protection Act, cap. 324
Fertilisers and Animal Foodstuffs Act, cap. 345

Town Planning Act, cap. 134 (1948)
Fire Inquiry Act, cap. 103
WAKF Commissioner's Act, cap. 109
Explosives Act, cap. 115
Petroleum Act, cap. 116
Housing Act, cap. 117
Methylated Spirit Act, cap. 120
Malaria Prevention Act, cap. 246
Use of Poisonous Substances Act, cap. 247
Food, Drugs and Chemical Substances Act, cap. 254
Local Authorities Service Charge Act, cap. 274
Continental Shelf Act, cap. 312
Suppression of Noxious Weeds Act, cap. 325
Coconut Preservation Act, cap. 332
Pests Control Products Act, cap. 346
Mineral Oil Act, cap. 307
Irrigation Act, cap. 347
Territorial Waters Act, cap. 371
Ewaso Ngiro South River Basin Development Authority Act, cap. 447
Ewaso Ngiro North River Basin Development Authority Act, cap. 448
Science and Technology Act, cap. 250
National Museums Act, cap. 216

ANNEX IV

Environmental legislation and enforcing or implementing agencies

Issue/concern	Legislation	Enforcing/ implementing agency
National territory	Maritime Zones Act, Continental Shelf Act	Kenya Navy
Land tenure	Government Lands Act, Land Titles Act, Registration of Titles Act, Land Group Representatives Act, Trust Land Act, Mazrui Land Trust Act, Registered Land Act, Land Planning Act	Commissioner of Lands, Local Government Authorities, Physical Planning Department
Water use and conservation	Water Act, National Water Conservation Pipeline Corporation Act	Ministry of Land Reclamation, Regional and Water Development/NWCPC
Environment and conservation, including pollution	Chief's Act, Local Government, Kenya Ports Authority Act, Public Health Act, Factories Act, Fisheries Act, Wildlife Management and Conservation Act, National Museums Act, Petroleum Act	Provincial Administration, Kenya Ports Authority, Ministry of Health, Ministry of Labour, Fisheries Department, Kenya Wildlife Services, Ministry of Tourism and Wildlife, NMK
Tourism	Tourist Industry Act, Tourist Development Corporation Act	Ministry of Tourism and Wildlife/ KTDC
Industrial development	Coast Development Authority Act, Factories Act, Export Processing Zones Act, Land Planning Act, Town Planning Act	CDA, Ministry of Labour, EPZA, Physical Planning Department, Regional Administration
Shipping	Kenya Ports Authority Act Merchant Shipping Act, Carriage of Goods at Sea Act	KPA/Ministry of Transport and Communications
Agriculture	Agriculture Act, Crop Production and Livestock Development Act, Plants Protection Act, Seeds and Plants Varieties Act, Coconut Preservation Act, Irrigation Act, Pest Control Act	Ministry of Agriculture and Livestock Development
Forestry	Forestry Act	Ministry of Environment Resources and Natural
Research	Science and Technology Act	Ministry of Research, Technical Training and Technology /Research Institutes
Fisheries	Fisheries Act	Fisheries Department



Integrated Coastal Zone Management in Madagascar

JOSEPHINE RANAIVOSON

INTRODUCTION

Sur près de 5 000 km de côtes, Madagascar présente un tracé de littoral varié allant des côtes plates et rectilignes, aux côtes escarpées, parfois échancrées en baies ou en larges estuaires. On trouve également des embouchures deltaïques, parfois caractéristiques puisque emboîtées dans des baies (baies de la Betsiboka, de la Mahajamba...). Les écosystèmes, également très variés, abritent une abondante biodiversité surtout sur la côte Ouest où sont concentrées près de 300 000 ha de mangrove, 1 400 km de formations récifales, et de grandes zones à herbiers. La côte Est présente seulement quelques aires de mangrove sur une étroite frange littorale, quelques récifs coralliens en bordure des îles et des îlots. Néanmoins cette côte orientale présente un important système lagunaire dont les eaux au total couvrent près de 20 000 ha et concentrant une faune ichtyologique euryhaline riche et diversifiée.

Les principaux problèmes environnementaux sont:

- l'ensablement et la sédimentation, consécutifs à l'intense érosion des hautes terres centrales
- la pollution domestique et industrielle
- l'érosion marine

Sur le plan de la gestion, l'environnement côtier malgache a toujours été négligé. Les actions de développement sont toujours ponctuelles et sectorielles, rarement liées à l'environnement. Les moyens de contrôle sont inexistants pour toutes les activités côtières. Dans les nouvelles politiques environnementales, l'environnement marin et côtier n'est jamais pris en compte. En 1990, un Plan d'Action Environnementale (PAE) a été produit, mais l'environnement côtier et marin n'y était pas spécifié. Seuls deux programmes, l'un sur les Concombres de mer et l'autre sur les Langoustes ont été exécutés dans la première phase PE1 de ce PAE (de 1990 à 1995).

La composante "Environnement Marin et Côtier", intégrée dans la seconde phase PE2 de ce PAE, la révision des textes régissant la plupart des activités côtières, la création du Ministère des Pêches et des Ressources Halieutiques, et l'exécution du programme PRECOI dans un cadre de Gestion Intégrée des Zones Côtières, sont les quelques progrès réalisés à Madagascar depuis la signature des Résolutions d'Arusha.

Il est prévu également la tenue prochaine à Nosy Be (14-19 octobre 1996) d'un Atelier National sur la Gestion Intégrée des Zones Côtières.

DESCRIPTION DES ACTIVITÉS CÔTIÈRES

Les principales activités en zones côtières sont: la Pêche, l'Aquaculture (depuis trois ans), les Parcs Marins et les Aires Protégées, les Activités Portuaires et les Transports Maritimes, l'Exploitation des Mangroves, le Tourisme, l'Industrie et les Extractions minières (en cours de mise en place).

Les problèmes communs à ces activités sont:

- Le chevauchement d'autorités, ce qui fait que les décisions et les actions sont assez lentes à venir en cas de catastrophes naturelles ou d'accidents.
- L'insuffisance du cadre législatif: ou bien les textes sont vieux et ne sont pas adaptés au contexte actuel (par exemple dans la Pêche et dans les Transports Maritimes) ou bien il y a un vide juridique (par exemple dans l'Industrie aucun texte ne règlemente les rejets industriels).
- La non application des lois, principalement à cause du manque de moyens en personnes et en matériels.
- Les conflits dans l'utilisation de l'espace.

La Pêche

Cadre Institutionnel

Ce secteur dépend du Ministère de la Pêche et des Ressources Halieutiques, créé en juin 1996.

Les institutions suivantes sont impliquées dans le secteur:

- LE DPRH (Direction de la Pêche et des Ressources Halieutiques) qui est la Direction de tutelle délivrant les licences de pêche ou les permis d'exploitation, et organisant également les programmes de formation pour les pêcheurs.
- Le CNRO (Centre National de Recherches Océanographiques) pour les activités de recherche.
- IHSM (Institut Halieutique et des Sciences Marines rattaché au Ministère de l'Enseignement Supérieur) pour les activités de recherche et la formation des futurs techniciens ou cadres du secteur.
- La FAO et le PNUD pour l'aide et le financement des programmes.

Cadre Législatif

Plusieurs textes existent, comme ceux relatifs aux octrois de licence de pêche, aux différentes sortes de pêche pratiquées à Madagascar, à l'utilisation des matériels de pêche. Il n'y a cependant pas de textes spécifiques sur la gestion des stocks ou la préservation de l'environnement. Actuellement de nouveaux textes sur une pêche basée sur une exploitation durable est en cours d'élaboration.

Application des Lois

Il n'y a aucune application pour la plupart de ces textes.

Souligons par exemple que les bateaux industriels crevettiers viennent pêcher dans la zone des deux miles réservée à la pêche traditionnelle et artisanale, ce qui est souvent source de conflits. L'administration tolère toutefois ces incursions par manque de moyens de répression.

Investissements et Fonds

La Pêche est le secteur économique qui reçoit le plus d'aide et de fonds des donateurs ou des investisseurs.

La plupart des fonds sont destinés surtout aux programmes de formation pour les pêcheurs, ou pour l'achat de matériels de pêche.

L'argent provenant des licences de pêche est versé dans le FDP (Fonds de Développement de la Pêche), lequel est surtout destiné à financer les études et les recherches en évaluation de stock, dans l'évolution des marchés...

Participation des Partenaires

- En ce qui concerne les communautés côtières locales, seul un programme FAO mené dans le Sud-ouest de l'île (région de Toliary) prend en compte leur participation dans la gestion des ressources.
- Dans un intérêt commun, le secteur privé (opérateurs de la pêche crevettière, thonière...) et l'Etat coopèrent pour l'amélioration des systèmes de gestion des ressources (création de fonds, réglementation à renforcer...).

Il est à signaler que dans la plupart des régions, les pêcheurs sont associés, mais surtout pour une meilleure gestion de leur matériel de pêche. Les associations pour une gestion rationnelle de la ressource sont très rares pour ne pas dire inexistantes.

Capacité (technique et humain)

Il y a une insuffisance importante en moyens techniques et humains, surtout pour le contrôle de la réglementation.

Recherche et Suivi-évaluation

Etudes, recherches et suivi peuvent être menés par les institutions suivantes: le CNRO, le CNRE et l'Université de Madagascar. Mais à cause d'échanges insuffisants entre instituts, de manque de coordination et aussi de financement, le domaine n'est pas assez performant.

L'Aquaculture

Cadre Institutionnel

Il est exactement le même que précédemment.

Cadre Législatif

L'activité est régie par l'Ordonnance sur la Pêche maritime, en cours de remaniement actuellement pour l'insertion des considérations environnementales (zones de mangrove à respecter, système d'élevage autorisé...). Les anciens textes étaient surtout relatifs aux normes d'installation des usines, aux normes de qualité des produits).

Application des lois

Si les nouveaux textes relatifs aux fermes crevetticoles ne sont pas encore prêts, deux fermes sont déjà opérationnelles, développement économique oblige. En attendant l'officialisation des textes, ces fermes de type semi-intensif, sont tenues de suivre scrupuleusement les prescriptions des cahiers de charge. Soulignons que les études d'impact ont été préalablement faites pour chaque ferme.

Investissements et Fonds

Ils sont nombreux et proviennent des donateurs (le Japon surtout), d'opérateurs privés lesquels souhaitent réellement la durabilité de l'activité, donc la préservation de l'environnement.

Soulignons que le BEI (Banque Européenne d'Investissement) vient récemment de faire don du FDA (Fonds de Développement de l'Aquaculture), géré par le Département Aquaculture de la DPRH, pour améliorer la gestion du secteur aquacole. Des fonds japonais viennent également d'être alloués pour la création d'un centre de formation des techniciens en aquaculture, dans le but de promouvoir l'aquaculture de type extensif (artisanal ou familial), le moins destructeur de l'environnement.

Participation des Partenaires

Les opérateurs privés, les donateurs et l'Etat, investissent ensemble pour un développement durable de l'activité.

Capacité (technique et humain)

La DPRH, l'institution de tutelle du secteur ne dispose pas actuellement de tous les moyens techniques et humains nécessaires pour le contrôle du secteur.

Recherche et Suivi-évaluation

Pour le moment il n'y a ni recherche, ni suivi par l'Etat sur l'activité. Signalons que l'opérateur effectue régulièrement des analyses d'eaux d'alimentation et de drainage. Les instituts de recherche (CNRO, CNRE et Université de Madagascar) sont prêts à combiner leur effort pour ce travail de recherche et de suivi moyennant aide financière.

Parcs Marins et Aires Protégées

Seul un parc marin existe à Madagascar, le Parc marin de Mananara nord, formé de trois îlots coralliens et inclus dans la Réserve de biosphère du même nom.

Il y a également deux réserves marines, Nosy komba et Nosy Tanykely, localisées dans le nord-ouest (région de Nosy be). La première a été classée sur le plan national en raison de sa biodiversité (site du lémurien *Eulemur macaco*) et la seconde selon un arrêté local pour une meilleure gestion du tourisme.

Mentionnons également la Réserve spéciale de Nosy Mangabe, dans la baie d'Antongil, qui abrite le lémurien Aye-Aye (*Daubentonia madagascariensis*).

Quelques îlots sont également classés Réserves Naturelles strictes car ce sont des sites de ponte de tortues marines: Nosy ve, Nosy Iranja...

Enfin signalons que trois réserves marines et un sanctuaire marin sont actuellement en cours de mise en place au niveau de la Péninsule de Masoala.

Cadre Institutionnel

Les aires protégées dépendent du Ministère de l'Agriculture et du Développement Rural car elles sont sous tutelle administrative de la DEF (Direction des Eaux et Forêts), institution rattachée au dit Ministère.

Les autres institutions impliquées dans le secteur sont:

- L'ANGAP qui est le responsable de gestion de toutes les Aires Protégées.
- L'UNESCO qui est le responsable direct de la Réserve de Mananara nord.
- CARE International qui est le responsable direct des futures aires protégées de la Péninsule Masoala.

Cadre Législatif

Il n'y a pas de lois spécifiques aux parcs marins et aires protégées marines. Toutes les lois utilisées sont celles des aires protégées terrestres, ce qui pose de sérieux problèmes fonctionnels en raison des différences écologiques fondamentales.

Application des Lois

Aucune application de la réglementation afférente au statut d'aire protégée marine n'est effective. Soulignons par exemple qu'au niveau du parc marin de Mananara nord une co-gestion mixte Population-Projet est mise en place, ce qui est contraire au statut du parc. Mais cette formule a été jugée nécessaire pour le maintien des bonnes relations avec la population.

Investissements et Fonds

Ils proviennent surtout des donateurs et des ONGs:

- Le DGIS finance la Réserve de biosphère de Mananara nord y compris le Parc marin.
- CARE International lequel est un ONG rappelons-le financera les futures aires protégées de Masoala.

Participation des Partenaires

Les pêcheurs de la région de Mananara étaient hostiles au début, au nouveau statut des zones au niveau desquelles ils avaient l'habitude de pêcher. Il y a eu donc des conflits avec les responsables du projet en 1988–1989. Il est rassurant toutefois de voir maintenant qu'il y a une coopération entre les pêcheurs et les responsables du projet, même si cet état est contraignant pour le statut du parc.

Capacité (technique et humain)

Les moyens techniques et humains pour la gestion de toutes les aires protégées marines sont insuffisants voire totalement absents pour certains sites.

Recherche et Suivi-évaluation

Ils n'existent pas du tout au niveau de Mananara nord, bien que prévus initialement lors de la mise en place du projet. Pour les autres aires protégées des recherches privées individuelles sont souvent réalisées (préparation de diplôme par exemple).

Activités Portuaires et Transports Maritimes

Cadre Institutionnel

Elles dépendent du Ministère des Transports et de la Météorologie.

La tutelle administrative et technique est assurée par la DTM (Direction des Transports Maritimes) et les Services décentralisés en province.

Cadre Législatif

Les lois sont incluses dans le Code Maritime édité en 1966 et en cours de révision actuellement pour les besoins de préservation environnementale.

Application des Lois

Non effective par manque de moyens matériels et humains.

Investissements et Fonds

Seul le port de Toamasina avec sa gestion privée travaille avec des investissements. Pour les autres ports, les fonds proviennent du PNUD, du CFD ou de UE/COI pour la réparation des moyens d'accès aux ports (balises, bouées...).

Les taxes prélevées sur les bateaux (droit d'entrée et de mouillage) sont très basses et sont juste suffisantes pour un entretien sommaire du port.

Participation des Partenaires

Seule l'administration portuaire s'occupe de la gestion effective du port. Aucun utilisateur des installations portuaires ne participe à cette gestion, même pas à l'entretien et au nettoyage. Les investissements se limitent au battelage (ports de Nosy be, de Toamasina).

Capacité (technique et humain)

La principale institution impliquée dans la gestion, la DTM (Direction des Transports Maritimes) n'a ni bateau ni une équipe technique suffisante. Ce qui fait que tous les trafics en tous genres sont visibles le long des côtes de Madagascar.

Recherche et Suivi-évaluation

Ils sont totalement inexistantes.

Exploitation du Bois de Mangrove

Elle est très localisée, limitée à quelques zones de mangrove du Nord-ouest et à des petites mangroves proches des grandes villes telles que Mahajanga, Toliary et Morondava.

Cadre Institutionnel

Dépend du Ministère de l'Agriculture et du Développement Rural.

La principale institution impliquée en tant que Direction de tutelle est la DEF avec ses services décentralisés en province.

Cadre Législatif

Les textes relatifs à l'exploitation du bois de mangrove datent de 1952. Dans le cas où certains articles manquent, les textes relatifs aux forêts terrestres sont appliqués. Tous ces textes sont en cours de révision pour répondre aux besoins actuels du secteur.

Application des Lois

Il n'y a aucune application par manque de moyens et aussi en raison des difficultés d'accès en zone de mangrove.

Investissements et Fonds

Aucun investissement ni de financement n'est connu.

Participation des Partenaires

Peu effective. Elle est limitée au reboisement prescrit à tout exploitant en bois de mangrove, conformément aux notes du cahier de charges.

Capacité (technique et humain)

Comme pour les forêts terrestres, les moyens techniques et humains sont très insuffisants.

Recherche et Suivi-évaluation

Des études et recherches écologiques ponctuelles sur les mangroves de l'Ouest et du Sud-ouest sont connues. Le suivi est à peu près inexistant.

Tourisme

Auparavant cette activité n'a pas connu de gestion proprement dite, ce qui explique les actions de développement anarchiques observées en zones côtières. La définition et la mise en place de la politique de DTCE (Développement du Tourisme Compatible avec l'Environnement) même si celle-ci ne porte mention de zone côtière, devrait apporter une grande amélioration au secteur.

Cadre Institutionnel

L'activité dépend du Ministère du Tourisme.

Institutions Impliquées

- La Direction du Tourisme qui est le département de tutelle, assisté par les services décentralisés en province.
- Les Tours operators et les Agences de voyage.
- Les Hôtels.
- Les Associations professionnelles du Tourisme.
- L'ANGAP et la DEF qui assurent l'application de la réglementation relative à la biodiversité exportée par les touristes.

Cadre Législatif

Les textes sur la Politique et la Stratégie du Développement Touristique à Madagascar incluent des considérations environnementales depuis 1990. Mais aucune spécification du tourisme en zone côtière n'y est porté.

La seule référence connue sur l'environnement côtier est le "domaine public" correspondant à 80 m au dessus de la laisse de haute mer et qui doit être laissé à l'usage public. L'Etat toutefois peut louer cet espace selon des conventions particulières, mais 25 m doivent toujours être laissés par le locataire pour l'usage public.

Application des Lois

L'espace réservé à l'usage public n'est pas souvent respecté (par les constructeurs d'hôtel, par les particuliers...).

Investissements et Fonds

Surtout par le CNDT (Caisse Nationale pour le Développement du Tourisme) et par l'Association Professionnelle du Tourisme.

Participation des Partenaires

A travers le DTCE (Développement du Tourisme Compatible avec l'Environnement) et le décret relatif MECIE (relatif aux zones sensibles), cette participation, peu effective jusqu'ici, est appelée à être dynamique. Avant toute opération, tout investisseur sera appelé à fournir à l'administration une Etude d'Impact Environnemental.

Capacité (technique et humain)

En cours de mise en place.

Recherche et Suivi-évaluation

La recherche et le suivi de l'activité touristique vis-à-vis de l'environnement sont totalement inconnus.

Industrie

Cadre Institutionnel

L'activité est sous la dépendance du Ministère de l'Industrie et de l'Artisanat.

Institutions Impliquées

- La Direction de l'Industrie, qui est le département de tutelle.
- La Direction de l'Aménagement du Territoire pour le planning du développement industriel toutes les deux assistées par les services ou délégations en province.

Cadre Législatif

Il y a plusieurs textes imposant la protection de l'environnement dans le développement industriel, mais il n'y a pas de texte sur les rejets industriels (nature, normes..).

Une nouvelle politique industrielle tenant compte de l'environnement, le DIED est actuellement en cours de mise en place. Il est à mentionner pourtant que l'environnement marin et côtier n'y est pas spécifié. Rappelons que cette politique tout comme les autres politiques sectorielles relatives aux investissements, sont règlementées par le décret MECIE.

Application des Lois

Peu effective. Il n'y a pas du tout de contrôle du niveau de pollution.

Investissements et Fonds

La Banque Mondiale est l'un des bailleurs supportant la mise en place du DIED. L'application du décret MECIE est prise en charge par l'USAID.

Participation des Partenaires

Actuellement aucune industrie installée sur le littoral ne prend des dispositions pour la préservation de l'environnement. Tous les rejets sont déversés bruts dans la mer sans aucun traitement.

Capacité (technique et humain)

En cours de mise en place.

Recherche et Suivi-évaluation

Le CNRO possède la plupart des moyens matériels pour réaliser des recherches et faire le suivi de la pollution en zone côtière, mais les fonds pour travailler manquent.

Analyse Critique

Cadre Institutionnel

Aucune autorité transectorielle n'est chargée de la coordination et de l'arrangement des activités en zones côtières, ce qui pose des problèmes en cas de conflits entre les usagers (pollution, utilisation de l'espace...). Par ailleurs les règlementations par plusieurs autorités à la fois sur une même zone ne sont pas claires: cas des zones de mangrove par exemple, gérées

à la fois par la DEF (réglementation de l'exploitation de bois) et le DPRH (réglementation de la pêche et de l'aquaculture). Où s'arrête l'autorité des uns et des autres?

Rappelons qu'un Ministère de l'Environnement, a été créé en 1994 mais il n'a pas en charge de coordonner les actions en zones côtières, ni de s'interposer en cas de conflits.

Cadre Législatif

Il est vraiment insuffisant car les textes sont soit vieux soit inexistantes.

Application des Lois

Aucune activité en zone côtière ne peut veiller à l'application des lois, faute de moyens de contrôle et de répression.

Investissements et Fonds

Ils sont très insuffisants sauf pour la Pêche. Il faut insister également sur le manque de coordination et d'arrangement parmi les bailleurs et/ou donateurs.

Participation des Partenaires

Il n'y a pas de participation suffisante des populations côtières dans les actions de développement ou programmes en zones côtières.

La participation des ONGs est également assez faible (surtout au niveau des actions de conservation ou de protection).

Capacité (technique et humain)

Elle est très insuffisante pour toutes les institutions publiques sauf au niveau des instituts de recherche où la capacité et la disponibilité des chercheurs sont bonnes.

Recherche et Suivi-évaluation

Les institutions de recherche n'ont que rarement suffisamment de moyens pour bien travailler. D'un autre côté il n'y a pas de relations entre ces instituts, ni de coordination entre les programmes menés.

Rappelons ici que l'ONE (Office National de l'Environnement), établissement public mis en place en 1990 avec le Plan d'Action Environnementale, est responsable de l'exécution des programmes relatifs à l'environnement en général. A ce titre il lui revient de veiller à la mise en place de structure destinée à assurer la coordination des futures actions et programmes sur l'environnement marin et côtier.

Recommandations

- Mettre en place une autorité ou un bureau chargé de la coordination et de l'intégration des activités en zones côtières.
- Spécifier l'environnement marin et côtier dans les nouvelles politiques environnementales.
- Installer le plus rapidement possible les nouveaux textes prenant en compte les contextes environnementaux et socio-économiques actuels.

- Renforcer les moyens de gestion (humains, matériels et financiers) des institutions impliquées dans la gestion des activités en zones côtières et surtout appuyer par des financements.
- Coordonner les programmes des donateurs et des bailleurs pour éviter le double emploi des fonds.
- Coordonner les programmes de recherche pour éviter les pertes de temps et d'argent.
- Eduquer et sensibiliser les populations côtières pour une exploitation rationnelle et durable des ressources.
- Lancer des programmes de sensibilisation sur l'importance de l'environnement marin et côtier pour des partenariats éventuels avec les ONGs.

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ANNEXE

Programmes sur l'Environnement Marin et Côtier

Principaux Programmes

Programme en cours de mise en place:

La composante "Environnement Marin et Côtier" intégrée dans le PE2 du PAE (1997-2001).

Début des opérations: 1997.

Financement : Consortium de bailleurs dont la Banque Mondiale.

Objectif: Dans le cadre d'une politique de Gestion intégrée des zones côtières, mettre en place la politique nationale de l'environnement marin et côtier.

Programmes en Cours

Programme PRE-COI: Sauvegarde et Gestion intégrée de la zone côtière.

En cours depuis juin 1995.

Financement: Union Européenne.

Objectif global: Contribution à la promotion d'une politique régionale de gestion durable des ressources naturelles.

Il est à souligner que les deux programmes sont complémentaires et les tâches respectives pour un même objectif ont été définies.

- Monographie sur la Biodiversité de Madagascar
En cours depuis début 1996. Financement: PNUD
- Programme "Mers régionales" du PNUE

Programmes Ponctuels

Programme terminé

Programme Mangrove CNRE/ORSTOM,

Début des opérations: mai 1991

Fin des opérations: juillet 1996

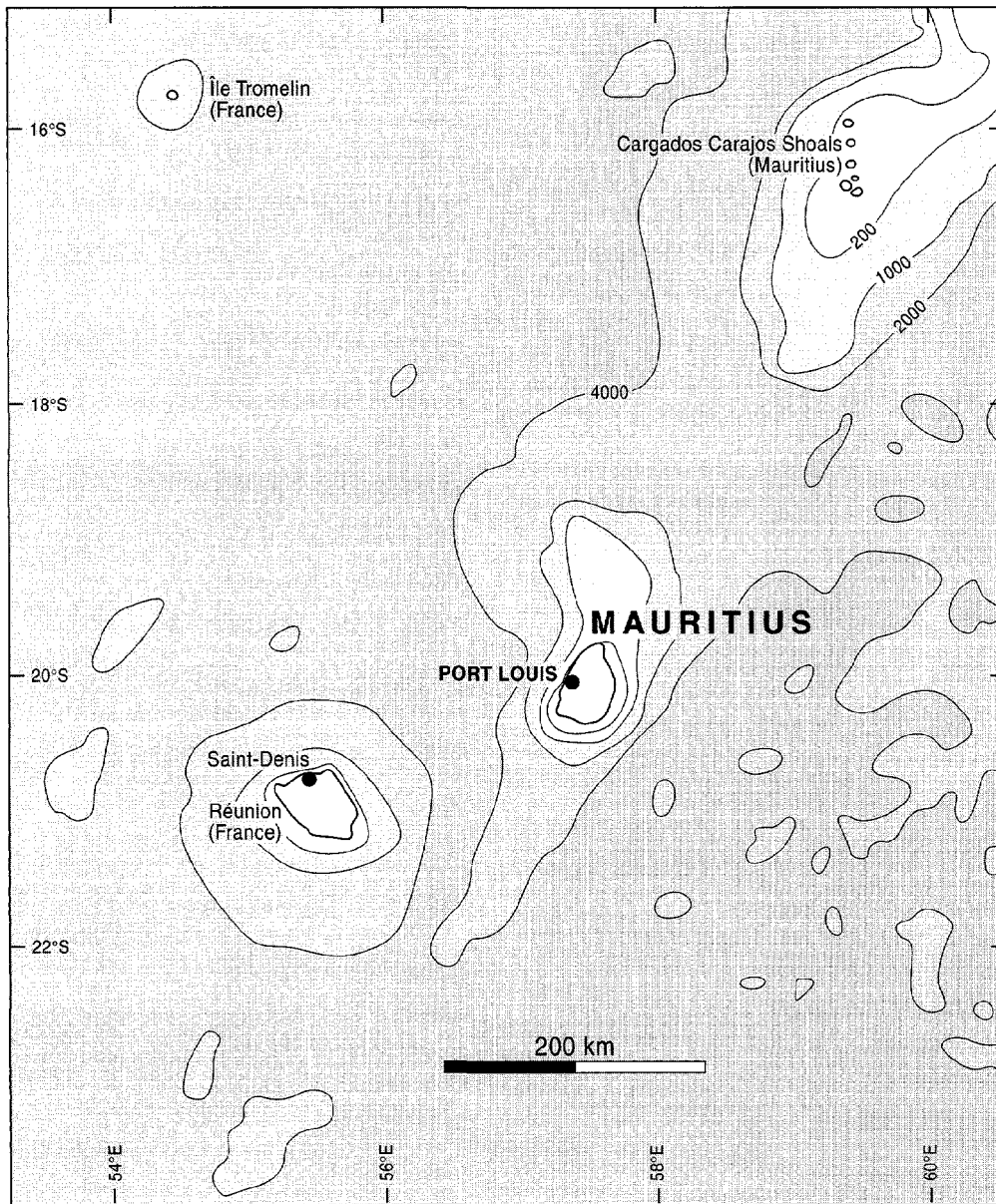
Financement: Subvention ORSTOM

Objectif initial: Meilleure connaissance de l'écologie, de la dynamique et de l'utilisation de la mangrove de la côte occidentale malgache (région de Morondava et de Belo/Tsiribihina) en vue de sa protection et de sa valorisation.

Productions: Atelier en juin 1994 "Hommes et mangrove dans le Menabe" dont les Actes sont en cours d'édition. Nombreux Mémoires de DEA. Rapports

Programmes en Cours

- Projet exécuté conjointement par la DPRH et le PNUD/FAO: Développement intégré des pêches traditionnelles dans le sud de Madagascar. Ressources côtières dans la région de Toliary (Anakao) sur financement PNUD.
- Projets relatifs à la protection et à la conservation de la biodiversité en zones côtières: le Parc marin de la Réserve de Mananara nord et les aires protégées marines de la Péninsule Masoala en cours de mise en place.
- Projet d'Eco-Développement Touristique sur Nosy Mitsio (Nord-ouest de Madagascar) par le bureau d'études BIODEV.



Integrated Coastal Zone Management in Mauritius

PIERRE DE BOUCHERVILLE BAISSAC

INTRODUCTION

The state of Mauritius comprises the islands of Mauritius, Rodrigues, St. Brandon and Agalega, as well as many smaller islands. The main islands of Mauritius and Rodrigues are of volcanic origin. The climate is sub-tropical, with a cyclone season lasting from December to April. In 1978, Mauritius, a signatory member to the Third Convention on the Law of the Sea, proclaimed its 200 nautical miles an Exclusive Economic Zone extending over an area of 1.7 million km². The island of Mauritius has a 200 km coastline and is almost completely encircled by 150 km of fringing reefs which enclose a lagoon of 243 km². The oceans, islands, coral reefs, lagoons and estuaries are closely linked with economic and human activities through direct and indirect exploitation of their living and non living resources. During the last decade the coastal zone has attracted human settlement, tourism, hotel development and other associated activities.

In Mauritius, the coastal zone is understood to be that which consists, on the seaward side, of the coral reef and marine lagoon areas, and on the landward side of the coastal area up to at least one kilometre inland from the high water mark at spring tide. The Pas Géométriques are, therefore, included in the landward coastal area. By this definition, major areas of settlement, tourism, and other activities are included.

Until about twenty years ago, the Mauritian economy was entirely dependent on the sugar industry. Per capita income was low, population growth uncontrolled and unemployment high. Prospects for the future were bleak. Given the urgent need to redress this situation, the country embarked on a major drive to diversify the economy. Unfortunately, Mauritians, all of whom are immigrants to the island, have historically formed an attitude of apprehension, fear and sometimes hostility towards natural processes, and have often been in conflict with nature and the environment. The relationship between the population and the endemic flora and fauna has generally been short of a harmonious one.

In that context, since the mid 1980s, rapid economic growth and employment creation in export-oriented sectors, agriculture, manufacturing and tourism were encouraged without much concern for or scrutiny of their location, implication for waste assimilation, resource use and abuse, or impact on the quality of life value of the environment. In addition, extractive activities in the lagoons, forests, including mangroves and sand dunes carried on unabated and were in fact intensified in certain cases. As a result, the coastal areas began to experience devastating social and environmental consequences. In the interaction between environment and economy it was thought that environmental deterioration was a cost that had to be paid for economic growth.

However, this deterioration began to affect people and communities and led to national moves at the highest policy level to develop environmental policy and management programmes. Thus, in 1987, environmental issues were placed high on the political agenda. Nevertheless, the sources of environmental degradation continue to get support in the

midst of attempts to establish coastal and ecosystem management. For example, stretches of prime public land over critical coastal areas continue to be allocated to private developers. Current coastal activities are primarily linked to economic benefits. The major ones include:

- harvesting of fin fish and shell fish
- sand mining: lagoon and sand dune
- coastal aquaculture
- hotel development
- bungalows, coastal parcelling and residential use
- food stalls, restaurants, shops
- other related businesses

Perhaps the most important source of ecosystem degradation is the release of sewage, organic matter, nutrients and sediment into coastal waters near population centres. Such contamination not only affects species and ecosystems directly, it also weakens ecosystem structures by reducing species' resilience and their ability to recover from major disturbances, a capacity which may have been within the natural regenerative capability of otherwise non-stressed populations (Lundin *et al.*, 1993). This has particular importance in Mauritius, as, according to Govind (1996), "Cyclones are the main cause of reef (and therefore lagoon) damages on the east and south coasts. Siltation is a problem in some lagoons. During cyclones and floods, silt is transported to lagoons and coral reefs in these areas leading to death of corals."

Sewerage in Mauritius has become a major problem. This has a very severe impact on the coastal environment as domestic waste water discharges into the sea after only very basic preliminary treatment. The bulk of industrial waste water is produced by the textile and sugar manufacturing industries. They are the largest industrial users of water resources and thus of waste water. Other potentially high polluting industries such as leather tanning and food processing exist in smaller numbers and also discharge their effluents directly into the sewer with limited treatment.

The current understanding of the coastal zone as applied in Mauritius is somewhat erroneous. To quote Quarrie (1992), "Small island developing states, and islands supporting small communities, are a special case both for environment and development. They are ecologically fragile and vulnerable. Their small size, limited resources, geographic dispersion and isolation from markets place them at a disadvantage economically and prevent economies of scale. For small island developing states, the ocean and coastal environment is of strategic importance and constitutes a valuable development resource. Small island developing states have all the environmental problems and challenges of the coastal zone concentrated in a limited land area. They are considered extremely vulnerable to global warming and sea level rise, with certain small low-lying islands facing the increasing threat of the loss of their entire national territories. Most tragically, islands are also now experiencing the more immediate impacts of increasing frequency of cyclones, storms and hurricanes associated with climate change."

It is therefore necessary for Mauritius to review the concept and accept that the islands in their integrity constitute the coastal zone, particularly since no point on Mauritius, the largest island in the state, is more than 20 km from the sea. Consequently, every aspect of planning and development must be integrated to consider their impact on both land and sea areas.

Integrated Coastal Zone Management (ICZM), a key element of Agenda 21, is widely perceived as an effective means for planning growth in the coastal zone, and for orchestrating development activities to meet the diverse needs of resource users while maintaining the productivity of coastal systems. It is the process as much as the end result that distinguishes Integrated Coastal Zone Management from other development planning modes (World Bank, 1995).

DESCRIPTION OF COASTAL ACTIVITIES

Institutional Framework

In late 1987, the Government appointed the National Environmental Commission (NEC), chaired by the Prime Minister, to review the existing legal and administrative structure for environmental management. By 1988, the NEC had prepared several recommendations for improvements to the institutional and legal framework. These were included in the National Environmental Action Plan (NEAP) prepared in 1988 with the help of the World Bank and were entitled "Economic Development with Environmental Management. Strategies for Mauritius". This report is the base reference in terms of environmental planning and laid the foundation for the Environment Investment Programme (EIP). This consists of 33 different projects, some already completed, others either current or planned for the future. The projects within the EIP are listed below.

Land management and tourism

- national physical development plan
- strengthening of land planning and control
- regional planning of tourist zones
- sewerage and solid waste disposal
- environmental laboratories
- creation of industrial parks
- national sewerage master plan
- incentive for industrial pollution control
- establishment of Hazardous Substance Control Board
- worker health and accident surveys
- impact of dust and leaded gasoline
- national solid waste management plan
- characterisation of sugar industry waste

Agriculture

- pesticide assay laboratory
- improving pesticides use and regulation
- integrated pest management research
- fertiliser study and research

Fisheries and marine conservation

- marine environment management plan
- establishment of marine parks
- lagoonal health study and pollution monitoring
- oceanographic data collection
- marine conservation centre

Terrestrial conservation

- Black River Gorges National Park
- nature reserves
- offshore islands
- re-afforestation

Institutional Strengthening

At the national level, the principal institution responsible for planning is the Ministry of Economic Planning, Information and Telecommunication (MEPIT). Since 1990, when the Ministry of Environment and Quality of Life (MEQL) was created, a number of reorganisations have taken place concerning the individuals and institutions responsible for the planning and management of environmental matters. A list (courtesy COI/FED 1996) of the institutions concerned with the environment and more particularly with the management of coastal zones, and terrestrial biodiversity is presented in Table 1. A number of committees and organisations exist within the framework of the institutions to advise and coordinate the various activities (see Table 2).

Legal Framework

Mauritius is signatory to 18 international treaties and conventions on the environment, and prides itself as being the first signatory country of the Rio Convention on Biodiversity. It is however, not signatory to the 1985 UNEP Convention for the Protection and Development of the Marine and Coastal Environment of the Eastern African Region.

At present, Mauritius does not have a framework law specific to the various issues of ICZM such as planning and development, utilisation, exploitation and enforcement. Instead it has a series of laws concerning various interventions and human activities related to *space* and *species*. The following are some of the laws relating to the sea and land.

Space

- Pas Géométrique Ordinance (1976)
- Mauritius Zones Act
- Territorial Sea Act (1970)
- Continental Shelf Act (1970)
- Ports Act (1976)
- National Coast Guard Act (1988)
- Town and Country Planning Ordinance (1954)
- Crown lands Ordinance (1980)
- Land Acquisition Act
- Rivers and Canals Act
- Carriage of Goods by Sea Act (1927)

Species

- Environment Protection Act (1991)
- Removal of Sand Act
- Fisheries Act (1980)
- Forests and Reserves Act (1983)
- Wildlife Act (1983)
- Wildlife and National Parks Act (1994)

Table 1. Institutions concerned with the environment, particularly coastal zone management and biodiversity

Ministry of Economic Planning Information & Telecommunication (MEPIT)	Macro-economic and sector-related policy planning
Ministry of Environment & Quality of Life (MEQL)	Coordination of environment-related activities, and Environment Impact Assessments
Ministry of Fisheries & Marine Resources (MFMR)	Research and management of marine resources (fisheries, coral reef, seagrass beds, fisheries reserves), monitoring of the marine habitat, marine pollution
Ministry of Agriculture & Natural Resources (MANR)	Management of nature reserves, outer islets and river reserves, protection and conservation of indigenous and endemic flora and fauna
Ministry of Housing, Lands Town & Country Planning (MHLT&CP)	Town and country planning, land survey of fice, cartography, permits for commercial exploitation of coral sand (sand digging in lagoon)
Ministry of Energy & Water Resources (MEWR)	Supply of drinking water, treatment of waste water, research and monitoring of water resources
Ministry of Local Government (MLG)	Collection and treatment of solid waste, management and administration of public beaches
Ministry of Education, Science & Technology (MEST)	Basic and applied research (University of Mauritius and Mauritius Research Council), formation, education, sensitisation
Ministry of Tourism (MT) Mauritius Sugar Industry Research Institute (MSIRI)	Tourism development Agronomical and agro-industrial research on sugar cane, vegetables etc., endemic plants herbarium
Meteorological Services	Weather conditions and meteorology, oceanographic conditions, climatic changes (sea levels, ozone layer)
Ministry of Foreign Affairs, International & Regional Cooperation (MFAIRC)	International conventions, regional policy and politics
State Law Office	Legislation, jurisprudence

Table 2. Advisory committees and organisations

Organisation	Presiding	Members
Permanent Committees		
National Environment Commission	Prime Minister	Most of the other ministries
Environment Coordination Committee	Permanent Secretary MEQL	Representatives of ministries with enforcement responsibilities, Environment Liaison Officers
Environment Impact Assessment Committee	Permanent Secretary MEQL	Concerned ministries (Land, Fisheries, Health, Tourism, Agriculture)
Environment Advisory Committee	Elected by members	Institutions and representatives of NGOs and private sector
Technical Committees		
Inter-ministerial Commission for Remote Sensing	MANR	Concerned ministries (Housing, Fisheries, Energy, Agriculture, Environment, MSIRI)
National Committee for Cartography	MHLTCP	Concerned ministries (Housing, Fisheries, Energy, Agriculture, Environment)
Technical Committee for the tourist zone in the North	MHLTCP	Concerned ministries (Tourism, Environment, Energy, Agriculture)
Nature Reserves Board	MANR	Concerned ministries (Environment, Agriculture, Rodrigues, NGOs, Mauritian Wildlife Foundation (MWF) and SPACE)
Outer islets Advisory Committee	MANR	Concerned ministries (Agriculture, Environment etc.) MWF
National Park Advisory Council	Independent nominated member	Ministries of Tourism, Agriculture and Education, National Development Unit, Rodrigues, NGOs (MWF, SPACE), MSIRI (herbarium)
National Threatened Plants Committee	National Parks and Conservation Service	Various plant specialists
Technical Committee on coral sand	MHLTCP	Concerned ministries (Fisheries, Environment)

The Environment Protection Act (EPA) now serves as a key piece of legislation regarding CZM in Mauritius. Under the Act, "Coastal zone" means any area of sea water including any low-tide elevation, land, beach, islet, reefs, rocks, between the baseline (as defined in the Territorial Sea Act of 1970) and the high-water mark; any land which is situated wholly or partly within 81.21 m of the high water mark, and includes any estuary or mouth of a river, stream or canal which lies within 81.21m of the outermost point of its bank on the sea at high tide (Fagoonee *et al.*, 1995).

For the protection of this zone regulations under the Act may provide "such measures as are necessary to ensure that activities in the zone are conducted so as not to cause damage by pollution to the natural environment". The EPA is thus essentially pollution-driven, and is based on the Polluter Pays Principle.

Promulgation of sections of the EPA have depended on the institutional, regulatory, scientific, technical and human capacity to implement and enforce them. Thus the Environmental Impact Assessment (EIA) section came into force in 1993, while the sections which depend on norms and effluent standards and monitoring capacity have yet to become operational.

The Fisheries Act of 1980 makes provision for the protection of rivers, streams, estuaries and lagoons in so far as aquatic organisms are concerned. Destruction of aquatic animals is punishable by fines and imprisonment. This law is currently being thoroughly revised and updated.

Enforcement

Provision for enforcement is made in the various pieces of legislation. Actual implementation is however often deficient, due to weak capacity.

Stakeholder Participation

Various NGOs are involved in coastal zone management and activities. The Mauritius Marine Conservation Society (MMCS) has been fairly active since 1980 in promoting interest in, knowledge about and need to conserve the marine environment, building public awareness for establishing marine parks and encouraging the enforcement of legislation. The "Mauritius Scuba Diving Association", consisting of some fifteen SCUBA diving clubs, also attempts to create public awareness about underwater marine life protection and conservation. The Mauritian Wildlife Appeal Fund, recently renamed the Mauritian Wildlife Foundation (MWF), is actively involved in endemic habitat restoration work and biodiversity conservation on Mauritius and Rodrigues and on a number of the adjacent small islands. MWF is the only NGO in Mauritius to be involved in this activity.

Other organisations involved include Friends of the Environment, involved in the restoration and preservation of historic monuments and a school sensitisation programme; SPACE, a pressure group for the environment; and l'Association des Consommateurs de l'île Maurice (ACIM). Stakeholders from the private sector include the Association des Hoteliers et Restauration de l'île Maurice, the fishing companies, the sugar industry and land developers.

Capacity (technical and human)

The National Committee for Mauritius of the IOC/FED Regional Environment programme (CN/MAU) has recently been compiling an inventory of the technical and human resources and also a file of resource persons and sector related competence. These should soon be available for consultation. A similar file for technical capacity is being compiled along the following lines:

- Infrastructure (offices, laboratories, research and experimental stations, documentation centres, nurseries etc.).
- Technical means (vehicles, propagation equipment, diving equipment).
- Computer facilities and data processing (databases, GIS, remote sensing, networks).
- Reception facilities (conference centres, trainee reception facilities).

On the whole, the various Government institutions do not have the human resources to perform the required assessment, evaluation and monitoring tasks.

Research and Monitoring

A number of institutions are mandated to do research and monitoring of the coastal zone. These are listed below.

The Albion Fisheries and Research Centre (AFRC)

AFRC was constructed in 1981–1982 with the assistance of the Government of Japan under a Grant Aid Project, and it has been operational since June 1982. It was under the then Ministry of Fisheries and Cooperatives and Cooperative Development. In August 1982, it came under the aegis of the Ministry of Agriculture, Fisheries and Natural Resources, and has operated under the Ministry of Fisheries and Marine Resources since November 1993. In 1982, the Albion Fisheries Research Centre had a total floor area of 1 300 m² comprising administrative, laboratory, and machine/workshop blocks and a hatchery. In 1987, a Marine Shrimp Culture Experimental Station was added to it, comprising a shrimp hatchery (442 m²), laboratory/office block (382 m²) and ponds including reservoirs (11, 600 m²). The construction of a new Marine Conservation Centre (floor area 1 286 m²) including laboratory facilities for marine ecology, marine chemistry, marine bacteriology and physical oceanography was completed in December 1995 (Albion FRC, 1995). This centre will be the national umbrella institution for marine conservation.

The objectives of the Albion Fisheries Research Centre are to carry out research and development activities with a view to increasing knowledge of fishery resources within the fishing limits of Mauritius, and to provide a basis for their sustainable development and management. Investigations are carried out to assess the state of the marine environment.

Research and development activities are carried out in the main fisheries sub-sections *viz.*: coastal, banks and tuna fisheries, marine and freshwater aquaculture and the marine environment. In addition to the Research Centre, freshwater aquaculture research is carried out at La Ferme Fish Farm Experimental Station, while vessels for coastal fisheries development are based at the Trou Fanfaron fishing port.

Appendix II lists the research and monitoring work undertaken by the AFRC. Though the list may seem impressive, objectives set are not always reached. To do so, it is necessary for the service to establish a greater degree of coordination and interdisciplinary cooperation.

Central Environment Laboratory

The ME&QL has a central environment laboratory for physical and chemical analyses on pollutants and residuals. The staff and equipment, however, is largely insufficient to provide effective monitoring.

Central Water Authority (CWA)

The CWA controls the quality of drinking water, surface and subterranean waters.

University of Mauritius

The University of Mauritius, through its Marine Division, is undertaking a series of research projects, e.g. "Oceanographic and ecological studies in coastal waters in Mauritius" and "Response of coral to climate change signals".

Mauritius Sugar Industry Research Institute (MSIRI)

The MSIRI is currently working on programmes to evaluate pesticide and fertiliser residual and pollutant effects in the natural environment. They are also conducting a study on the reduction of sugar mill effluents. The MSIRI is reputed for the quality of work that it produces.

CRITICAL ANALYSIS

Institutional Framework

The institutional framework is well established. However, although the Ministry of Environment and Quality of Life is equipped with its own laboratory and should now function as the national coordinating agency for all environmental matters, it has neither the capacity nor the capability to deal with the issue alone. It therefore has to rely heavily on other departments to share the management responsibility. Consequently, a multitude of agencies at present share the responsibility for coastal zone management. This inevitably results in split responsibility and overlapping jurisdiction, creating managerial problems and conflicts.

The problem is aggravated when scientific and technical expertise is not brought into the decision-making process fully. This may happen for a number of reasons, namely policy decision, institutional failures, such as lack of coordination and collaboration between agencies, and shortage of appropriate staff and failure to recruit new personnel. Environmentally trained staff still fail to find jobs in appropriate institutions, while the latter's programmes get delayed through lack of capacity.

Excessive government bureaucracy is also a major hindrance to the implementation of ICZM. To quote Young (1995), "Often, the restrictive nature of government requirements can defeat the purposes of ICZM. Provisions for agency funding, budgeting and other procedures may impede the ICZM process. In Mauritius, for example, governmental purchasing, requisitioning and budgeting rules were so inflexible that no unit of a ministry could be tapped to assume responsibility for the operation of a strict conservation area. To manage a protected area, an agency must have the ability to respond to emergency situations. Agencies within the ministry system were so bound by detailed annual budgeting requirements, however, that funding for emergencies would be virtually impossible. Instead, the conservation area could be managed only through the creation of a para-statal body." Or by appropriate NGOs.

An additional point concerns the role of "Advisory bodies". This is often ambiguous as some may have no power while most have only a limited influence. Even when their power is clearly defined, an advisory committee's role may be misinterpreted by the public and by other governmental bodies, who may interpret "advisory" to mean that the body's recommendations are not mandatory or binding.

Legal Framework

In an effort to control conflicts in land development, the Government of Mauritius has produced a national physical development plan (NPDP) through the Ministry of Housing, Lands and Town and Country Planning. The NPDP (volume 1 published in 1995) is a physical land use planning document and is primarily concerned with the effects of development and other activities in, on, over or under land. It should be noted that in Mauritius, "land" is taken to include the areas encompassed by the entire living coral reef and the offshore islets. The NPDP should be one of the most important instruments for preventing environmental degradation by providing a rational framework for land allocation among competing sectors, i.e., agriculture, residential and recreational (public beaches and hotel and tourism development).

The Ministry of Housing, Lands and Town and Country Planning is currently preparing a comprehensive Land Management Plan for the coastal region. The Northern part of the country has already been done, the South-West zone is currently being prepared and the South East area will be done at a later stage. The object is to define the land available and classify it for different types of utilisation with a view to preventing irrational use of limited resources. These outline schemes should be essential tools for environmentally sound decision-making if adhered to. However, the NPDP and the outline schemes are not sufficient to promote land utilisation consistent with national objectives. This is taken care of by the Town and Country Planning Act.

It is regrettable though that certain developments are being allowed on an *ad hoc* basis, particularly in areas where the land management plan has not been completed. This applies particularly to hotel development in the South-East and South-West of Mauritius, leading to conflict on the utilisation of beach areas, for example, hotel development vs. use of public beaches for recreation, and hotel development vs. marine park establishment.

The question of marine reserves and parks remains largely unaddressed. Since the early 1970s, many recommendations have been made for protecting marine areas around Mauritius through the creation of marine parks (Procter & Salm, 1974; 1975), fishing reserves (Robertson, 1974) and special sites with buffer zones (UNEP, 1984). These recommendations have not yet been implemented and there are no marine protected areas though two proposed marine parks are waiting for approval by the State Law Office of the associated legislation (the revision of the 1980 Fisheries Act) to become operational.

Six fishing reserves exist, but these are not properly enforced. Nine island nature reserves also exist, but only one is properly enforced as it is under long-term lease to the Mauritian Wildlife Foundation.

The 1980 Fisheries Act covers the control and exploitation of fisheries and marine resources. Subsequent to a noticeable decrease in coastal fisheries production in the last fifteen years, a number of protective measures were introduced by the Ministry of Agriculture,

Fisheries and Natural Resources in 1987. In view of the importance given to fisheries and marine resources, a new Ministry of Fisheries and Marine Resources was created in 1993, following the separation of the portfolio of Fisheries from Agriculture and Natural Resources. This ministry is currently undertaking a major revision of the Fisheries Act which will more clearly define the parameters of exploitation, protection of species, habitats and resources and enforcement. The bill is expected to be tabled in the next few months. The major problem that remains, however, will be the inability to provide effective enforcement.

There is a national commitment towards marine conservation. Yet there is a feeling that a national marine conservation policy is still lacking. In view of the legal status of the sea (*Domaine Publique*) and the variety of stakeholders, uses, jurisdiction, legislation, regulation and authorities, accountability and responsibilities are diluted. There is a lack of inter-agency collaborative exchange to remedy this.

The MEQL produced the document "Sustainable Development, The Mauritius Approach" in 1994, which states that:

- 125 000 m³ of waste water per day are produced, with a pollution load of 60 tonnes BOD per day.
- Only 18% of the sewage is sewer-borne, and this is exclusively restricted to urban areas.
- In the rural areas, the most common disposal systems are cess pool (44%) and pit latrines (37%).
- In unsewered parts of urban districts and also in the rural districts, the most common method of waste disposal is the flush toilet, connected to an absorption pit, sometimes via a septic tank.

Waste water has a high pollution effect in the open sea. On a stretch of the West coast of the Mauritius, from Baie du Tombeau to Flic en Flac, there are currently seven sewerage outlets into the sea. Only one of them has a deep water outfall. The rest release untreated sewage mixed with industrial and commercial waste water at very shallow depths or near the surface inside the lagoon or on the reef. (Pelicier, 1996, pers. com.). There is practically no dilution before the sewage reaches the lagoon. No proper diffusion and discharge takes place near the reef. Floating sewage often travels along the coast with the tidal currents in these areas and part of it reaches public beaches. Eutrophication and dense algal blooms commonly occur around outfalls and siltation, and suspended solids cause extensive coral damage and death (Fagoonée *et al.*, 1995).

A national sewerage master plan was recently developed, which defines appropriate disposal technology and will be executed in line with the NPDP, the water resource master plan. Though the Environment Protection Act (EPA) is the main law dealing with pollution, further consolidation of legislation is required.

Lastly, the Government is finalising the national oil spill contingency plan as well as the Port Louis Harbour contingency plan. The oil marketing companies also have their own contingency plans. However, local means to contain a major oil spill are extremely limited. Mauritius would have to solicit the assistance of specialist organisations overseas to prevent or limit damage to the coastline that could be devastating to the tourism industry, the fisheries industry and the health of the ecosystem.

Enforcement

While rules and laws may exist to protect the marine environment and resources, as mentioned earlier, enforcement is generally inadequate, due to lack of capacity or interest and in some cases because of corruption. Construction and development permits are subject to Environment Impact Assessments (EIA). These may be done by independent institutions at the request of the Development Agency and examined by the MEQL. It can happen that the EIA is not objective, favouring development at the expense of the environment.

Investment and Funding

The Government of Mauritius and international agencies are investing heavily in resources for coastal protection, management and research. The following is a list of some of the activities.

- The creation and equipping of the National Coast Guards, a division of the Mauritius Police Force. The Coast Guards have the responsibility of monitoring the coastal area and high seas of Mauritius. They are equipped with power boats and large patrol boats and are based in a number of places along the coast. They are responsible for monitoring power boats, sand digging, lifesaving and support for the enforcement of the Fisheries and Marine Resources Act. The main responsibility for this last action, however, falls on the enforcement branch of the Ministry of Fisheries and Marine Resources. This is financed by the Government of Mauritius.
- The Japanese Government has generously financed the construction and equipping of the Fisheries Research Centre and the Marine Conservation Centre at Albion for the MF&MR. This unit now has at its disposal modern and sophisticated equipment. Work already done at the centre includes a study on "Lagoonal health characteristic and coastal pollution" and various specific studies related to coral reefs and fisheries.
- The Japanese will also fund a detailed study and survey of the lagoon including the reef around Mauritius, to map the distribution and status of animal and plant forms in the lagoons. This will be done in cooperation with the Albion Fisheries Research Centre.
- The Albion Fisheries Research Centre will soon be undertaking a project with the help of the Canadian Government (CIDA) on "Coastal Marine Resources and Use mapping" which will produce a detailed map of the coastal area to develop a sensitivity atlas. CIDA is also assisting with the creation of the marine parks.
- The European Development Fund is currently funding a five year project undertaken by the Indian Ocean Commission IOC/FED (Environment) CN/MAU for coastal protection and Integrated Coastal Zone Management. The project, which became operational in 1995, will initially produce a detailed study and recommendations, followed by pilot projects.
- The National Committee/Mauritius of the Indian Ocean Commission/FED (Environment) (CN/MAU) has recently financed a study on the creation of a marine ecotoxicology network in Mauritius. The report from the study is expected soon.
- The CN/MAU has also recently launched a series of programmes designed to reinforce the local Rodriguan capacity to monitor and study the state of the lagoons and reefs of

Rodrigues. This is in the form of capacity building, training in diving and basic marine ecology, diving equipment and a compressor. About ten people are currently being trained. This activity will be accompanied by a strengthening of partnership with institutions and resource persons in Mauritius and Rodrigues.

- A local NGO, the Mauritian Wildlife Foundation, recently started a five year project for the restoration of the floral habitat and biodiversity of two small islets around Mauritius and on Rodrigues. This five year project is funded by the World Bank/GEF.
- Two marine parks at Balaclava and Blue Bay are ready to be established. The MFMR is waiting for the revised Fisheries Act to start the operational phase. The project will be financed with the help of the Government of Mauritius.
- The Caisse Française de Développement is funding the modernisation of a sewerage treatment plant.

Though these projects are all very promising, coordination and inter-disciplinary cooperation are essential if they are to produce results and achieve the set objectives.

Stakeholder Participation

At the moment, planning and decision-making on coastal management is done essentially at the Government level only. There is limited input from the private sector, e.g. the hotel industry and NGOs. Lack of communication between Government departments is an aggravating factor in the decision-making process.

A recent report prepared by the Indian Ocean Commission Regional Environment Programme (COI/FED CN/MAU April 1996) identifies a series of problems and conflict areas that must be addressed if an integrated management plan for the coastal region is to become operational and effective.

The following are listed in the report.

Problems of technical and environment-related nature

- Over-exploitation of the natural resources of the lagoon (fisheries, non-renewable coral sand, reef).
- Destruction of corals by human action (dredging, anchoring, use of fishing nets, fish traps, stamping).
- Degradation of beaches, rivers, canals by solid wastes, essentially plastic.
- Ecotoxicological events (excessive algae growth and tides, fish deaths).
- Industrial pollution (water soluble wastes such as sugar mill and textile mill effluents).
- Agricultural pollution (excessive fertiliser and pesticide wastes draining into the rivers and into the lagoon). In this case mainly the west coast (leeward side of Mauritius) is affected.
- Coastal erosion and excessive sedimentation of the lagoons.
- Excessive residential and agricultural effluents causing eutrophication of lagoon and rivers.
- Degradation and deforestation of mangrove areas.
- Degradation and loss of sea grass beds (primarily the result of sand digging activities).

- A population explosion of sea urchin in the last few years has devastated many seagrass beds (believed to be caused by the over-exploitation of crustaceans and fish that normally would control the urchin population).
- The conflict between hotel and public caused by the reduction of public beaches (recreational areas).
- The negative impact of hotel and tourist resources development on the coastal strip and the lagoon (sand dredging for boat lanes and ski lanes, pollution, coastal erosion etc.).

Problems of human or organisational nature

- Insufficient popularisation of technical and scientific information.
- Lack of transparency and information on the activities of certain institutions.
- Conflict between stakeholders.
- Lack of coordination and integration of interdisciplinary activities.
- Lack of partnership and active participation.
- Conflicts of interests on space and resources between users.
- Conflict between the private sector (including NGOs) and the administration, essentially taking three forms:
 1. Limited or poor recognition of the value and merits of private operators in the management of resources by the administration and institutions.
 2. "Pragmatic-operational" approach versus bureaucratic stagnation (lack of decisions and action).
 3. Aggressive and non-respectful attitude and approach to the environment and management rules on the part of certain productive sectors (industry, tourism) for whom private (financial) interests largely supersede the public interest (i.e. the national heritage concept).
- Conflict between institutions.

"The concept of integrated management of the coastal zone is often ill-defined as regards its judicial and geographic delimitation. It is, as are all environment related matters, a multi-disciplinary sphere requiring strong means and a strong will for its coordination and pooling of resources. However, the sphere of intervention of the different partners (stakeholders) remains very sector related, if not partitioned, and the different coordination committees and monitoring bodies often cannot reach a consensus of opinion and an effective mode of operation. This often produces a loss of confidence in the coordination tools (including by private sector and NGOs). This results in an individuality approach within these institutions, giving rise to large scale duplication and an irrational use of the physical and human resources available." (CN/MAU, 1996)

The report also lists problem areas as identified by resource persons involved in coastal zone activities:

- Low level of understanding by decision-makers and the public of environment related issues and in particular of the importance of integrated coastal zone management policy and actions.
- Slow or poor application of planning exercise.
- Poor respect for and enforcement of existing laws.
- Lack of strict legislation concerning pollution and land use and construction norms.
- Difficulty if not impossibility of access to technical and scientific information and reports (this is often the case even within institutions and between different institutions)

within the administration, frequently as a result of compartmentalisation or presumed confidentiality).

- No mechanisms to put a monetary value on the impact of actions on the environment and the coastal zone, thus a balance sheet cannot be drawn up to allow the development of a short, medium and long-term integrated management plan taking into account the fiscal or economic value of sustainable utilisation of limited resources.

Though political will exists in Mauritius to try and ensure that there is rational use of the resources available, this has not produced the hoped for results. Two important reasons for this are:

- Serious lack of vertical and horizontal communication and exchange of ideas and information among all stakeholders.
- Insufficient, or often non-existent understanding of what is at stake for the country and its economic players in the short and long term, thus the concept that integrated management can lead to sustainable utilisation of resources by all parties and stakeholders involved is weak.

Research

A final point concerns research, information and data. To implement or choose between policy options, studies which can generate large amounts of data are commissioned. This data is often not widely available, as emphasis is placed on the generation of data and not on the dissemination of information. The data is too often guarded as the exclusive property of the individual, unit or agency generating or commissioning it. Who requires the data is often the criterion for a decision to release it. Considerable data exists, but it is not turned into useful information

WHAT NEEDS TO BE DONE?

As a party to the Biological Diversity Convention, Mauritius has committed itself to conservation and protection of the environment and sustainable use of biological diversity through implementation of national strategies, plans and programmes for sectors such as agriculture, fisheries, and industry, and matters such as land use planning and tourism development. As a major user of natural resources, tourism planning should be given the highest priority in the integrated management plan for the coastal region. All parties involved should be brought into the decision-making process and a cohesive, common policy for sustainable utilisation developed.

As a result of the 1992 UN Conference on Environment and Development in Rio de Janeiro, more emphasis should be placed on local action plans (Agenda 21) that integrate environmental protection into local economic development. People in individual countries and in the region will need to have sustainable sources of income to prevent them from overexploiting natural resources (fish, sand, tourism and other economic activities).

An integrated management portfolio must work within the context of sustainable development, strengthening and expanding protected areas, promoting the sustainable use and management of land, water, biological resources and physical space through local community involvement, capacity building, research and conservation. The public, the business

community, and especially Mauritian youth need to have access to all relevant and related information for this to take place. Exchanging knowledge through open communication, education activities and national and regional training facilities will strengthen understanding and participation in the project.

Thus, to ensure the long term success of an integrated management plan for the coastal region of Mauritius and for other countries in the region, social, economic and community factors must be taken into account. It is necessary to develop in the early stages of such projects a comprehensive and integrated approach that will set the guidelines but can however be modified when it becomes necessary to incorporate new parameters and activities not taken into account initially.

Public partnerships as well as cooperation with governmental bodies (e.g., for legislation and enforcement), non-governmental organisations and international institutions must be established. It is of utmost importance that a campaign to create awareness and understanding of the importance and benefits of integrated management be undertaken. This campaign should be directed primarily to policy and decision makers, administration and operators in the private sector and associated organisations.

Partnership, consultation and participation should become key principles and should be sought at all levels of planning, policy making and funding on the principle that "Peace, development and environmental protection are interdependent and indivisible" (Rio Declaration 1992 – Principle 25).

To achieve successful ICZM it is therefore necessary to do the following:

- *Develop an Integrated Coastal Zone Management Plan* for Mauritius to ensure the rational utilisation of resources and to maintain the environmental quality of the coastal zone. A major purpose of such a plan would be to provide a framework for coordination among the many ministries with jurisdiction over coastal areas in Mauritius.
- *Prepare a framework law.* This is necessary since Mauritius has a dispersed set of laws sometimes causing conflicts of interest, jurisdiction and enforcement.
- *Set up a clear authority or secretariat,* possibly under the Prime Minister's Office, to coordinate activities, and avoid overlap in responsibilities and the decision making process.
- *Involve the community.* The Government of Mauritius should hold stakeholder workshops before making policies. The community participation approach is essential if the sustainable utilisation of natural resources for the benefit of all parties is to take place. The policy making process must be participatory and not merely "consultative".
- *Provide education and information.* The Government has the responsibility to inform and educate the public and its own administration if ICZM is to be successful. Education at all levels and campaigns to generate interest are essential.
- *Establish managerial framework.* The best worked out vision or plan cannot be achieved without an appropriate managerial framework. As mentioned above, the long-term institutional improvements will have to include the consolidation of legislation. The improvement of skills in the landed professions, to serve both the public and the private sectors, needs to take place. A more efficient administrative machinery that acts and is seen to act as a facilitator as well as a watchdog must also be developed.
- *Improve communications between agencies.* To this effect every effort should be made to get rid of the compartmentalisation that exists between ministries, departments and institutions. Equally, a streamlining of the bureaucratic process in the Government services and administration is essential. Department heads must be able to make decisions.

- *Develop alternatives.* Finally the Government should recognise that if certain activities that are non-complementary to the ICZM policy, these activities should cease but a compensatory mechanism, or an alternative employment mechanism, should be introduced.

To conclude, we quote Principles one, three and four of the Rio Declaration on Environment and Development 1992.

Principle 1.

Human beings are at the centre of concerns for sustainable development. They are entitled to a healthy and productive life in harmony with nature.

Principle 3.

The right to development must be fulfilled so as to equitably meet developmental and environmental needs of present and future generations

Principle 4.

In order to achieve sustainable development, environmental protection shall constitute an integral part of the development process and cannot be considered in isolation from it.

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ANNEX I

NGOs involved in coastal zone management and activities

The Mauritian Wildlife Appeal Fund, recently renamed The Mauritian Wildlife Foundation (MWF). 6th Floor, Ken Lee Building, Edith Cavell Street, Port Louis, Mauritius. Phone: (230) 211 1749. Fax: (230) 211 1789. E-mail: mwfexec@bow.intnet.mu. Contact person: Mr Pierre de Boucherville Baissac, Director of Development.

Friends of the Environment. Labourdonnais Street, Port Louis. Contact person: Dr Monique Koenig.

Mauritius Marine Conservation Society. c/o MUG, Railway Road, Phoenix, Mauritius. Phone: (230) 676 5788. Contact person: Ms Nathalie von Arnim, President.

SPACE. Contact person: Mrs Nalini Burn (Ministry of Women's Right & Child Welfare).

ANNEX II

List of projects and services

Ref. Albion Fisheries Research Centre (Ann Rep 1995)

Division	Project	Objectives
Aquaculture	Seed production	Production of microalgae (as live feed) and fish/shellfish larvae for aquaculture and release. Develop techniques for maturation of fish/shellfish in captivity.
	Pond management and marine aquaculture extension	Improve pond production techniques. Provide services to barachois farmers and develop new production techniques such as pens and cages.
	Berri-rouge culture development	Production of berri-rouge fingerlings. Develop and improve grow-out production techniques.
	Fresh water aquaculture extension	Provide extension services (supply of fish fingerlings, site visits and advice on project).
Marine sciences	Marine environment management plan	Work with consultants on air-borne imagery, mapping of coastal and sensitive zones.
	Marine pollution monitoring of baseline data on coastal waters	Monitoring of water quality and development.
	Marine ecosystem monitoring (reef/mangroves/seagrasses)	Effect base-line studies on marine ecosystems.
	Physical oceanography	Collection and analysis of data on physical properties of coastal waters (current patterns/salinity/temperature).
	Ecotoxicology	Screen fish for toxicity and monitor harmful algae and jellyfish population explosions.
	Sand resources monitoring	Monitor sand removal from designated sites.
Marine resources	Gear development and bathymetric surveys	Maintenance and setting up of new FADs. Collection of bathymetric data. Management of the station at Trou Fanfaron.
	Snapper biology/Training	Assessment of fish population parameters of fishermen on small bank. Provision of an extension service (including training to fishermen).
	Fish inspection service	Delivery of import permits and fish quality inspection.
	Coastal fisheries	Monitoring of coastal fisheries. Data collection. Preparation of statistical bulletin.
	Offshore demersal fisheries	Monitoring of offshore demersal fisheries. Management of resources. Licensing.
	Monitoring of fishing vessels	Monitor and enforce licensing conditions. Quota allocation.
	Stock assessment (lagoon)	Collect biological data for evaluation of fish population.
	Tuna fisheries/RTP/BMFC	Compile statistics and biological data on tuna fisheries and regional collaborative research.
Marine parks and reserves services	Marine parks surveys and set up	Conservation of marine biodiversity (including coral communities and fish population). Management of designated parks and reserves.

Integrated Coastal Zone Management in Mozambique

EBENIZARIO CHONGUIÇA

INTRODUCTION

On April 21–23 1993, a workshop and policy conference on Integrated Coastal Zone Management (ICZM) was held in Arusha to discuss problems and solutions with regards to sustainable development of the coastal areas of Eastern Africa and the Western Indian Ocean (cf. Lindén, ed., 1993). With the participation of Ministers and top level officers from Tanzania, Seychelles, Mauritius and Mozambique, the conference resulted in a number of technical recommendations and resolutions on Integrated Coastal Zone Management in Eastern Africa and the island states.

The present paper intends to provide an assessment of what has occurred in Mozambique with respect to coastal zone management issues in line with the Arusha resolutions. The assessment exercise is divided into three parts. The first part deals with a descriptive presentation of the status of coastal activities in Mozambique, in an evolutionary perspective covering the last three to five years. In the second part, a critical analysis of successes and failures observed so far is provided together with an attempt to identify the most probable factors governing observed trends (positive or negative). The third part presents a general overview on what needs to be done for more effective ICZM within the context of Mozambique's political and socio-economic environment. A list of finished, ongoing or planned initiatives and projects on coastal resources and environment is provided in an annex.

DESCRIPTION OF COASTAL ACTIVITIES

Any attempt to describe the coastal activities of whatever country under analysis, must begin with a clearly defined concept of the coastal zone or the geographical space in which such activities take place. For the current analysis, such space is regarded as the area of interface between the terrestrial and marine environments. It includes the coastal lowland and the adjacent waters influenced by both the upland and sea conditions (cf. Chua & Scura eds., 1992; Chua, 1993; Shah, 1995). Given the need for well defined management boundaries, in Mozambique there is a growing consensus that the area should integrate all coastal districts (with a clearly defined coastal shoreline) with interior districts that contain clear evidence of terrestrial and marine overlap. With regard to existing international agreements on international waters signed by Mozambique, the coastal zone also integrates territorial waters and the exclusive economic zone (EEZ). The area thus defined contains an extraordinarily complex and rich resource base that provides a wide range of opportunities for extraction of goods and services, including:

- fisheries
- forestry
- industry

- coastal tourism
- transport, port development and shipping
- human settlements and urban development

Discussion of the various topics included in this paper will take place within the context of coastal zone and coastal activities as defined above. For detailed information on the general biogeophysical characteristics of Mozambique's coastal zones and related activities, the reader is referred to Tinley, 1970; 1971; GTA, 1990; Lundin and Chonguica, 1993; and Gove, 1993.

Institutional Framework

The institutional framework for coastal policy and management issues is generally determined by the activities outlined above. A list of institutions and their major responsibilities with respect to policy, planning, management, research and training is provided in Table 1. These institutions have been in place since the establishment of the post-independence Mozambique Government in 1975, with the exception of the Ministry of Environmental Affairs (MICOA), created in 1994. It should, however, be mentioned that in the past, institutions dealing with environmental issues were incorporated in one way or another in existing government bodies as Departments or Cabinets, for example, the Department of Environment and Regional Development within the National Institute for Physical Planning (INPF). This Department in particular has evolved, leading to the creation in 1992 of the National Environment Commission (NEC), which came about as a result of the increasing awareness of environmental matters among top level decision-makers, motivated to a great extent by staff members of that Department. Activities developed by the National Environment Commission, particularly with respect to Mozambique's participation in the United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro in 1992, further expanded awareness of environmental issues at all levels in society. This in turn led to the establishment of a stronger institution that would allow for a more holistic approach in dealing with environmental matters – MICOA.

Nevertheless, it would be incorrect to say that institutional concern for environmental issues was initiated only through INPF, NEC and MICOA. Even before 1975, the institutional framework addressed policy, planning and management issues of the natural resource base. The most noteworthy observation with respect to the past relates to the operational approach used – and still in use following independence in some cases – which is characterised by the lack of integrated holistic vision and inter-sectoral interaction. The need for a multi-sectoral approach in the management of the national resource base is currently being recognised as a result of NEC and MICOA's activities regarding the National Environmental Management Plan (cf. MICOA, 1995).

Until very recently, there was no specific institution to address Integrated Coastal Zone Management. Most institutions with a mandate regarding policy, management and planning issues of coastal resources are not specifically circumscribed to the geographical boundaries of the coastal zone. The institutional set-up is based instead on the administrative boundaries of state administrations which have as operational units of action the provinces and districts. One exception to this would be the Ministry of Transport and Communications – Maritime administration and the Institute of Hydrography and Navigation. Given the specificity of their subject matter, they operate within the strict limits of the water bodies and direct adjacent terrestrial areas.

Table 1. Major institutions dealing with policy, planning and management and research on coastal issues (after Massinga & Hutton, 1996)

Institution	Policy	Planning and management	Research and training
Ministry of Agriculture and Fishery			
National Directorate of Forestry and Wildlife	X	X	
National Directorate for Geography and Cadastral	X	X	
Small Scale Fishery Development Institute	X	X	
National Institute for Agronomic Research			X
Fishery Research Institute			X
Ministry of Transport and Communications			
National Marine Directorate	X		
Maritime Administration	X		
National Institute for Hydrography and Navigation	X	X	X
National Meteorological Institute	X	X	X
Ministry of Commerce and Tourism			
National Directorate of Tourism	X	X	
Department of Commerce	X	X	
Ministry of Health			
National Laboratory of Food Hygiene and Water			X
Ministry of State Administration			
National Directorate of Local Administration		X	
Ministry of Industry and Energy			
National Directorate for Hydrocarbons	X	X	
National Directorate for Mining	X	X	
National Directorate for Industry	X	X	
Ministry for Environmental Affairs			
National Directorate for Resource Management	X	X	
Coastal Zone Management Unit	X	X	X
Eduardo Mondlane University			
Department of Biological Sciences		X	X
Department of Geography			X
Department of Forestry			X
Department of Chemistry			X
Department of Physics and Meteorology			X
Coastal Urban Municipalities			
Maputo	X	X	
Beira	X	X	
Nacala	X	X	
Pemba	X	X	
Xai-Xai	X	X	
Quelimane	X	X	

Within the framework of MICOA's policy for environmental management as reflected in the National Environmental Management Plan (NEMP), coastal zone management is defined as an issue of high priority. This is due to the role it plays in the provision of goods and services for over 40 percent of the country's population (which is living along the coast) and in the generation of export earnings to the Gross National Product. On the other hand, there is clear evidence of inadequate management procedures, due to weak institutional arrangements, leading to the destruction of existing coastal resources and sensitive ecological systems.

Given this situation, MICOA contributed to the establishment of an Inter-institutional Technical Committee for Coastal Zone Management (CTIGC). This Technical Committee integrates senior officers from the most critical institutions related to coastal issues, and is coordinated by MICOA. It should be noted however, that the Committee is still operating on an *ad hoc* basis, while it formalises its structure and functions.

Legal Framework

Most of the existing legal framework for natural resource management pre-dates independence. At present, most of these laws are still being applied, since the constitution of 1975 states that any law or its provision adopted prior to independence will remain valid as long as it does not harm the interest and policy of the Republic of Mozambique (Massinga & Hutton, 1996) (see Table 2).

Table 2. Sample of existing legislation and period of establishment (NEC, 1993)

Legislation code	Major purpose
Decree No 547, July 23, 1927	Prohibits the cutting of mangrove in specific areas of the coastal strip
Decree No 1993, July 23, 1960	Defines the establishment of Gorongosa National Park
Decree No 2787, May 23, 1967	Prohibits hunting at Inhaca and Portuguese Island
Decree No 2568, October 7, 1967	Establishes the security roles for siting of storage facilities for crude oil, its derivatives and residues
Decree No 2707, December 23, 1967	Creates an area for special surveillance within Inhaca and Portuguese Island
Decree No 47/71, May 25, 1971	Defines the establishment of Basaruto National Park
Decree No 51/72, May 30, 1972	Defines penalties to be applied to collectors of plants and animals within the boundaries of national parks and reserves in Mozambique
Decree No 495/73, September 20, 1973	Determines a set of protection measures against water pollution, pollution of beaches and coastal areas
Decree No 20/81, December 30, 1981	Ratifies the Convention on International Trade of Endangered Species of Wild Fauna and Flora
Decree No 18/81	Ratifies the African Convention for the Conservation of Nature and Natural Resources
Decree No 2/92, June 3, 1992	Creates the National Commission for Environment (NEC)

With respect to coastal zone issues, a national framework for their management is strategically defined within the NEMP approved in 1994. It emphasises the relevance of coastal zone issues and recommends an adequate re-assessment of the existing legislation so as to make it more suitable to the present situation. As a result of these recommendations, various efforts were made to compile and assess existing environmental laws (NEC, 1993). This led to the drafting of a National Environmental Law (which integrates coastal issues) submitted early this year to the parliament but not yet approved. It can therefore be said that there is as yet no clearly defined legal framework to deal with the coastal zone as a specific geographical unit for integrated policy, planning and management. What exists is a set of legal regulations with respect to the diverse set of resources that may or may not fall within the geographical boundaries of the coastal zone.

One exception to this is with respect to marine resources. The extent of territorial waters and the exclusive economic zone (EEZ) is clearly defined by signed international conventions. Another exception is related to the existing regulation for the 100 m coastal fringe from the higher water mark, defined as an *coastal protection area* and under the jurisdiction of the Maritime Authorities within the Ministry of Transport and Communication. Other clearly defined coastal regulations are related to existing marine protected areas with endangered species such as the dugong and marine turtles. Very recently new legislation has emerged defining the tourism sector as responsible for management of the 50 km of coastal fringe, from the 100 m line that determines the coastal protection area.

Enforcement

Enforcement is one of the weakest components of the country's legal framework. In nearly all aspects of the country's legislative process there are no effective human and technical resources capable of ensuring enforcement. The situation is particularly bad for coastal zone management given the extent of the coastline (2 500 km) and the almost non-existent technical and material resources for marine surveillance. Numerous cases of illegal fishing or inappropriate fishing techniques are known to the public and the Maritime Administration Authorities, but they are unequipped to stop such actions.

Investments and Funding

There are various types of coastal investments currently being made. They can be grouped as follows:

- Institutional building for integrated coastal zone management – MICOA/DANIDA.
- Upgrading and maintenance of coastal infrastructures for navigation purposes – National Institute for Hydrography and Navigation.
- Protection of coastal erosion specially along the major coastal cities (e.g. Nacala, Beira) – FINIDA and the government of Holland.
- Master plan for coastal tourism development – European Union.
- Mecufi coastal zone management, a pilot project on resource management – NORAD.
- Xai-Xai district coastal management, a pilot project on coastal planning – UNEP/FAO/MICOA.
- Private or joint-venture tourism development initiatives (e.g. Ponta do Ouro, Inhaca Island, Bazaruto Archipelago, Vilanculos, Inhassoro, Pemba).
- Natural gas extraction (e.g. Pande-Vilanculos).
- Mining of heavy sands along Zambezia coastal areas.

Stakeholders Participation

Major stakeholders that are participating in or being affected by ongoing coastal zone development programmes are the local communities, national private sector, foreign private investors (South Africans, Zimbabweans, Namibians). State institutions or companies either alone or in joint-ventures with foreign companies are also involved.

Capacity (technical and human)

Overall, the existing technical and human capacity is still very limited for Integrated Coastal Zone Management. Most of the institutions listed in Table 1 do not have sufficient technical or human resources to cope with the demand. The best qualified personnel and most of the existing technical resources tend to be concentrated in the headquarters of the major institutions in Maputo. The level of technical and human capacity decreases abruptly in the provinces and districts. It should, however, be noted that given the new decision-making approach being advocated nowadays, intending to empower the local administration, some initiatives are being taken to re-direct resources to provincial and district levels.

Research and Monitoring

Current research activities being undertaken with specific connection to coastal zone issues can be listed as follows:

- Department of Biological sciences/UEM
 - coastal ecology
 - marine biology (Inhaca Research Station)
- Department of Geography/UEM
 - coastal and quaternary geomorphology
 - downstream impact of rivers regulation – changes in riparian ecology, fluvial
 - geomorphology and estuarine dynamics
- Department of Chemistry/UEM
 - estuarine pollution with heavy metals and hazardous waste
- Department of Physics/UEM
 - oceanographic processes
 - dynamic meteorology
- Institute for Fishery Research (IIP)
 - marine ecology and oceanography
 - impact of river flow regulation on coastal fishery habitats
- National Laboratory for Water and Food Hygiene (LNHAA)
 - estuarine water bacteriological contamination
 - monitoring of water quality standards
- MICOA/Darwin-Frontier
 - status of coral reefs in Pemba

Despite existing knowledge about such research, not much information is available to the general public regarding major research findings.

CRITICAL ANALYSIS

Institutional Framework

An institutional framework has not yet been adequately established to deal with integrated coastal management issues in a comprehensive way.

Despite the existence of the NEMP, which was designed with the participation of staff members from various institutions to ensure a multi-sectoral dimension in its content and implementation, empirical evidence reveals that there is still much to do to fulfil such an objective. This is illustrated by the lack of a clearly defined national policy on coastal zone management that is rooted in a multi-sectoral approach to management.

Because of the hierarchical structure of most institutions (national, provincial and district levels) there is neither a clear definition of responsibilities nor adequate exchange of information to avoid conflicts. At a national level decisions may be taken regarding the allocation of a given piece of land for a particular development proposal in a specific district, without consulting the district authorities. At various levels of the hierarchical and sectoral structure of the existing institutions, decisions are taken without adequate inter-action, resulting in duplication of concessions ("legally given") for the same land. With regard to tourism for example, various channels can be used to comply with the required institutional clearing for project implementation, ranging from the Centre for Promotion of Investments (CPI), Ministry of Commerce, Industry and Tourism, Provincial Authorities, District Authorities etc.

Given the current socio-economic changes initiated by the advent of peace and a shift to a market economy, a large number of development initiatives are being implemented or proposed, particularly within the coastal zone. But Mozambique does not have a comprehensive plan for coastal zone development based on sound knowledge of location, status and potential of the most sensitive coastal areas. This exacerbates the institutional inability to make the correct decision with respect to coastal zone development initiatives. It should, however, be mentioned that some changes in the institutional framework are taking place. Within the Ministry of State Administration a new institutional arrangement is being launched to reinforce the capacity of local administration, thus devolving decision-making power to local levels and enhancing community participation in the decision-making process (at least on paper and in speeches). Pilot projects are being implemented to generate experiences in empowering of local administrations (PROL – priority districts).

The creation of the Ministry for the Coordination of Environmental Affairs brought about a new perspective with respect to the need for a functioning inter-sectoral approach in the existing institutional framework. Since 1995, this ministry has established an Inter-sectoral Technical Committee for Coastal Zone Management (CTIGC) which includes representatives from the ministries most directly related to coastal issues. Pilot projects on coastal zone planning and management are being implemented in Mecufi, (cf. MICOA, 1992), Querimbas (cf. Society for Environmental Exploration, UK, 1995) and Xai-Xai (Motta, 1996). Those pilot projects are resulting in a great deal of ICZM planning and management experience as well as creating the groundwork for an Inter-institutional Technical Committee for Coastal Zone Management. Various national and international workshops have been promoted by this Committee and it is moving from an *ad hoc* to a more formalised status. A recent ICZM national workshop held at Inhaca Island focused on the definition of an operational methodology for coastal zone planning and management (MICOA, 1996).

However, given the complexity of priority development issues currently requiring the Government's attention, these initiatives have not yet achieved the desired results. Districts (even the pilot ones) are still not equipped with adequate institutional arrangements in terms of qualified personnel, technical, material and financial resources. The Inter-institutional Technical Committee for Coastal Zone Management does not have adequate means to transmit its experience to appropriate decision-makers. Lack of a sufficient mandate, reduced technical and managerial resources are most like the major factors.

Legal Framework

The existing legal framework to deal with coastal management issues is clearly insufficient. There are a set of international conventions related to marine resources, for example, that are not yet signed by the Government of Mozambique (e.g. the Basel convention on Transboundary Movement of Hazardous Waste). On the other hand, the limited knowledge of the status of coastal resources and the unclear definition of the geographical boundaries for coastal zone management hamper formulation of a more effective legal framework, including determination of areas of jurisdiction for the various interested and affected parties. It should, however, be noted that the legal devices already available, if well-managed and implemented, do have the potential to at least minimise some of the critical problems currently affecting coastal resource management. An effort has been made by the NEC (MICOA), to compile and assess the existing legal references to management of natural resources. This assessment will not be complete without clear determination of the effectiveness of existing legislation, diagnosis of existing gaps, ways to close these gaps and to make the legislation applicable in a multi-sectoral perspective.

Also of critical relevance is the extent to which decision-makers at all levels are familiar with existing legislation when decisions are taken. This observation stems from the various cases in which decisions were taken contrary to existing legislation. This is even more critical at provincial and district levels where development actions take place.

Enforcement

Empowering existing institutions, especially at the levels where violations occur, will go a long way towards solving problems of enforcement capacity. Currently, in cabinet offices where decisions are made, there are no means to detect or advise on cases of legal violations in a systematic manner. Out in the field, existing enforcement structures are not adequately equipped in terms of personnel, technical or material resources to intervene when violations are detected. It does not make sense to have legislation that protects a given endangered species without having adequate means to monitor the species growth and movements, and detect cases of violation. With respect to marine resources, the legal framework stipulating the territorial waters, EEZ and fishing regulations is in place. However, in cases of violation of the territorial waters, dumping of hazardous waste, oil spills, blast fishing etc., none of the maritime authorities have the required personnel or equipment to promptly detect such cases and act against them.

The currently unregulated and expanding tourism sector is associated with a number of legal violations frequently reported by the media. However, no significant action against such cases has been taken to date. The passive attitude often taken by responsible authorities is perceived as completely unacceptable by the general public.

While in most cases the lack of enforcement can be attributed to reduced technical and managerial resources, in others it is caused by associated factors. The current socio-eco-

conomic situation has led to financial insecurity in many households. Investors or project proponents may take advantage of this situation, leaving some civil servants open to bribes, to the detriment of their professional responsibilities.

Investment and Funding

Investments and funding are currently contributing to reinforcement of the existing institutional framework and establishment of an adequate Integrated Coastal Zone Management policy. There is also a set of investments and funding being directed towards development initiatives.

The first type of investments is visible within the existing institutional framework of ministries involved in coastal zone issues, NGOs and the Ministry for the Coordination of Environmental Affairs in particular. Institutional capacity building programmes are the major emphasis – integrating training, equipment and managerial skills in policy and management issues. This is being done with the support of various international agencies (e.g. UNDP, WORLD BANK etc.) and intergovernmental agreements (the government of Holland, Sida, DANIDA, NORAD, CIDA etc.).

With respect to the second type of investment, major actions are directed towards the fishery sector, coastal tourism, forestry, urban development, harbours improvement and navigation and coastal protection. They involve investments by the Government using loans from international agencies, international agency funding, private sector (foreign, national or joint-ventures). Most of the investments related to infrastructure development are somehow tied to the Government. The tourism sector is where the bulk of private investment has been made. The fishery and forestry sectors have a balanced mix of private and government investments.

In the overall context, a clearly defined development policy to direct appropriate investment is lacking. Some investments appear simply to counter-balance critical environmental degradation problems occurring elsewhere, others are the result of funds availability for Mozambique in given sectors, others are made to take advantage of opportunities for quick profit generation, and some provide for needed socio-economic development. Under these circumstances, and given the general scarcity of financial resources, there is no clear set of procedures to adequately screen investment offers or direct them towards the most critical developmental needs in Integrated Coastal Zone Management. Most of the investments end up being more donor driven than rooted in the country's self-defined development priorities.

Stakeholder Participation

It is not common practice to have all critical stakeholders (interested and affected parties) participating in the planning and management process. The planning process is still generally centralised within government bodies and it is only very recently that some initiatives have widened the scope to include parties affected by the projects.

In these new initiatives, the level of stakeholder participation in the planning process is often determined by the size of the individual *stake*. This means that grassroots stakeholders are marginalised. A number of investment initiatives (e.g. tourism concessions) have resulted in community displacement or reduced access to traditionally owned coastal resources.

With regard to NGOs, it should be noted that until very recently, they were associated with foreign entities. Existing NGOs in Mozambique have been mostly foreign and national ones are quite new. Therefore, most of them are not yet adequately established in institutional, managerial and financial terms. The presence of most foreign NGOs in Mozambique was originally based on emergency programmes and food aid during the war. At that time they held key positions in almost all provinces and districts. In some cases NGOs had an annual budget much larger than that of the province or district. With the advent of peace and a new socio-economic framework, some NGOs are re-directing their actions towards development initiatives, and are therefore addressing environmental issues as well.

Capacity (technical and human)

Technical and human capacity is largely insufficient to cover the urgent requirements of coastal zone management. This is critical at provincial and district levels, since the available resource distribution pattern discriminates against those levels (province and district) of management and decision-making.

Most of the existing technical resources (e.g. 4x4 vehicles) circulate within major cities. Headquarters offices are equipped with the latest computers and updated software packages to store and process data generated by a district officer who, in most cases does not have a single pen, pencil or even paper to record the requested data. These imbalances hamper proper functioning of provincial and district institutions in fulfilling their mandate.

It should, however, be mentioned that a promising capacity building programme on environmental matters especially for decision-makers has been in implementation since 1992. Coordinated by MICOA and with funding support from Sida, a set of short term training courses on how to integrate environmental issues into planning and decision-making was designed and implemented for all eleven provinces, from 1992 to 1993. The training (on a province by province basis) was directed to all provincial governors, provincial directors including relevant members of the private sector, NGOs and the community. At present, a similar approach is being implemented under the CAPACITY 21/UNDP funding, but directed to senior officers at ministerial level, and members of the council of ministers. Special packages are being designed for decision-makers at district level and members of parliament. Although the training packages are not specifically designed for integrated coastal zone management, the broad perspective on resource management also includes coastal issues, and is enhanced by course participants from coastal areas.

Research and Monitoring

Ongoing research activities by the University and other research institutions are generally undertaken in an isolated and sporadic manner. Even within the university, each department sets up its own research agenda, often oriented to the department's or researcher's personal interest, academic ambitions and time constraints for graduation. Institutions outside the University (e.g. IIP LNHA) focus mainly on implementing research and monitoring activities in accordance with their particular interest and availability of funds. There is no clearly defined research and monitoring strategy to address the requirements of an Integrated Coastal Zone Management programme. Researchers from the Universities do not communicate sufficiently with decision-makers to produce the kind of information that meets decision-makers needs. On the other hand decision-makers very seldom request research studies to provide information for a given policy issue. Existing research potential

is thus not explored to its maximum capability. This situation calls for formulation of an overall national policy for research and development that takes into account coastal zone management information needs.

Within MICOA, plans exist for the establishment of a Centre for Coastal Zone Management in the Xai-Xai district (with support from DANIDA). Apart from its role in promoting adequate coastal management initiatives throughout the country, a great deal of research and training activities are planned to be undertaken as key duties of the Centre.

Summary of the Analysis

From the above analysis, it appears that significant steps have been taken towards the establishment of an adequate institutional, legal and managerial framework for sustainable Integrated Coastal Zone Management in Mozambique. Most of these initiatives are still in the very early stages, however, and will take time to be consolidated. The most important factors preventing more rapid progress towards effective coastal management and protection of marine resources can be listed as follows:

- Lack of a solid and coordinated institutional framework to address coastal zone management issues.
- Lack of a strategic vision translated into an effective coastal zone development policy.
- Limited technical, human and financial resources to empower existing institutions at all levels of intervention, particularly the provinces and districts.
- Lack of a defined strategy and technical resources to ensure that existing legislation is enforced.
- Lack of a clearly defined research policy to address information needs on natural resources.
- Lack of effective inter-sectoral coordination to harmonise the decision-making process.

WHAT NEEDS TO BE DONE?

With regard to the Arusha recommendations in particular, some of the recommended actions have been initiated, but most are still in the primary phase of implementation. This is due in part to the short time span or simply to lack of a comprehensive action plan for their implementation. As for those initiatives that have been taken so far, it is now necessary to consolidate and refine them. Because Mozambique is still in an incremental process of learning and capacity building, there is a need for a strategy that can maximise the multiplier effect of positive outputs achieved thus far. Given the limited financial and technical resources available, any expansion of institutions or activities will have to be done gradually, following well defined steps that respond to identified priorities.

The positive gains derived from the recommendations of regional workshops on ICZM now need to be disseminated to all relevant individuals, institutions and sectors. Often, lessons from regional workshops and conferences go no farther than the participants themselves. It is important to establish an action plan that ensures implementation of both conference recommendations and the stipulations of ratified regional and international conventions.

Critical actions to achieve more effective integrated management and protection of coastal and marine resources in Mozambique include the following:

- Clear identification of major underlying causes of existing coastal resource depletion through:
 - improved diagnosis of coastal resource stocks and dynamics through effective research and monitoring
 - ongoing inventory and assessment of status of existing coastal activities in terms of applied technologies and productions systems.
- Formulation of a coastal zone management strategy adequately translated into land use planning for coastal resources. Such a strategy needs to be rooted in the principles of:
 - increasing the level of satisfaction of the population's basic needs
 - ensuring community participation in the decision-making process
 - preventing coastal resource degradation due to inadequate exploration.
- Adequate harmonisation of existing human, technical and financial resources in the implementation of operational land use planning for coastal resources, taking into account the need for:
 - enhanced inter-sectoral coordination
 - adequate empowerment of local institutions for resource management capability (technical, human and financial) to reduce regional imbalances
 - effective exploration of economies of scale in allocation of development initiatives
 - guidance on development initiatives by national and or international investors
 - enhanced community participation in the management process.
- Establishment of an effective enforcement mechanism for existing legislation through:
 - proper dissemination of current legislation
 - empowerment of law enforcement authorities at all levels
 - immediate actions against known cases of environmental violations using, if need be, special requests for regional or international assistance
 - effective implementation of environmental impact assessment of proposed development projects in coastal areas and subsequent monitoring and auditing.
- *Definition of an effective national policy for research and development with a view to:*
 - generate and develop a decision support system for natural resource management
 - optimise the use of existing research institutions and expertise through appropriate definition of critical research needs.
 - optimise the use of existing regional and international expertise
- Establish a strategy for human resources development and stabilisation through:
 - encouragement of aspirations in professional career development
 - promotion of incentives to ensure willingness to work effectively

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ANNEX I

A. Ongoing initiatives on coastal resources management

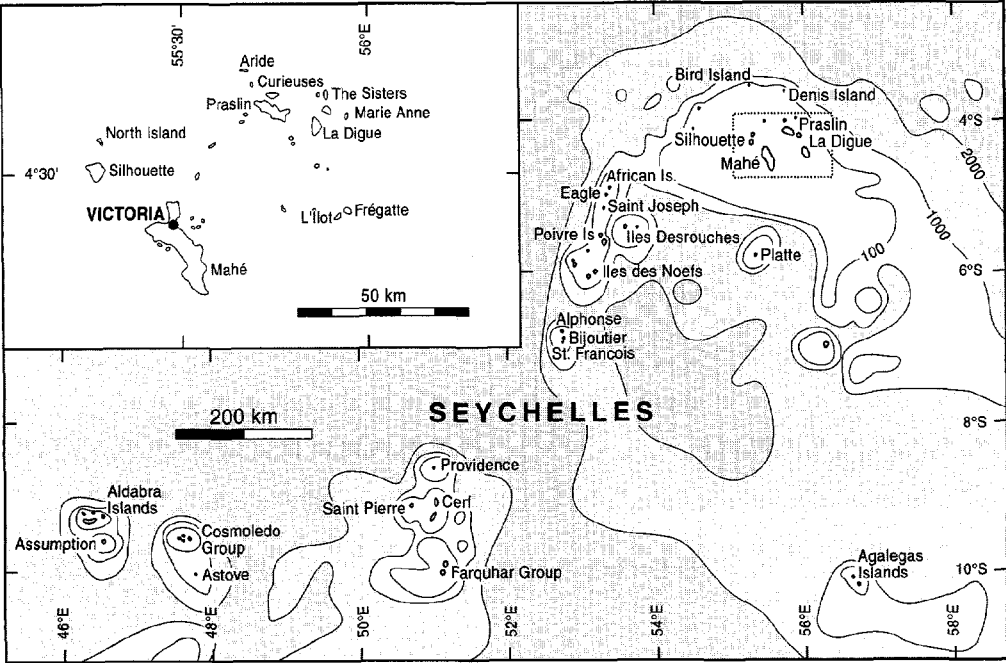
Project Title – Institution	Fishery	Environment	Legislation	Approx. \$ in thousands
Mecufi coastal zone management – MICOA	X	X		1000
Coastal profile of Xai-Xai district – MICOA		X		50
Case study on beaches in Mozambique (Xai-Xai and Ponta do Ouro-Inhaca) – UEM		X		50
Case study on island management (Mozambique Island) – UEM		X		2.5
Elaboration of a methodology for physical planning and programme for coastal zone management – MICOA			X	N/A
The Darwin Frontier Mozambique Quirimba Archipelago marine research programme – MICOA/Darwin Frontier		X		260
National environmental legislation – MICOA		X		N/A
Macro-diagnosis of coastal zone – MICOA		X		100
Management of coastal resources by local communities in Xai-Xai Beach – MICOA		X		380

N/A = information not available

B. Currently planned initiatives on coastal resources management

Project Title – Institution	Fishery	Environment	Legislation	Approx. \$ in thousands
Coastal zone management of the city of Nacala – MICOA		X		N/A
Environmental impact assessment of Cahora Bassa dam – MICOA/others		X	X	N/A
Emergency protection for Marracuene beach – MICOA		X		N/A
Establishment of marine parks – MICOA/DNFFB		X	X	N/A
Inventory of specific marine coastal ecosystems – MICOA and UEM		X		N/A
Inventory of wetlands in Mozambique – MICOA/DNFFB and IUCN		X		N/A
Programme for mangrove management – MICOA/UEM	X	X		N/A
Pilot development of aquaculture in Zambezia – MICOA/IIP	X			600
Management of coastal cities: Beira – MICOA/others		X		300

N/A = information not available



Integrated Coastal Zone Management in the Seychelles

NIRMAL JIVAN SHAH

INTRODUCTION

The Seychelles is a republic of 115 islands set in an EEZ of 1 374 000 square kilometres in the South-Western Indian Ocean. Described as a Small Island Developing State (SIDS), it is in fact a country with a high Human Development Index. The population of 73 850 is one of the smallest among SIDS, but because of the mountainous terrain, 85 to 90% of the peopled land, along with most of the infrastructure, is clustered on a narrow belt of coastal lowlands and reclaimed land. The importance of the coastal zone is predicated on the fact that tourism and artisanal fisheries, so critical to the economic and social stability of the Seychelles, depend heavily on the integrity of coastal habitats. Although the level of awareness about the need for environmental protection is adequate, Integrated Coastal Zone Management (ICZM) is still lacking.

DESCRIPTION OF COASTAL ACTIVITIES

Institutional Framework

Comprehensive coastal management began in the 1960s with the creation of a Nature Conservation Board, which later became the National Parks and Nature Conservation Commission. In 1982 the National Parks and Nature Conservation Commission was reorganised to become the Seychelles National Environment Commission, with objectives derived from the World Conservation Strategy.

In June 1989, a Department of Environment was created under the direct responsibility of the President. In May of 1992, the Department was merged with another Ministry to become the Ministry of Foreign Affairs, Planning and Environment. The Division now is composed of four technical sections, namely, Environment Education, Conservation and National Parks, Forestry and Environment Assessment and Pollution Control. On July 6 1992, because the National Environment Commission had ceased meeting, its powers were legally transferred to the Director of Conservation and National Parks by order of the President (SI 82 of 1992). In 1996 these statutory functions were transferred to the new Marine Parks Authority which assumes responsibility for all Marine National Parks.

Today, power over matters that concern coastal matters is spread over several organisations. The management of solid waste is now the portfolio responsibility of the Solid Waste Collection Agency (SWAC). The Seychelles Fishing Authority is the central authority for all fisheries matters, including aquaculture. The Ministry of Community Development (MCD) controls land and infrastructure development. The MCD also took over responsibility for the Crown Land and River Reserves Ordinance as of 1994.

The Public Utilities Co. is responsible for sewerage and solid waste collection and disposal. The Seychelles Bureau of Standards is mandated to develop environmental standards. In addition, it operates the national environmental laboratory. The Department of Tourism and Transport is responsible for tourism development and land and sea transport. The Ports and Marine Services Division of this Department is responsible for marine pollution and the Oil Spill Contingency Plan. The Island Development Co. manages many of the outer islands. The Police is responsible for enforcing all laws in the Seychelles, including environmental laws.

Several inter-ministerial committees have been established, one of the most powerful being the Town and Country Planning Authority. More recent initiatives include the high level National Resource Committee, the Environmental Steering Committee, the Climate Change Committee and a Pesticides Board. An interesting development has been the creation, under the Environment Protection Act 1994, of the National Environment Advisory Council whose membership includes private and NGO representatives.

Legal Framework

Policy and laws concerning the coast were formulated as early as the first settlements. Subsequent efforts in this regard concerned mainly fishery and other biodiversity harvesting activities. The Environment Protection Act 1994 (EPA) recognised, for the first time, the coastal zone as a management unit. Activities dealing with coastal zone and management authority functions were also mentioned. In the Environment Protection (Impact Assessment) Regulations, 1996, the "coastal strip" is defined. In addition, categories of sensitive coastal areas are listed. Eleven areas have been set aside for nature conservancy under the National Parks and Nature Conservancy Ordinance (chap. 159) and public access has been limited in 24 areas under the Protected Areas Act (chap. 40). Other environmentally sensitive areas have traditionally been protected under the Crown Land and River Reserves Ordinance (chap. 150) and the Forest Reserves Ordinance (chap. 153), although these seem to have been little used. Areas of importance as nesting sites for wild sea birds have been protected under the Wild Birds (Designation) Regulations. The protection, management and control of biodiversity is regulated by the Breadfruit and Other Trees (Protection) Ordinance (chap. 122), and the Wild Animals and Birds Protection Ordinance (chap. 143). The Plant Protection Act (1996) makes provision for regulating the importation of plants and plant products into the Seychelles.

The fishing industry is controlled by the Fisheries Act (5 of 1986), the Licenses (Fisheries) Regulations (SI 21 of 1987) and the Harbour (Fishing Port) Regulations (SI 58 of 1988). The Fisheries Act covers not only fish but also the management of marine mammals, crustaceans and marine molluscs. Planning permission, other than from government organisations, is required for all forms of terrestrial development under the Town and Country Planning Ordinance; the Town and Country Planning Authority regulates land utilisation. The Land Reclamation Ordinance (chap. 152) and the Removal of Sand and Gravel Act (13 of 1982) requires licenses to be obtained before any operations can be commenced.

Pollution resulting from human activities is controlled by the Public Health Ordinance (chap. 194), the Health and Sanitation (Prevention of Defilement of Rivers and Streams) Regulations (SI 4 of 1970), the Derelict Motor Vehicles (Disposal) Ordinance (18 1972) and the Public Utilities Corporation (Sewerage) Regulations (SI 9 of 1987). The Environment

Protection Act 1994 covers all aspects of pollution. The Pesticides Control Act 1996 regulates the manufacture, distribution, use, storage and disposal of pesticides.

The Beach Control Regulations (SI 77 of 1978) provide some protection for beaches. Certain maritime activities are regulated by the Harbour Ordinance, (chap. 210), the Marine Pollution Regulations (SI 51 of 1981) give power to the Harbour Master to control discharges from ships, the Merchant Shipping (Oil Pollution) (Seychelles) Order (SI 118 of 1975) restricts and demarcates liability for oil pollution damage and provides for insurance and compensation for damage and defines the liability of ship owners. There is also a Dumping at Sea Act (Overseas Territories) Order (SI 36 of 1976).

Stakeholder Participation

There are two international NGOs, BirdLife International and the Royal Society for Nature Conservation (RSNC), which manage Cousin and Aride Special Reserves respectively. BirdLife, which has been working in the Seychelles since 1968, also manages several other biodiversity projects, including the long-term Rehabilitation Plan for the rare Magpie Robin, and a monitoring program for biodiversity. The Seychelles Island Foundation, although not a real NGO because it was initiated by Decree in 1979 and its Board is appointed by the Government, is made up of representatives of the Seychelles government and other organisations such as the Royal Society, ORSTOM and the Smithsonian Institution. It manages the Aldabra Special Reserve and the Valle de Mai. The Liaison Unit for NGOs (LUNGOS), created some time ago, has become more active in the last two years and funding for member NGOs has been secured for some environment-related projects.

In the early 1990s, several local environmental NGOs were formed. The Partnership Foundation completed a survey of mangroves and a study of under-utilised marine coastal resources, and also produced two posters on marine parks and mangroves. The Nature Conservation Trust is managing a wetland area on the east coast and is active in ornithology and general research. The Seychelles Environment Lobby pressed for access to beaches and appropriate coastal zone development. A new organisation, WildLife Clubs of the Seychelles, whose aim is awareness and education among young people, has been formed and now has more than twenty clubs. The Partnership Foundation and the SEL are currently not active.

As regards public participation, this has mostly revolved around public clean up days and litter collection during Environment Weeks. Tree planting by youth groups has also been attempted. In 1995, IUCN and the Conservation and National Parks Section initiated the first Public Workshops. These Workshops were in the framework of management plan formulation for the Marine Parks and Reserves. In the same year, the national ICZM Workshop supported by the World Bank and Sida brought together high level participants from the Government, NGOs and the private sector. In 1996, a public workshop also attempted to gain public support for La Digue Landfill, a project funded by the European Union.

Funding and Investment

When the Department of Environment was formed in 1989, its budget was about US\$1 million. With the launching of the EMPS, this budget was more than doubled. In addition, the new Solid Waste Agency (SWAC) has been awarded a subsidy of US\$2.5 million. An Environment Trust Fund (ETF) has also been established.

It must be noted that the country has benefited from abundant and diverse donor assistance in the field of environment. Much of this has been mobilised through the Environmental Management Plan (EMPS) 1990–2000. The EMPS includes an investment program and was prepared as an extension of the National Development Plan. Priorities for action are consolidated in a series of twelve programme areas with 56 projects proposed, six regional in scope and the rest national. The total cost of the national component is SR. 262 million (approx. US\$52.5 million) while the cost of the regional programs is estimated at SR. 10.6 million (approx. US\$2.12 million). In February 1991, the EMPS was presented to a donors meeting in Paris, where positive indications were made of assistance amounting to nearly 80% of the total amount of investment necessary. To date, of the 51 national projects, 22 have actually been funded and are either completed or undergoing. Some SR. 75 million have been invested in the EMPS framework of projects.

In the final quarter of 1992, the country initiated the preparation of a Public Sector Investment Programme (PSIP) to replace the National Development Plan 1990–1994. This was initiated because it was believed that the previous Five Year Planning methodologies had led to public investments that were *ad hoc* and also few private sector investments. The PSIP incorporates both economic planning and budgetary reform for the purpose of sustainable development. When completely operational, it is envisaged that the PSIP will lead to a sustainable national system for deciding national priorities in a specific three year prioritised investment program. The finalised PSIP document was released for sale in August 1996.

Capacity (technical and human)

Capacity building in the field of environment was believed to be a priority with the launching of the EMPS. Human resources development management has been addressed through the Human Resource Development Plan 1993–2000 (HRDP), although human resource planning for environmental management is barely touched upon in this plan. Nevertheless, the Division of Environment saw a large increase in its personnel from 1990 onwards. In one section alone, Conservation and National Parks, the total personnel of two senior staff and six Park Rangers grew to 37 staff members by 1993, with three Seychellois graduates as top management. The staff of the Seychelles Fishing Authority grew from 86 in 1989, to 104 in 1993.

The capacity to manage the coastal environment has been tremendously enhanced over the last five years, with the addition of new Seychellois graduates in different fields. In the Division of Environment, the presence of a sole Seychellois graduate in biology in 1990, was by 1995 added to, by graduates in biochemistry, civil engineering, town and country planning, botany and horticulture and environmental management. At the Seychelles Fisheries Authority there are presently six Seychellois university graduates.

Training programs have been provided both locally and overseas. In the Division of Environment every staff member in a technical position has been provided with some type of training. The Conservation and National Parks Section was provided with full time trainers for two years. The recent Canadian funded PRIMTAF training program is still ongoing and has organised technical, administrative and policy training in environmental management for individuals in various sectors. Training by local experts and the training of trainers are increasingly becoming the norm. A recent training program in the handling of pesticides, for example, was implemented by government experts.

Technical capacity is supported by a host of policy instruments. The Plan d'Aménagement du Territoire (PAT), the National Land Use Plan, was initiated in 1988 with the assistance of the French Government, and completed in 1993. This is a comprehensive planning document for land use in the Seychelles. In 1993, as part of EMPS Project H. 3, a massive Forestry Sector study and plan was formulated with the assistance of Finnish experts, for the first time in the Seychelles history. The study is expected to lay the foundations for long term sustainable development of the country's natural as well as planted forests. Management plans for the marine parks and for La Veuve Special Reserve have recently been developed through IUCN assistance. In 1995, as part of EMPS Project A. 2, a set of twelve Environmental Assessment Guidelines for all important economic sectors was released by the Division of Environment to assist in the orderly development of environmentally sensitive industrial and commercial activities. An atlas of all the sensitive areas on Mahé, Praslin and La Digue has also been produced with French aid.

Research

Research in the Seychelles is limited. Most research carried out by nationals has been concerned with natural resources. Research carried out by expatriates and foreign organisations on the other hand has been quite substantial although academic. Substantial coastal research has been carried out by foreign ship-based expeditions such as the various Soviet cruises, and more recently by the Netherlands Tyro expedition in 1993.

Fisheries continues to be the most extensive research area in the Seychelles. The research programs are carried out by the Research Division of the Seychelles Fishing Authority. As of 1994, this division had 24 staff members. Research facilities include a research vessel, two laboratories and a gear workshop. The three main programs of the Division are fisheries statistics and stock assessment of the artisanal and industrial fishery, fisheries development principally in relation to artisanal fishery and mariculture. The SFA is assisted in its research by ORSTOM. Most of ORSTOM's work concerns research into the tuna fisheries. Of interest to coastal management is ORSTOM's Indian Ocean oceanographic database.

Research in the coastal and marine environment of coral atolls has been ongoing on the Aldabra Special Nature Reserve since 1967. A research station constructed by the Royal Society in the 1960s has undergone extensive refurbishment through GEF funds. Between 1967 and 1980, more than 100 scientists from seven countries visited Aldabra. Coastal research has focused on specific species, zonation, ecology and some behavioural studies. Research on Cousin and Aride, both Special Reserves, also spans some 30 years. Expatriate scientists have produced more than 200 papers on the different aspects of the ecology of the islands.

The Seychelles Bureau of Standards also conducts studies of relevance to coastal management. With recent renovations, the Laboratory Testing Centre of this institution is well equipped. This includes a national environmental analysis laboratory which carries out analysis of environmental samples for the Division of Environment. An instrumental analysis facility has capabilities to carry out a wide spectrum of tests, ranging from determination of trace metals to pesticide analysis.

At the Division of Environment, research and monitoring is being carried out mainly on endemic plants, with previous assistance from a Swedish botanist and on rare bird species, with the help of a BirdLife consultant. Coral reef monitoring has been attempted in the past but has gained some new life recently, with training and monitoring sites set up with the assistance of experts from the Great Barrier Reef Marine Park Authority. Under the GEF project, stock assessment of turtles has commenced.

CRITICAL ANALYSIS

Institutional Framework

The country has registered several major successes in coastal management. Comprehensive efforts in coastal conservation started 35 years ago. Between 1969 and 1991, 25 protected conservation areas were created, of which two are World Heritage Sites. The country's Environmental Management Plan was launched in Paris in 1991. Comprehensive physical planning policies have been in place which effectively restrained runaway and *ad hoc* development seen in so many other countries.

It must be emphasised that Integrated Coastal Zone Management does not yet exist in the Seychelles. What is apparent is that several elements of coastal management are being handled by different sectors. Some of these components are being handled in a satisfactory way in a sectoral perspective. However, there is a lack of serious and open partnership between stakeholders and government agencies and lack of coordination and communication within and between government agencies, all of which mean that integrated management is still absent.

The lack of standard policy on issues and areas of concern to Integrated Coastal Zone Management is of continuing concern. Decisions are therefore based not on the best available technical information and long-term planning but on *ad hoc* and often emotive responses. Plans such as the EMPS and PAT are not really used as routine decision-making tools.

Although the Seychelles has numerous planning documents, too few are actually integrated. Government organisations are very much sector-based. Sectoral interest may be an impediment to an integrated approach since each sector can attempt to defend its own "turf" or engage in empire-building. The existence of grey management areas, such as for coral reefs, mangroves and bio-prospecting, continue to plague coastal management. Even in areas where a mandate has been legally established such as EIA, institutional grey areas continue to exist.

The DoE is responsible for coastal zone management under the EPA 1994, but there is currently no section, unit or staff to deal with this issue on a full time basis. The staff of the Environment Assessment and Pollution Control Section were previously assisted by a Peace Corps Volunteer assigned to CZM planning, but the entire Peace Corps programme in the Seychelles was decommissioned in 1995.

The institutional study commissioned by the World Bank in 1992 dealt in depth with the capacities and deficiencies of the DoE. Unfortunately, it based most of its conclusions on the premise that the EMPS was the "masterplan" or guiding policy for this division. In reality many of the actual day-to-day works and concerns such as beautification, garbage collection and urban renewal are outside the priority and critical areas identified by the EMPS.

Legal Framework

The Seychelles has much extant legislation pertaining to the coastal environment, ranging from the 1907 Coast Reserves and Foreshore Leases Ordinance to the 1994 Environment Protection Act. In the last five years, there has been a great increase in the amount of relevant legislation passed, including the Plant Protection Act and the Pesticides Act in 1996. There are also ongoing efforts to revise existing legislation, in particular the Town and Country Planning Act. These have been positive steps to modernise legislation for coastal management and to plug loopholes. The comparative ease of drafting and enacting legislation in the Seychelles seems quite extraordinary and can be a boon in coping with new and emerging areas of concern.

Legislation for Integrated Coastal Zone Management is insufficient. The Environment Protection Act 1994 for the first time enshrined the coastal zone as a management unit and provided for certain measures. Nevertheless, there is no legal mechanism for integration and coordination, and public input and stakeholder participation are still weak.

A notable blow to ICZM was the granting of legal powers to SFA as the sole deciding authority for aquaculture and overriding the powers of the Town and Country Planning Commission and the Division of Environment for siting aquaculture facilities. A glaring gap in the present legislation is that no agency in the Seychelles has the power to regulate or control development in coastal waters and oceans.

The Biodiversity and Conservation Areas Act, drafted with the assistance of FAO and accepted by the Government, still remains on the shelf. This extremely comprehensive and modern piece of legislation includes issues currently not covered by law such as protection of corals and protocols for bio-prospecting. It also recommends matching local legislative commitments to international convention to which the Seychelles is a party, such as CITES.

The fate of the Coastal and Marine Biodiversity Agency is perhaps the greatest legislative disappointment in coastal management in the Seychelles since Arusha. This proposed authority was supported at Arusha and approved by the Seychelles Cabinet of Ministers. A comprehensive legislative framework was formulated with the assistance of FAO and was commented on by all relevant local organisations. In addition, the Agency was a central concern in the Biodiversity Strategy process assisted by IUCN in 1995 and its creation was supported by government departments and NGOs. The legislative Bill was published in the Official Gazette in 1994, but was not presented to the National Assembly.

A Marine Park Authority was set up in 1996 under the EPA 1994. It is not known what kind of planning process and approval this underwent. The legislation has some important weaknesses. First, funds collected by the Authority have to be lodged with the Environment Trust Fund. This immediately sets up potential conflicts between two different institutions, and this seems to be the only Authority in the Seychelles to have such a financial arrangement. Secondly, the powers of the Seychelles National Environment Commission under the National Parks and Nature Conservancy Ordinance are provided to this Authority, powers which are very broad and cover all aspects of environmental management. Again, the appropriateness of these powers and potential for interagency conflicts need to be examined.

Enforcement

Enforcement concerns and issues are among the most important in all areas of coastal resource management. Despite a panoply of legislation and a high literacy level, the level of compliance by the local populace is low. Enforcement of environment laws has also been demonstrably poor and very few cases have even been brought to court. Nevertheless, in the last two years the Police has augmented its forces and professionalism, and improvements in enforcement may be expected as a result.

The principal enforcement agency for all laws is the Police. Generally in the past, enforcement capabilities by the Police have been severely lacking. Although this is now improving, it is acknowledged that it is difficult for a small police force to effectively enforce a multiplicity of laws over a dispersed territory. Moreover, as in many small islands, kinship patterns and social familiarity complicate matters. A situation exists where "everybody knows everybody or is related to everybody". Enforcement can also engender violence, as in 1993 when poachers burnt a new Marine Park patrol boat. In such a small island people can feel vulnerable. Penalty amounts also appear widely disparate at present under Seychelles law. In many cases the potential penalty for violations such as illegal fishing in marine parks or felling of protected trees, is less than the potential gain to the violator from the illegal activity.

Some of the most difficult enforcement issues relate to the proof of violation. In the problem of boundaries, where for example violators are within a Marine Park which does not have boundary markers, proof concerning illegal activities is difficult. In addition the statutory language in many instances hampers enforceability by the way it is phrased. For example, if a law forbids fishing in a protected area the enforcement official may be required to prove that the violator was actually fishing. That proof may be difficult to obtain. In many instances, coastal resource violations do not seem to be taken seriously by the authorities. There are many examples where violators caught in the act have not been arrested or prosecuted. In many cases, the technical ministries have apparently been unable to collect proper evidence and present it in the correct manner. This has resulted in many cases being delayed. Police and judicial authorities may also not be aware of the breadth of coastal resource protection or its importance to the Seychelles. In addition, in the case of the so called "high official violator", the Police may be unwilling to take action. This can create a downward spiral effect where others may come to believe that they can behave similarly.

Investments and Funding

There have been significant investments in environmental management in particular through the EMPS. EMPS project funds to date total about SR. 75 million. In addition, over the last five years, government budgetary commitments in this area almost match this at approximately SR. 50 million. In general in the Seychelles, overseas assistance has been effectively and appropriately utilised. However, the substantial bilateral assistance that the Seychelles received in the past fell by more than 66% from 1990 to 1994. The scale of economic activities limits local sources of financing. Recent budgetary cutbacks by the government could also constrain ICZM efforts. It must be noted that there has been little or no investment in Integrated Coastal Zone Management, most funding assistance has been for sector-oriented projects.

Much progress has been made in the field of solid waste management. A Solid Waste Man-

agement Plan has been produced for Mahé and sanitary landfills for Anse Royale on Mahé and La Digue have been designed and will be constructed soon. The government has allocated some US\$2.5 million to the SWAC to manage solid waste. Furthermore, the government has liberalised this field by allowing privatisation of the collection service. However these are all "end-of-pipe treatments". There has been little investment in other methodologies such as returnable packaging, "pollution bubbles", use of economic instruments etc.

The engineering design for waste disposal facilities at Port Victoria is complete under a GEF project. The disposal facility itself will now need to be built, but funding has not been identified. In the area of sewerage, although substantial investment has been received, many of the targets set by the EMPS have not been achieved. The old treatment plant for Victoria broke down in 1995 and make-shift facilities had to be built. Modern treatment plants are still lacking for areas such as Beau Vallon, Anse Royale and Praslin.

The production in 1994 of the twelve volume Environmental Guidelines with French assistance was a much awaited EMPS project, and has been reinforced by the Atlas of Sensitive Areas. Nevertheless, there is little evidence to show that these have been used to improve decision making and policy, as their limited distribution has given them little impact on the general behaviour of the various actors and stakeholders.

As regards coastal biodiversity, a GEF project for turtle protection is ongoing and has registered a major success in stopping the commercial sale of turtle shell and rehabilitating turtle shell artisans. In fishery resources management, most investment has been allocated for infrastructure and gear development, but assistance from the European Union and a UK based organisation has resulted in the stock assessment of key fish species fished by local fishermen. Lesser successes include the Biodiversity and National Parks Programme, where implementation by the DoE has been marked by several difficulties. Similarly, Forestry Sector Studies and Plans have not resulted in marked improvement in management capacity or scientific procedures strengthening in the forestry sector. In both these cases, the constraints lie within the Division of the Environment where human resource-related weaknesses prevent effective absorption of assistance.

The effectiveness of aid in revision of environmental law has been mixed. The EPA 1994 was drafted by a CFTC consultant and enacted, but the Biodiversity and Conservation Areas Act drafted with FAO assistance still remains on a shelf. The revision of the Town and Country Planning Act by external consultants has been awaited for more than a year but is still not finalised.

Assistance by UNEP to implement its EAF/5, Integrated Coastal Area Management (ICAM) was channelled through the Seychelles Fisheries Authority. Implementation, training and provision of equipment did not include other organisations. Implementation of the ICAM plan is jeopardised by this approach, by lack of funds from UNEP and by institutional constraints within the Seychelles.

Stakeholder Participation

Case studies from all around the world indicate that stakeholder inclusion is paramount to the success of ICZM. However, the Environmental Management Plan of the Seychelles (EMPS) is a clear illustration of past thinking in this regard, where all the projects are to be implemented by the Government. The approach has been command and control and many of the interactions between the government and coastal stakeholders have been character-

ised by tensions. While this is changing, in particular through LUNGOS, the country has inadequate experience in motivating and involving coastal stakeholders in meaningful decision-making and power-sharing and needs assistance in this field.

The National Environment Advisory Council established in 1996 can become a lynch-pin in the development of stakeholder participation in ICZM, because the membership is quite varied. In reality, all of its meetings have centred around the Division of Environment handling questions from members. Little or none of the advice provided by the Council has been utilised by the DoE, and minutes of meetings are rarely followed up with concrete action on the ground.

Because the concept of environmental management continues to be perceived as garbage collection, hygiene and beautification by many policy makers, the general public has had little exposure to or information on aspects of ICZM. There is a profound lack of understanding in the private and public sector regarding the value of ICZM and the implications of certain behaviour and development patterns. Although there continue to be many media programs on the environment, there is little national experience or skill in the design and assessment of public information environment programs.

Environmental NGOs are still few in number and they are institutionally weak. Although a study showed that there are excellent entry points for NGO involvement in coastal resource management in the Seychelles, it also pointed out that NGOs need national and international assistance to help in capacity building and programming. The ETF has funded a few projects, but in general NGOs have difficulties garnering funds locally for programming and projects, in part because of the increasing competition with many government organisations tapping the same sources.

Capacity

Capacity building has registered many successes, especially in the field of training and planning documents and tools. Training programs have been established, locally as well as overseas. Park rangers for example have been trained in a wide variety of skills ranging from first aid to ecological monitoring. Nevertheless, the translation of training and improvements in technical documentation into superior Integrated Coastal Zone Management is difficult to demonstrate. Lack of skilled human resources cripples environmental management in the Seychelles.

There is a critical gap that is not being bridged and that is the dichotomy between technical advice and policy decisions. In some cases, an unfortunate situation exists where technical knowledge, advice and findings are not supported or incorporated into decision-making. In these cases, this leads to policy decisions that are more often than not founded on personal beliefs and prejudices. Lack of morale among technical staff can also be attributed to the effect of this situation.

The bulk of the staff at the Division of Environment is composed of administrative staff, field workers and lower echelon personnel. The loss of technical personnel at the division is high. Although the number of Seychellois degree holders at the DoE increased from one in 1990 to seven in 1996, in the same period seven senior Seychellois staff (many of them graduates) took up jobs elsewhere. There is a heavy dependence on expatriates and administrative or non-technical personnel. Because of recent down-sizing of the budget, many of

the vacated posts are frozen if replacements are not recruited immediately.

The dearth of staff which can make informed decisions, the inability to prioritise work because of *ad hoc* tasks, a scattered national territory and a surfeit of projects, are crippling effective and timely action in many sectors. A case in point is the *Takamaka* vascular wilt, where government response to combat the disease was initiated almost a year after the phenomenon had been identified.

There is poor institutional memory owing to high staff turn-over and dependence on expatriates. Technicians are often left in the dark because there is not enough knowledge of what went on before. Repetition, overlap and confusion are often the end-results of weak institutional history. A poor career image and lack of role models have constrained the further entry of talented young Seychellois in the environmental field in the past.

A coastal management project under the Commission de l'Océan Indien (COI) was initiated in the Seychelles with the recruitment of a National Coordinator in 1993. To date it has produced several reports, but concrete progress and improvement in ICZM is not evident. In particular, capacity building for ICZM seems to be absent. Heavy emphasis on desk reports, and focus on problems rather than solutions have dominated the project to date. The top down methodology means that community groups, the private sector, NGOs and others are being left out of the loop.

Research and Monitoring

Integrated Coastal Zone Management is in the main a question of providing feasible solutions. Therefore investment in monitoring systems and scientific personnel is desirable. Of importance to coastal zone management are the numerous studies and documents which have been produced on coastal issues. Most of the problems and constraints have already been identified and there should be a relatively good base for continuing monitoring and research. Much data may already be available. However, our knowledge of coastal zone processes in the Seychelles is incomplete, nor are we fully *au fait* of all the tools available.

It must be noted that most research has been undertaken by expatriates, usually on short term visits. In many cases these are academic, not focused on management needs and are too complex for follow up by nationals. As a result, there has been little incentive to continue or repeat such research locally. In particular, research on human use of and relationships with the coastal zone are lacking.

Researchers in the Seychelles have inadequate access to or knowledge of the mass of scientific materials published on their own country. The interest in collecting and using all the scientific material is only now taking root. On the other hand much data is not available. Either they are in the "grey" literature, or are not being released by the entities concerned. A case in point are the several Soviet expeditions spanning several years where the results have not been made available.

The public and policy makers are relatively ignorant of the value of research and monitoring. Decisions are often based on personal opinions rather than the best available scientific information or the precautionary principle. Research results are often dismissed if they conflict with widely held opinions and prejudices.

Data and research on some long-term trends are scant. The study of the effects of mercury in fish on the development of Seychelles children is one of the few cases which examines

the interactions of Seychellois with the coastal zone over time. Of future concern would be predictive ability regarding coastal erosion and climate change. A recurrence of the 1862 cyclone, which precipitated a tidal wave, could be devastating.

Care must be taken to standardise research. Because of the dependence on expatriate researchers, there is a tendency towards a multitude of methodologies and research designs. For example, regarding the coral reef monitoring program of the Division of Environment, it is reported that interest in assisting the Seychelles by various institutions is currently creating a problem in the choice of research design.

Basic monitoring of baseline features – such as beach profiles, fish numbers, and coastal water quality, that require only simple materials and lower echelon personnel – should be devised and carried out on a continuous basis. This would provide long-time series data which could then be used for management decisions.

Summary of the Analysis

Without doubt, the Seychelles has achieved several major successes in coastal environment management. But there are some important factors preventing the movement to Integrated Coastal Zone Management. In summary these are:

- *Planning and implementation.* Environment-related planning in the Seychelles has produced many valuable documents. Nevertheless, the loop between plans and implementation is rarely fully closed. Also, integrated plans are rare and sectoral interests continue to dominate national planning. Where there are planning tools that could be utilised in an integrated fashion, such as the EMPS or the PAT, they are rarely used in ways that reflect their importance as national planning systems.
- *Legislation.* A plethora of laws exist and valiant efforts have been made to update sectoral legislation. Nevertheless, in some key areas, the legal framework is deficient. Conversely, in some cases, existing legislation is not used effectively. Coastal zone management legislation is only now beginning to appear but is strongly sector-oriented. The manner in which the legislation is sometimes interpreted and enforced is also deficient.
- *Human resources.* The lack of human resources is often mentioned but the Government continues to lose technical staff at an alarming rate. Despite all the good intentions and funding for sectors concerned with coastal management, ICZM can never succeed if the human resource problems are not tackled very urgently. Not only does the continuing loss of government staff have to be addressed, but innovative organisational structures have to be devised. New partnerships and methods of working have to be forged outside traditional Government lines.
- *Development pressures.* There are development pressures and competing demands for existing natural as well as financial and human resources. The development emphasis on manufacturing industries as well as the legal framework for investments have the potential to weaken coastal conservation initiatives. Heavy dependence on tourism pits intensive use against the restraints required to achieve effective Integrated Coastal Zone Management. The services provided by the environment have also never been calculated so that the opportunity costs of development are considered.

- *Public participation.* Public participation and NGO movements are all limited. Although changing, a national program for enabling NGO environments and sustenance of NGOs in this field does not exist. Assistance to NGOs in the EMPS framework is limited or non-existent. For the broadly based and effective action needed in any Integrated Coastal Zone Management program, people must be empowered to make decisions affecting their environment.
- *Tragedy of the Commons.* Open access to resources, leading to the "Tragedy of the Commons", underlies the continued over-exploitation of coastal resources in the Seychelles. The islands are still viewed with a frontier mentality, i.e. coastal resources are boundless and can be used by just about anyone for any purpose.

WHAT NEEDS TO BE DONE?

Integrated Coastal Zone Management involves the comprehensive assessment, setting of objectives and planning and management of coastal systems and resources, taking into account traditional and historical perspectives and conflicting interests and uses. A national ICZM program for the Seychelles should facilitate integrated decision-making through a process for cooperation and coordination among sectors, integrating community, governmental, private and NGO interests.

Many of the sectoral elements required for ICZM programming are already in place or planned in the Seychelles (see Table 1). However, certain constraints, problems and issues, as elaborated the previous section of this document, are hindering progress in the proper direction. The resolution of these constraints may by themselves not automatically lead to successful ICZM, and therefore environmental management through sectoral, donor-driven projects may be of limited long-term value in this case. For successful ICZM to be achieved a process-oriented approach needs to be established. The following process is recommended specifically for the Seychelles.

Framework

- High level political support and commitment must be sought for the ICZM approach.
- Inadequacy of present systems of coastal management and causes of unsustainable use must be recognised by key organisations and stakeholders.
- The scope and objectives of the ICZM program must be established and be acceptable to key organisations and stakeholders.
- A mix of top down and bottom up approaches is recommended with the participation of the government, NGOs, private enterprises and community groups.

Process

- The process must be cyclical and ongoing. Management plans and other products although necessary are not ends in themselves.
- The process must be country driven and owned, with minimal presence of external agencies and personnel. Foreigners must be "on tap, not on top".
- The participation of key local players must be supported and assisted throughout.

Table 1. Elements for the implementation of ICZM in the Seychelles

KEY: E = Excellent; A = Adequate; NI = Needs improvement; P = Poor; O = Does not exist

Treaties and conventions	Party to international/regional mechanism for addressing issues which transcend national boundaries	A	P
Non-regulatory approaches			
Resource valuation	Provides value and benefits of coastal environments	O	O
Habitat restoration	Rehabilitates damaged habitats such as wetlands	P-NI	P
Flood protection	Protect areas subject to flooding by constructing proper drains, culverts and restoring natural barriers	NI	NI
New/improved infrastructure	Improves quality of life, reduces pollution	NI	NI
Leases on subtidal lands	Reduce competition for limited resources	P	P
Support of NGOs	Augment national capacity by pooling of resources	P	P
Fisheries extension services	Increase yield of fisheries through improved methods that do not degrade the natural ecosystem	A	A
Oil spill contingency plan and disaster preparedness	Specify actions to be taken to protect coastal resources in emergencies	A-NI	P-NI
Environmental guidelines	Recommends codes of conduct for economic sectors	E	P
Inter-sectoral cooperation	Promotes integration, collaboration and resource pooling	NI	P
Technical training	Improves effectiveness of staff	E	P
Staff development	Provides conducive working environments and careers	NI	P
Public campaigns	Inform and involve public and stakeholders	NI	P-NI
Monitoring	Augments data base and tracks long-term trends	P-NI	P-NI
Funding			
Overseas assistance	Augments ability to implement national objectives	E	A
Budgetary provision	Provides funding for organisations to fulfil objectives	E	P
Legislation			
General coastal environment	Establishes legal basis for managing coastal zones, including wetlands, water quality, resource use etc.	A	NI
Land planning	Establishes legal mandate for planning	A	NI
Protected areas	Sets critical areas aside to be protected in perpetuity	E	NI
Institutional arrangements	Identifies and empowers agencies responsible for planning and implementing coastal management	NI	NI
Critical ecosystems	Prohibits or limits the destruction or alteration of wetlands, mangroves, dunes, beaches, coral reefs, etc.	P	P
Fishing	Establishes limits on total catch, minimum size and weight, closed seasons, etc.	A	NI
Aquaculture	Regulates environmentally harmful activities associated with aquaculture	P	P
Pollution	Sets water quality standards, limits or prohibits discharges; establishes regulations for solid waste	A	NI
Coastal flooding	Prohibits/restricts building in flood zones; establishes building codes for structures in area subject to flooding	A	NI
Erosion/accretion	Establishes setback lines for coastal construction; regulates shoreline protection works; prohibits/limits mining beach sand	A	P
Environmental impact assessments	Evaluates potential impacts of large projects on coastal resources	A	P
Enforcement	Ensures compliance by population	P	P

Institutional Arrangements

- A vehicle to drive and coordinate the program must be established. This is recommended to be in the form of an intersectoral body. Because of institutional weaknesses, a full time technical secretariat is necessary to ensure success.
- Institutional and legal areas of responsibility should be clarified or established.
- Capacity building and training and human development aspects must be emphasised. The support and retention of local staff is essential.
- A methodology for involvement of key stakeholders in the government and civil society must be developed.

Financial Arrangements

- Funding priorities should be determined by the inter-sectoral body.
- Program funding should be channelled through the inter-sectoral body.
- A mix of government, non-governmental, private and external funding is recommended.
- Existing financial arrangements and resources should be better utilised, and new and innovative sources of assistance should be developed.

Technical Components

- Data-heavy research should be avoided. The emphasis should be on understanding key linkages between people and resources for the purpose of solving management problems.
- Valuation of coastal resources is necessary. The inclusion of opportunity costs in development project proposals should be an important component.
- Demonstration projects or pilot activities should be established, particularly involving key stakeholders in communities, government and NGOs.
- Information dissemination is highly recommended but should not be haphazard. Proper design of education and information dissemination programs should be emphasised.
- Progress must be measurable and regularly assessed through tools such as Logical Framework Analysis (LFA).

Conclusion

New management approaches are necessary for small island states such as the Seychelles and their coastal zones, because of their special character. For Integrated Coastal Zone Management to become a reality in the Seychelles, the term "Integrated" must be given pre-eminence. The ultimate outcome of any ICZM program must therefore be coordinated and participatory management of coastal areas based on clear objectives, a realistic regime (procedures and tools) and measurable indicators of success and sustainability. A process-oriented approach based on the above recommendations has a high degree of success in this direction.

ANNEX

National projects of relevance to ICZM

Various Projects were fully articulated in the Environmental Management Plan of the Seychelles (EMPS) when it was launched in early 1990. The following are projects which have been financed and are at different stages of implementation. In addition, there are also regional programs of significance not mentioned here.

EMPS A1 – State of environment reports

Financing: SR. 128 500 by FAC

EMPS A2 – Environmental guidelines

Financing: SR. 400 000 by FAC

EMPS A3 – Environmental assessment procedures

Financing: SR. 371 000 by FAC

EMPS B3 – Improvement of vehicle test and facilities

Financing: Consultancy SR. 60 000 by Spain

EMPS B5 – Contingency plan for marine pollution

Financing: SR. 240 000 by ICOD

EMPS B6 – Implementation of international conventions for prevention of marine pollution from ships (MARPOL)

Financing: SR. 765 000 by GEF

EMPS C1 – Greater Victoria sewerage project, phase I, II, & III

Financing: SR. Phase II. SR. 10 000 000 by ADB

EMPS C3 – Beau Vallon Bay sewerage project

Financing: Consultancy. SR. 2 574 000 by CFD

EMPS C5 – Anse Aux Pins/Anse Royale sewerage study

Financing: SR. 3 000 000 by ADB

EMPS C6 – Anse Volbert sewerage study

Financing: Consultancy. SR. 1 320 000 by CFD

EMPS C8 – Solid waste treatment plan for Mahé

Financing: SR. 360 000 by EU

EMPS E3 – Rehabilitation of Le Niol water works

Financing: SR. 22 000 by World Bank

EMPS F1 – Introduction of lead free gasoline

Financing: Consultancy SR. 60 000 by Spain

EMPS G4 – Rehabilitation of Curieuse National Park

Financing: SR. 2 600 000 by FAC

EMPS G6 and G7 – Restoration and preservation of Aldabra ecosystem

Financing: SR. 1 760 000 by GEF

EMPS G8 – Upgrading of the National Botanical Garden

Financing: SR. 350 000 by ACCT

EMPS G5, G9 and G10 – Biodiversity conservation and national parks program

Financing: SR. 2 800 000 by EU

EMPS H3 – Forest management plan and sector study

Financing: SR. 400 000 by FINIDA and SR. 6 000 000 by Germany

EMPS JI – Turtle protection program

Financing: SR. 5 300 000 by GEF

EMPS K1 – Revision of environmental legislation

Financing: by UNDP (report rejected)

by FAO, Phase 1: Biodiversity

by CFTC, Phase 11: Environmental assessment and pollution control

EMPS L1 – Environment document centre

Financing: SR. 200 000 by ACCT

La Digue solid waste landfill study and construction

Financing: SR. 1 300 000 by EU

Environmental education

Financing: SR. 1 000 000 by SIAST

Rehabilitation of the La Veuve Reserve

Financing: SR. 150 000 by UNESCO

Climate change and transport sector

Financing: Consultancy SR. 350 000 by SEI

Dutch Trust Fund

Financing: SR. 2 500 000 by Netherlands (administered by World Bank)

Projet PRIMTAF Formation en gestion et suivi de l'environnement

Financing: by Université du Québec à Montréal (Canada)

Implementation of the Montreal Protocol

Financing: by UNEP

The Integrated Marine and Biodiversity Centre

Financing: SR. 1 000 000 by EU

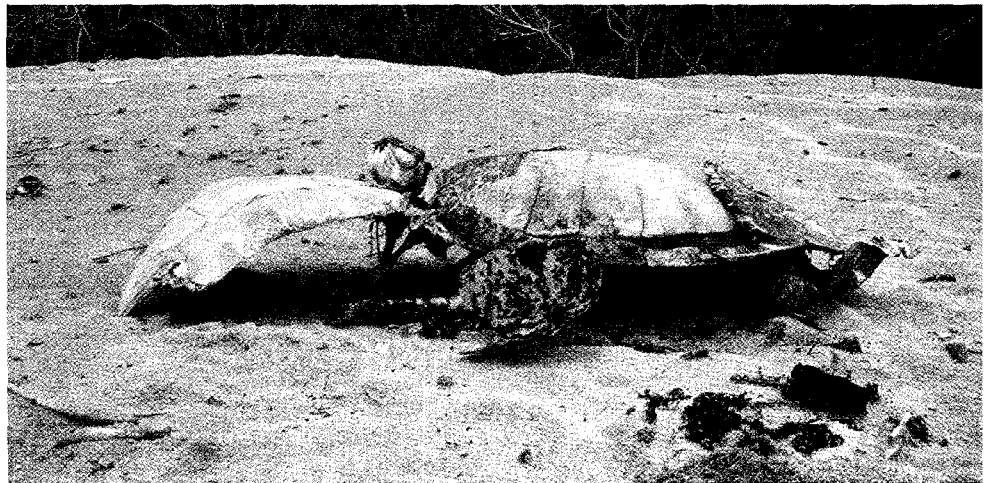
Enabling the Seychelles to prepare its national communications to the United Nations Framework Convention on Climate Change

Financing: SR. 1 250 000 by GEF

The fishery in the Comoros is small-scale and carried out with hook and line. (Photograph: Jan Post)

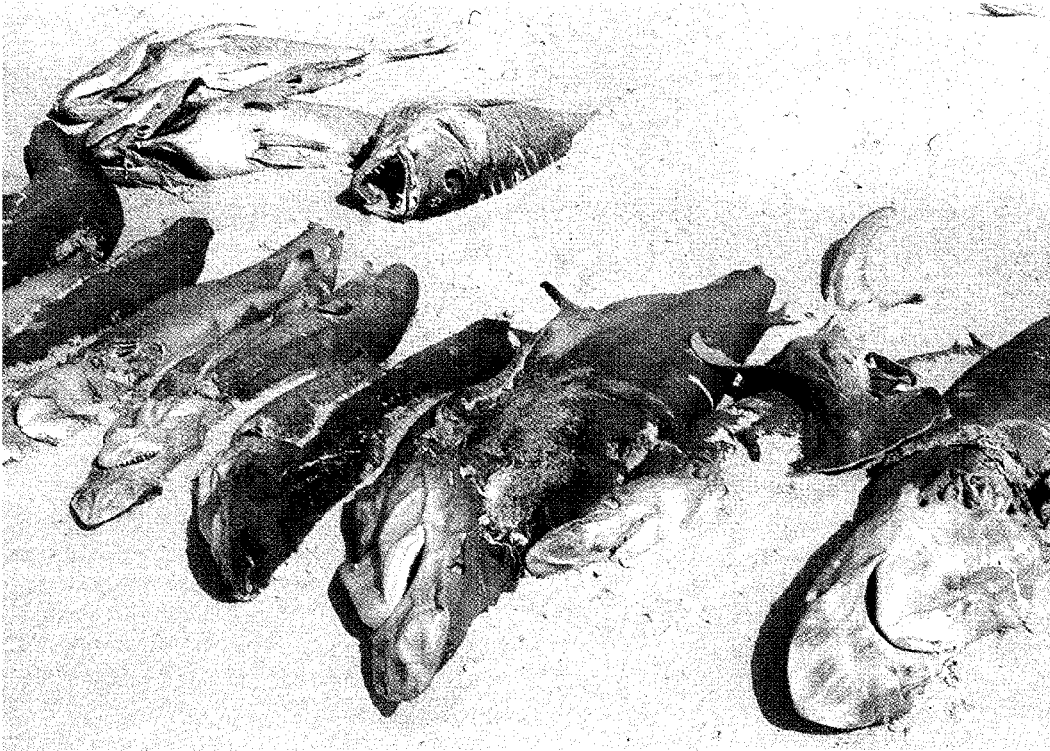


Turtles are still widely hunted in the Comoros. (Photograph: Jan Post)



Fishing activities in the Dahalak Archipelago were small during the war, but the current stability in the country makes it possible to develop and use the resources in a sustainable manner. A GEF coastal project is now under implementation, with the objective to support the government's efforts to manage coastal development. (Photograph: C. G. Lundin)





Shark fishing is an increasing problem all over the world, since the harvesting of these top predators easily leads to local extinction of species. The long-term effects on coral reef ecosystems are not known, but are likely to be significant. The de-finned sharks left rotting on this beach in Eritrea is a typical example of the wasteful fishing practices currently used to provide products for the Asian markets. (Photograph: C. G. Lundin)

Unloading of frozen tuna from a fishing vessel in Mombasa port. Deep sea fishing is increasing in Kenya. (Photograph: Stefan Rosengren)





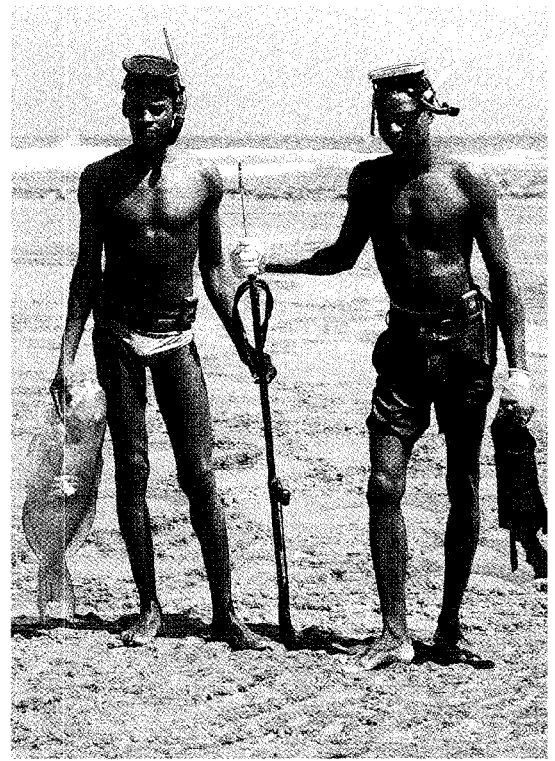
Mangrove forests are increasingly clear-cut and used as dumpsites for waste. This is Makupa Creek in Mombasa, Kenya. (Photograph: O. Lindén)

Erosion is a big problem in Madagascar. The forests in the mountains are clear-cut and the soil is washed into the sea, causing siltation and death of corals. (Photograph: C. G. Lundin)



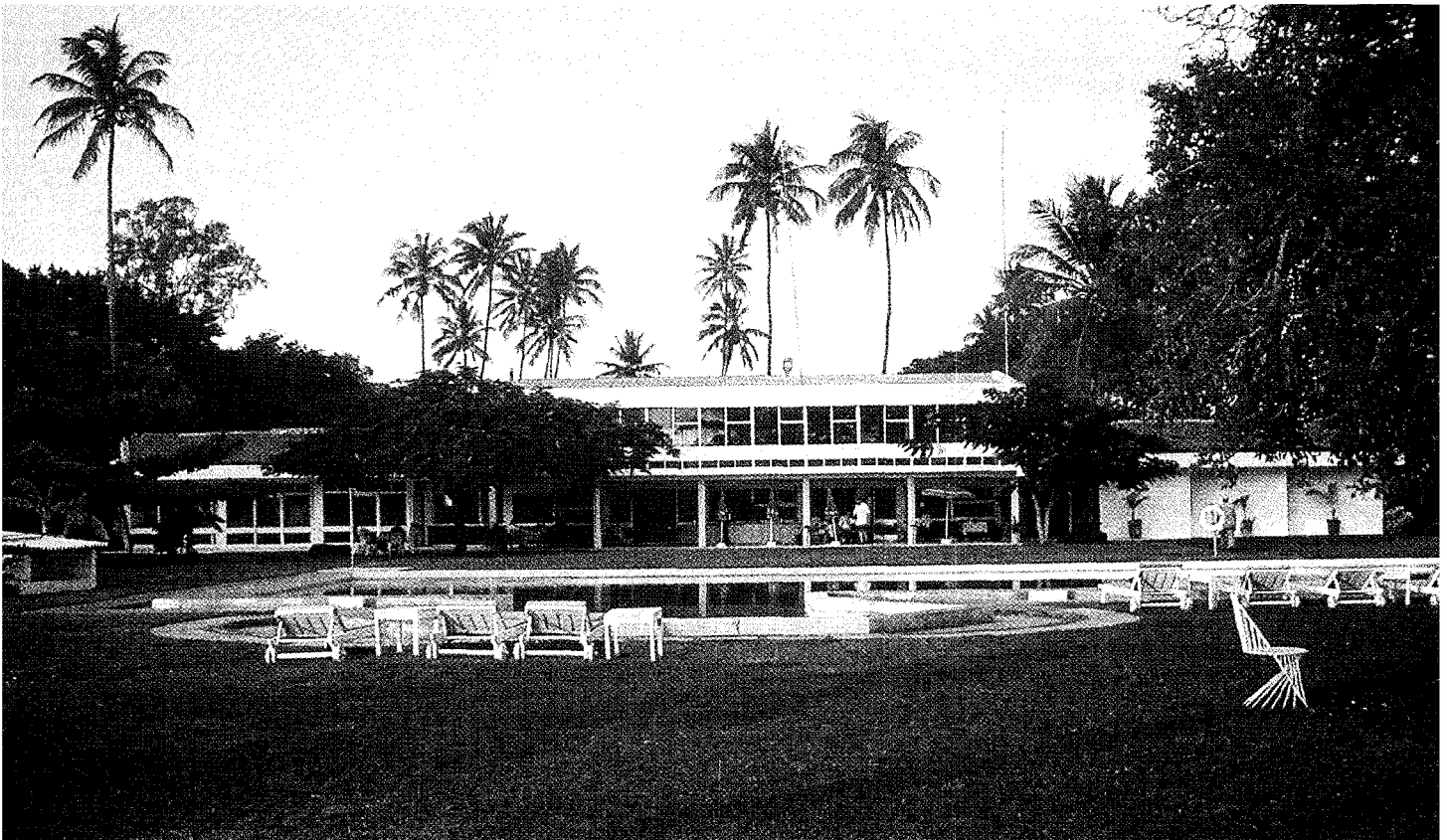


Fishing in Madagascar is mainly carried out from small boats.
(Photograph: C. G. Lundin)



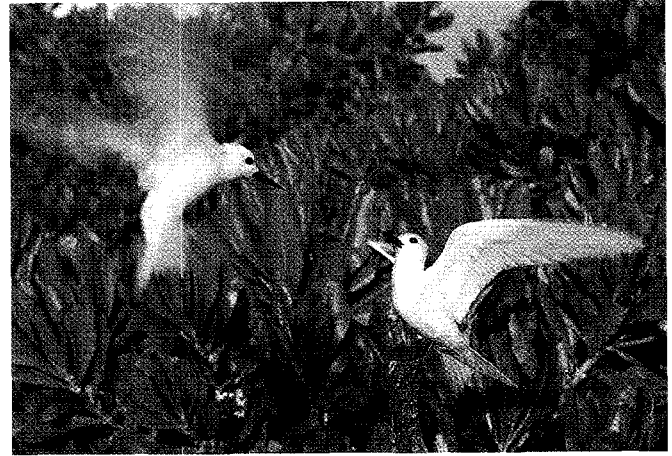
Fishermen using harpoons to fish for octopus and reef fish off Mozambique. (Photograph: L. Hernroth)

Since the end of the long civil war, Mozambique is developing the tourism industry as a foreign exchange earner. (Photograph: C. G. Lundin)





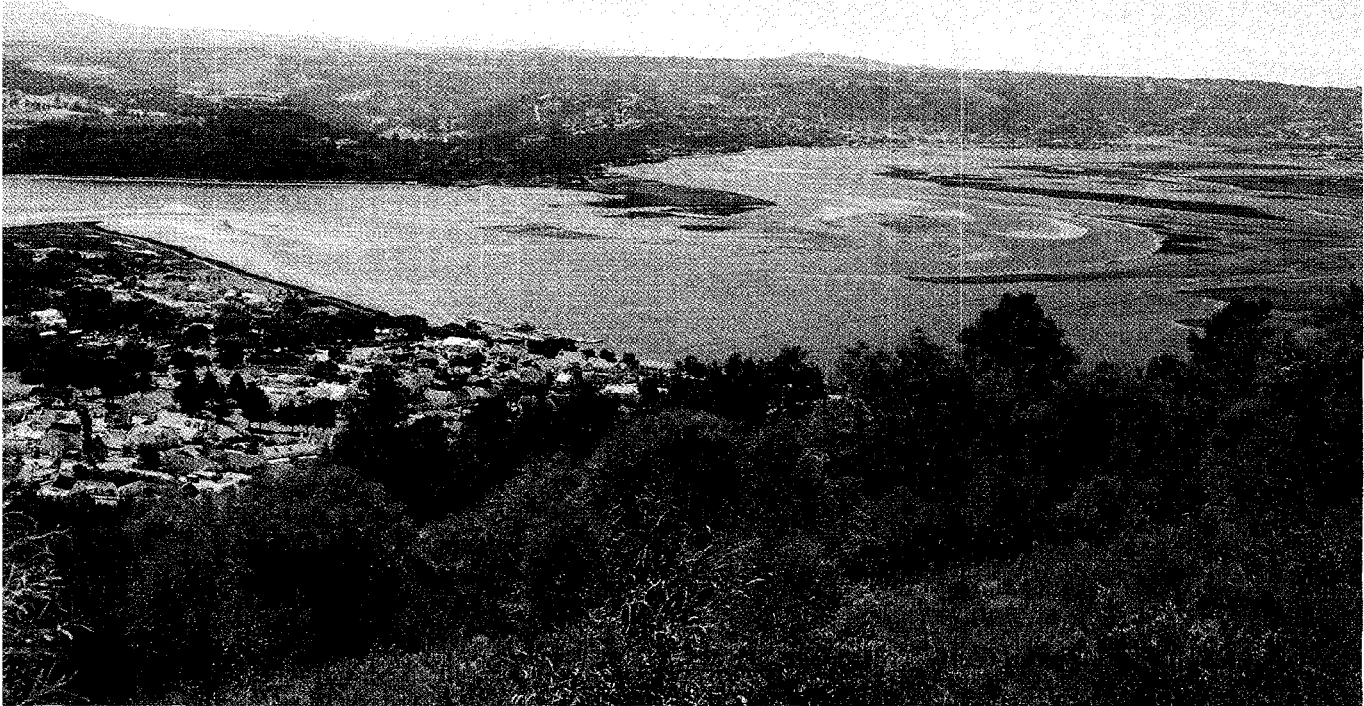
Turtles are now protected in the Seychelles. This turtle was captured for tagging and released thereafter. (Photograph: C. G. Lundin)



Fairy terns on Bird Island. The Seychelles offers a wide range of habitats for birds and there are many species endemic to the islands. (Photograph: Stefan Rosengren)

Land reclamation for airport in Mahé, Seychelles. (Photograph: Stefan Rosengren)





Cape Point, South Africa, is typical of the rocky coasts that are important features of the cold waters in the southern part of Africa. Currently, a GEF project is being prepared to address the biodiversity conservation issues of the Cape. (Photograph: C. G. Lundin)

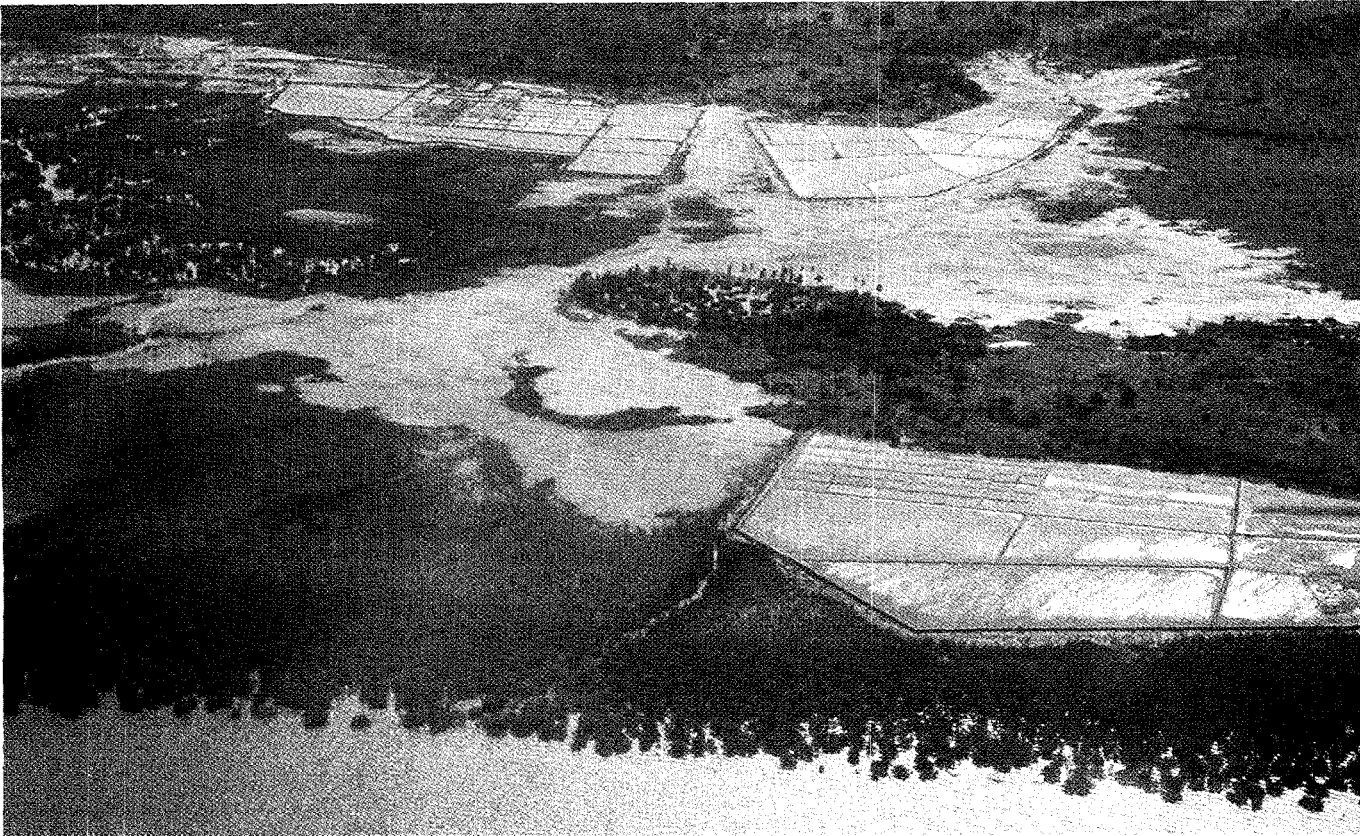
Seaweed farming is an important cash income source for villagers along the east coast of Unguja, Zanzibar. The seaweed is dried after harvest and sold to be processed for its gel content. (Photograph: O. Lindén)



Untreated sewage running from a broken pipe at low tide in Zanzibar town. Sewage is a growing problem with devastating effects on the marine ecosystems. (Photograph: Stefan Rosengren)



Mangroves are being cut to give way to salines for the production of salt from seawater. (Photograph: C. G. Lundin)





Integrated Coastal Zone Management in South Africa

D. E. MALAN

PREFACE

An Eastern African Action plan was produced during 1980–1985, as part of the United Nations Environment Programme (UNEP) Regional Seas Programme. This was later formally adopted (Nairobi Convention and two protocols) by several East African countries, but not by South Africa.

In 1993, a Ministerial meeting was held in Arusha, Tanzania, that looked at Integrated Coastal Zone Management (ICZM) in East African countries. Again South Africa did not participate. This meeting adopted the Arusha Resolution. This resolution resolved and recommended that the countries emphasise the sustainable development and integrated management of coastal areas for the primary benefit of coastal communities and listed a number of actions. It also urged countries to ratify the Nairobi Convention. It was further agreed to hold a follow-up Ministerial meeting at the end of 1996.

To prepare for this meeting all the East African countries were requested to prepare a critical analysis of ICZM in their country. Dr Malan of the Department of Environmental Affairs Sub-Directorate: Coastal Zone Management has been requested to draw up and present this status report on ICZM for South Africa. Flowing from the various country reports, the intention is to compile a background report and recommendations for the Ministerial conference to be held in Seychelles in October 1996. The format and contents of this document were largely dictated by the wishes of the organisers.

INTRODUCTION

The South African coastline stretches a distance of 3 100 km, from Alexander Bay in the west to Ponta do Ouro in the east. By international comparison it is linear with relatively few bays and inlets. Given the fact that the current population of South Africa is around 43 million, this means that if everybody went to the beach at the same time there would be approximately 7 cm of coastline per person. Although this is a hypothetical calculation, it stresses the finite character of the coast. Further, most development in the coastal provinces is concentrated along the coast. In the Western and Eastern Cape Provinces approximately 80 percent of the population resides in a narrow coastal strip. Development and other pressures on the coast have recently increased dramatically, and it is expected that this trend will continue.

South Africa's diverse and rich coastal ecosystems have been exploited as a human food source for more than 5 000 years. Harvesting of mussels and other marine organisms from the inter-tidal zone and the capture of finfish in rivers, estuaries and marine waters have provided an important source of protein. However, there are clear signs that increasing population pressure and the consequent potential for over-exploitation and environmental

degradation of coastal and marine resources are reducing the ability of coastal systems to sustain human activities. The ecosystems and associated renewable and non-renewable resources found within the coastal regions of South Africa play a major role in sustaining the economic and social development of the nation. If these ecosystems and resources are well managed, they will continue to serve a strategic role in meeting the needs of current and future generations.

The coastline of South Africa encompasses ecosystems ranging from semi-arid through temperate to sub-tropical. The climate of the coastal regions is heavily influenced by three oceans – the Atlantic, Indian and Southern – and by the Agulhas and Benguela currents which bring warm waters from the north to the eastern coast and cold water from the south to the western coast, respectively. The geology is highly varied with ancient basement rocks, such as granite, overlain by conglomerates formed from old marine sediments. Major parts of the coast are rock-dominated shorelines, incised by river systems that terminate in estuaries of varying sizes and which often contain extensive wetlands. Deep weathering within river catchments has created a source of sediments that form the basis for "pocket" and more extensive beaches, sand dunes and dune fields that characterise much of the southern and western coastal land forms. These same sediments may contain heavy minerals, such as titanium, rutile and zircon, which are mined from certain beaches and coastal dunes. Alluvial diamonds are mined along the West (Atlantic) coast.

Apart from these non-renewable resources, tourism and fishing are particularly important in the South African context. The value of coastal resources is seriously underestimated by the public and politicians. While it is difficult to put precise values on the economic and environmental goods and services generated by coastal ecosystems, their contribution to the national economy and to the employment and food security of local populations helps to sustain the well-being of millions of people. These same coastal resources offer potential for the expansion and diversification of economic activities. It is essential that South Africa endorses the principle of ICZM and gives political support for its implementation.

DESCRIPTION OF COASTAL ACTIVITIES

Institutional Framework

The interim Constitution of South Africa (adopted 28 January, 1994) provides for a three-level structure of government. Management of the environment is currently administered at all three levels. The levels comprise:

- National or central government, consisting of Parliament and the central executive governmental institutions. The parliament is bicameral, consisting of a National Assembly and Senate.
- Provincial government, consisting of the unicameral legislatures and administrations of the nine provinces.
- Local government, which is currently in the midst of a complex transition process, including a recent series of democratic elections.

Following the first democratic elections of April 1994, work has started on the finalising of the final Constitution. The draft final Constitution is currently being reviewed by the Constitutional Court. If the Constitution is accepted, Parliament will consist of the National Assembly and a Council of Provinces (replaces the Senate).

National (central) government is represented by 29 departments. Several of these deal to a greater or lesser extent with aspects of Integrated Coastal Zone Management (ICZM). These include Agriculture, Environmental Affairs and Tourism, Foreign Affairs, Land Affairs, Mineral and Energy Affairs, Public Works, Trade and Industry, Transport, and Water Affairs and Forestry. At central government level, the Department of Environmental Affairs and Tourism (DEA & T) is chiefly responsible for ICZM. National departments are listed in Annex I, while an institutional profile of the department is given in Annex II. Until recently the National Minister of Environmental Affairs and Tourism was advised by the Council for the Environment. Under the Council, a number of committees were formed – with the Committee for Coastal and Marine Systems advising the Minister on coastal issues. The Council for the Environment and its committees were disbanded after the elections in 1994, as it was felt that they were not representative. Its future awaits the outcome of a general consultative national environmental policy process (CONNEPP) which is currently underway.

The national Department of Environmental Affairs and Tourism consists of six Chief Directorates (Environmental Management, Sea Fisheries, Pollution Control, Tourism, Weather Bureau and Administration. See Annex II). The Sub-Directorate: Coastal Zone Management falls under the Directorate: Environmental Impact Management of the Chief Directorate: Environmental Management. It currently employs seven professionals. A newly created Deputy-Director post is currently being advertised.

South Africa has never enjoyed a uniform, integrated approach to coastal zone management. In 1910, South Africa was constituted as a unitary state from four former British colonies. This situation prevailed from Union in 1910 to the establishment of the so-called self-governing homelands in the 1960s as part of the policy of grand apartheid. These former colonies became the four original provinces – the Cape, the Orange Free State, the Transvaal and the Natal Provinces. As a consequence, parts of the eastern Cape became the territories of Ciskei and Transkei and the coast of Natal became a patchwork of territories belonging to Natal province and the KwaZulu "homeland". The 1994 Interim Constitution abolished the provinces in this form and replaced them with nine new provinces, namely Eastern Cape, Free State, Gauteng, KwaZulu-Natal, Mpumalanga, Northern Cape, Northern Province, North West Province and Western Cape. KwaZulu-Natal has become a single province, and the Ciskei and Transkei have been incorporated into the Eastern Cape Province. These new provinces have been vested with considerably more power than the previous provinces.

After two years, many of these provinces are still in the process of finalising their structures. Traditionally the provinces have been strong on nature conservation but lack broader environmental experience and capacity. The "environmental" portfolios have been allocated to different departments within the nine provinces and are still being moved around internally. Currently "environment" is the responsibility of the following Members of the Executive Councils (MECs) within the four coastal provinces: Eastern Cape (Economic Affairs, Environment and Tourism), KwaZulu-Natal (Traditional and Environmental Affairs), Northern Cape (Health, Welfare and Environment), Western Cape (Finance and Environmental Affairs). In order to establish a mechanism to promote coordination, the national Minister of Environmental Affairs and Tourism established a forum where all nine of the provincial MECs, and their senior officials, meet on a regular basis. This MinMEC Committee, chaired by the national Minister, established a further Technical Committee to advise them.

Historically, urban municipal government has existed in South Africa since the early nineteenth century. Rural areas, those areas outside municipal boundaries, are managed by District Councils. In KwaZulu-Natal there are three spheres of local government, i.e. regional councils, local councils, and the Durban Metropolitan Council. Rural areas have representation on regional councils and the latter is the sphere of government responsible for rural areas. The recent local elections have for the first time provided for unified and non-racial metropolitan authorities, and also for the creation of effective rural local government. It is clear, therefore, that local government will continue to be the subject of transition for many years to come.

Legal Framework

Historically, the notion of environment has often been identified with the preservation of wildlife and the conservation of nature. In contrast, the Interim Constitution for the first time included a direct reference to the Environment, and laid down as one of the fundamental rights of citizens, that (Art. 29): *"Every person shall have the right to an environment which is not detrimental to his or her health or well-being..."*. Hence, the Interim Constitution emphasises human welfare rather than only being concerned with the impact of humans on nature.

First and foremost, the draft Constitution sets out an overall legislative framework. It states that: *"The Constitution is the supreme law of the Republic; law or conduct inconsistent with it is invalid, and the duties imposed by it must be performed"* (Clause 2) [Constitution of the Republic of South Africa Bill, 1996 (As Amended by the Constitutional Committee in May 1996. As mentioned above, the draft Constitution is currently being reviewed by the Constitutional Court)]. Various Chapters and Schedules within the Constitution address the relationship between the different levels of government and their legislative competencies. Secondly, there are a number of legislative acts which are exclusively environmental in nature. The Environment Conservation Act, Act 73 of 1989, contains general environmental legislation, and is today – along with the Constitution – the main body of national environmental legislation. For example, the General Environmental Policy that was formulated (and is currently being updated through CONNEPP) and the policy to control the use of off-road vehicles along the coast were both promulgated in terms of section 2 of this Act. The Environment Conservation Act also makes provision for the promulgation of regulations. For example, the department published regulations in terms of Section 21 of the Act, to control activities that may have a detrimental effect on the environment, such as disturbance of vegetation, earthworks, dredging and dune stabilisation within certain sensitive coastal areas. Other legislation in this category includes acts and ordinances related to the conservation of natural resources and to pollution control.

The provincial nature conservation sections have ordinances dealing with various environmental matters, but emphasising nature conservation. In terms of the draft Constitution, environment is both a provincial and a national competency and therefore provincial environmental legislation will have to be expanded to include broader environmental issues. For example, in KwaZulu-Natal, new planning legislation is in the process of being developed which includes environmental management controls. As mentioned in the previous section, the former "homelands" have been reincorporated into the new provinces. Some of the environmental legislation that applied in these territories has only recently been integrated into the legislation of the new provinces and/or repealed. Examples include the

Environmental Conservation Decree of Transkei (Decree No. 9 of 1992) and the Nature Conservation Act of Ciskei (Act No. 10 of 1987).

It should also be pointed out here that early colonial governments sometimes reserved to themselves *narrow strips of land which lay between property granted in private ownership and the high-water mark*. Such strips exist along much of the coast and are known in different places as "Admiralty Reserve", "Coastal Forest Reserve", "Forest Reserve", "Beach Reserve" or "Government Reserve". The width of these strips vary, but is generally between fifty and sixty-five metres. These reserves facilitate good ICZM, but unfortunately do not extend along the entire coastline.

Further, there is legislation with direct environmental relevance, such as planning and land-use acts and local authority bylaws; legislation predominantly containing environmentally specific norms, e.g. the Scashore Act (Act No. 21 of 1935), the Forest Act (Act No. 122 of 1984) and the Occupational Health and Safety Act (Act No. 85 of 1993); and, legislation incidentally containing environmentally specific norms, e.g. the Sea Fishery Act (Act No. 12 of 1988.) Finally, South Africa is party to a number of international conventions and treaties related to the environment (see Annex III) and a member of various international conservation organisations.

Law Enforcement

There is no consistency with respect to the enforcement of environmental legislation at the national level. In the case of some national departments, national policies and regulations are enforced at the provincial or even the local level, whilst in contrast other departments such as the Department of Water Affairs and Forestry, and Mineral and Energy Affairs, have their own inspectorates – who are responsible for enforcing their policies and regulations. As far as DEA & T is concerned, the Chief Directorate: Pollution Control has a limited number of air pollution inspectors, while the Chief Directorate: Sea Fisheries conducts research on marine resources and regulates and controls marine fisheries. The following section mainly concentrates on this component.

The Department of Environmental Affairs and Tourism has the responsibility to manage and to conserve South Africa's marine living resources. Marine law enforcement (marine control) is the function of the Directorate: Resource Exploitation and Control and is exercised in terms of the Sea Fishery Act, 1988 (Act No. 12 of 1988).

The draft Constitution stipulates that all functions relating to marine resources are excluded from the nature conservation functions assigned to provincial authorities. Consequently, functions associated with marine control which were the responsibility of the former Cape Provincial Administration, the KwaZulu-Natal Provincial Administration and the former Transkei and Ciskei are to be handled by central government. The area requiring protection stretches along the 3 100 km coastline from the mouth of the Orange River (South Africa/Namibian border) to Ponta do Ouro (South Africa/Mozambican border) and in general for some 300 km seawards, a total area of nearly 1 155 000 km². This vast area is the country's declared Exclusive Economic Zone (EEZ) (Maritime Zone Act of 1994, Act No. 15 of 1994), which also incorporates the Fishing Zone (FZ).

The above situation may change, depending on the outcome of the deliberations of the Fisheries Policy Development Committee (A draft fisheries policy has recently been submitted by them to the National Minister of the DEA & T). Certain responsibilities could possibly be transferred to the provincial governments. Details of the functions of the Di-

rectorate: Resource Exploitation and Control, staff complement, acts administered and locations, as well as details about the situation in KwaZulu-Natal, are contained in Annex IV. There are also a few national coastal and marine parks, and two national lake areas, which are administered by the National Parks Board. Law enforcement in these areas occurs in terms of the National Parks Act (Act No. 57 of 1976), the Lake Areas Development Act (Act No. 39 of 1975) and regulations promulgated in terms of these acts. The Natal Parks Board controls marine resources in KwaZulu-Natal on behalf of DEA & T.

Environmental enforcement is also achieved at the local level with many local authorities having an inspectorate which deals with aspects of environmental management, including building regulation, health, behaviour on beaches etc.

Investment and Funding

It is difficult to make an accurate assessment of the funds invested in ICZM by the different levels of government. At the national level, DEA & T has a total budget of R163 million per annum (R4.5 = 1US\$) of which R23 million per annum is allocated to the Chief Directorate: Environmental Management. Within this Chief Directorate R1.6 million per annum (salaries included) is allocated to the Sub-Directorate: Coastal Zone Management. In addition to this, R52 million per annum is allocated to the Chief Directorate: Sea Fisheries. Approximately R2 million is directed from DEA & T and the Foundation for Research Development (FRD) towards coastal and marine research.

Stakeholder Participation

Traditionally, the government prepares policy and legislation with limited, or no, public input until it is published for comment in the Government Gazette. The Sub-Directorate Coastal Zone Management was one of the first government sections to endorse the principle of stakeholder participation. It seeks to actively involve all stakeholders and has used this with success since 1992. Examples include the highly participatory coastal policy initiative, involvement in designing regulations to control certain harmful activities in sensitive coastal areas and its information exchange programme.

Capacity (technical and human)

South Africa has competent scientists, engineers and technical experts. Coupled with a sound infrastructure, communications, computer and transport system, scientific capacity is good. However, as far as ICZM is concerned, there is a lack of expertise at national, provincial and local levels, and a shortage of trained managers. Also, the general public's awareness of ICZM is not well developed. Although the formal education system, such as universities and technicons, addresses certain issues relevant to ICZM, none specifically addresses ICZM. To address this problem DEA & T established the Coastal Management Advisory Programme (CMAP). DEA & T believes that "good information is our coastline's best protection". Therefore, CMAP's mission is to play a dynamic role in facilitating positive awareness and exchange of information amongst all interested groups to ensure cooperative, sustainable development of South Africa's coastal resources.

As an inclusive process of public education in environment and development, CMAP's work takes many forms, including the use of printed material, workshops and seminars, courses, videos, the radio, inputs into university and technicon courses etc. CMAP has

adopted the principle of partnerships and aims to get specific projects sponsored by the corporate sector. Several examples exist, including making a video on coastal matters with Alpha (Ltd), interactive displays at the Two Oceans Aquarium in Cape Town, and combining with Caltex to run the Rietvlei Nature Reserve interpretative sign programme.

Apart from CMAP, the Chief Directorate: Sea Fisheries also has its own media section. Although it is not involved in running courses, it plays a significant education and public awareness role as far as marine resources are concerned. Several non-governmental organisations (NGO) contribute to environmental education in general and sometimes coastal issues are also addressed. Examples of these include Sharenet – a network of environmental NGOs – and the Wildlife Society. In addition to these NGOs, several universities and technicians are based on the coast and several of these cover coastal and marine matters in their curricula and conduct research on various aspects of the coastal and marine ecosystems.

Research and Monitoring

Government institutions, NGOs and other stakeholders possess a considerable amount of scientific information on general environmental issues, but the main body of knowledge is produced in, and disseminated from, South Africa's wide variety of training and research institutions. South Africa has an excellent institutional research infrastructure. The Council for Scientific and Industrial Research (CSIR) is one of the leading research and development facilities on the African Continent and is also active in the field of ICZM. Other actors in this field include the Foundation for Research Development (FRD), the Human Sciences Research Council (HSRC) and the Water Research Commission (WRC). The latter plays a pivotal role in research on water issues. It does not itself undertake research, but was created to coordinate and fund research aimed at augmenting South Africa's water resources, improving the use of water, reclamation and most phases of the water cycle.

The South African Network for Coastal and Oceanic Research (SANCOR) coordinates, facilitates, stimulates, reviews and endeavours to promote marine science, engineering and technology (MSET) in South Africa, to promote the wise and informed management of the use of the marine and coastal environments. It comprises three components with overlapping functions:

- forum
- leadership group
- coordinating groups

The SANCOR Forum is a broadly based, consultative, communication and advisory body accountable to the Marine Science, Engineering and Technology community (MSET) and to the leadership group. The current membership comprises fifty-five organisations. The forum meets at least once a year in one of the regional coastal centres.

The leadership group comprises ten members that meet frequently and is responsible for representing the collective interests of members of the forum. The leadership group is funded by the FRD and the DEA & T. The leadership group is accountable to these two organisations and is responsive to their needs.

The coordinating groups comprise scientists and other interested persons actively involved in a defined area of research. Whenever a "critical" mass of research effort is identified, a

motivation for the establishment of such a specific coordinating group will be considered. In addition to the above structures, Task Groups are set up as and when necessary to undertake specific tasks, usually of limited duration. Detailed information about SANCOR is attached as Annex V.

A marine research and development programme entitled "The Sea and the Coast" was initiated by the FRD and DEA & T, and developed by the marine research community after much consultation. It aims to promote the wise use of marine and coastal resources through appropriate marine science, engineering and technology. The emphasis on application is intentional and it is expected that the programme will make meaningful contributions to national or regional economies through enhancing information available for decision-makers in the public and private sectors.

For the sake of convenience, the programme has been developed as separate but interacting thrusts which focus on:

- communities and living marine resources
- the coast as a resource
- offshore living resources and society
- mariculture

Apart from this programme, a "Marine and Coastal Resources Programme" was developed as part of the FRD's new portfolio of programmes. It is complementary to the aims and objectives of "The Sea and the Coast", but has a broader focus and is aimed at enhancing competitive research in MSEI, corrective action and academic-government/industry co-operation. In addition to those listed above, this programme has the following thrusts:

- biodiversity and conservation
- ocean dynamics and coastal geomorphology
- weather and climate

These programmes are managed by a programme advisory committee and thrust management groups.

During the past few months, the FRD and the SFRI have been negotiating with a number of foreign countries in an effort to set up collaborative research programmes on the west and east coast. The proposed west coast programme, named BENEFIT (Benguela-Environment-Fish-Interactions-Training), is a multi-disciplinary research programme developed by the three national fisheries research institutes of Namibia, Angola and South Africa that is aimed at understanding the interactions between the economically valuable living marine resources and their interaction with the environment. This programme will be used as a vehicle for training appropriate manpower in the region. The east coast programme (CORP-WIO), involves a number of countries, namely Kenya, Tanzania, Mozambique, Mauritius and South Africa, and will seek to assess the status of various living marine resources and their habitats and to investigate their sustainable utilisation.

In addition to basic research, more applied research is sometimes commissioned by management agencies at the national and provincial level. For example, in KwaZulu-Natal, the Town and Regional Planning Commission funded research into the effects of sea level rise, estuaries and other environmental issues.

CRITICAL ANALYSIS

Institutional Framework

Although policy-formulation is one of DEA&T's main functions, it is not its exclusive domain. Some policy-making and many executive functions are assigned to a number of technical departments. The line functions of many of the national departments cover certain aspects of ICZM. For example, the Department of Water Affairs and Forestry controls effluents discharged into the coastal zone and the Department of Mineral and Energy Affairs controls mineral exploitation. Even within DEA & T there is an artificial split between the Chief Directorate: Sea Fisheries that controls marine resources and the Sub-Directorate: Coastal Zone Management that concentrates on the terrestrial side. This state of affairs makes effective environmental administration extremely difficult. An overview of the functions of the different national departments is given by Sowman (1993).

Apart from the Chief Directorate: Sea Fisheries, the Sub-Directorate: Coastal Zone Management is the only governmental unit dealing specifically with the South African coastal zone. Although the unit is staffed with dedicated professionals and co-operation with various grass root organisations is good (DANCED, 1994), there are major shortcomings. As mentioned earlier, at the national level the Sub-Directorate: Coastal Zone Management only employs seven professionals to cover the entire 3 100 km of coastline. Obviously these numbers are complemented by the relevant staff of the four coastal provinces, but there are clearly too few individuals in the Sub-Directorate to cover its present tasks. This results in "crisis management" and not enough attention being given to proactive work. In addition to the staff shortage, the current budget allocated to this Sub-Directorate is hopelessly inadequate. This will negatively impact on ICZM in the short, medium and long term.

At the provincial level the coast has never been treated as an area that needs dedicated staff to manage it. Coastal issues are addressed by provincial Nature Conservation and Land-use Planning departments, in addition to other issues. Most conservation departments have established Integrated Environmental Management (IEM) sections to evaluate proposed developments, but their recommendations are often not reflected in planning decisions. The situation is aggravated in certain instances where differences of opinion arise within the same Ministry, for example when priorities of the economic and environmental sections are in conflict.

After the first fully democratic elections in South Africa the new government started an affirmative action programme and a campaign to reduce the number of civil servants by some 100 000 per annum over a three year period. This is likely to have severe repercussions for ICZM in South Africa, as traditionally only a limited number of individuals have been directly involved in ICZM. Of the four coastal provinces, the Western Cape and Eastern Cape could be the most severely affected. They have lost most of their senior managers and researchers, many formerly involved in ICZM, since the elections in 1994. Some of the remaining staff have expressed the opinion that some of the new managers appear not to realise the importance of research input into management decisions.

At the local level very few authorities currently have environmental sections or environmental employees and none specifically dedicated to ICZM. Many still see environmental employees as a luxury that could possibly cause more problems for them than anything else. On the positive side, there are a number of local authorities that are environmentally conscious.

Last, but certainly not least, the environmental portfolio appears often to be the last to be filled when Ministers are allocated. It is hoped that the current government will take the environment more seriously.

Legal Framework

Historically, environmental law in South Africa has developed haphazardly in response to environmental needs and pressures. In general, legislation to regulate coastal development and manage coastal resources is weak and oriented towards optimal rather than sustainable utilisation. First and foremost, the draft Constitution sets out the overall legislative framework, and makes reference to the environment in the Bill of Rights where section 24 states that "*Every person has the right -*

- a) to an environment that is not harmful to their health or well-being"; and
- b) "to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that -
 - i) prevent pollution and ecological degradation;
 - ii) promote conservation; and
 - iii) secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development".

This section is likely to influence judicial decision-making, and ICZM, by requiring that due weight be given to environmental considerations, traditionally undervalued by the courts.

South Africa has a plethora of legislation dealing with the environment. However, it is generally agreed that it has thus far been relatively ineffective. The main reason is that responsibility for the formulation of legislation and enforcement thereof is divided amongst a large number of authorities at the different tiers of government which are generally not adequately trained, funded or organised. This is exacerbated by the complex division of delegated legislative powers and functions between the national and the provincial levels. Suffice it here to stress that the new political situation in South Africa makes for a situation of transformation and uncertainty as regards the future legislative set-up, its implementation and its enforcement.

Section 146 of the draft Constitution currently being tested in the Constitutional Court gives some direction. In terms of the division of powers, the central government will retain administrative competence in respect of the formulation of national policies, the implementation of minimum, country-wide norms and standards, and executive functions with regards to environmental matters which have implications across both provincial and national boundaries (for example, air pollution control). The central government will also retain responsibility for the negotiation and signing of all international agreements (section 231). Various Chapters and Schedules within the draft Constitution address the relationship between the different levels of government and their legislative competencies. A few points relating to the management of marine and coastal resources are highlighted here.

The principle of cooperative governance and inter-governmental relations are accepted in the draft Constitution. As far as marine resources are concerned, the situation is quite clear. Although "*Environment*" and "*Nature Conservation*" are identified as areas of concurrent national and provincial competence, "*Marine resources*" are specifically excluded and therefore remain a national function. As far as coastal zone management is concerned, the pic-

ture is less clear. While "*Provincial planning*" is specifically mentioned as a provincial function, and "*Beaches*" as a local government matter, most of the other areas impacted on by coastal zone management are listed as concurrent national and provincial competencies.

The Constitution makes provision for the devolution of certain legal responsibilities, including environmental matters, to the Provinces. Despite this provision and increasing emphasis on regional government, there is general agreement that some form of national policy will always be required to develop a common purpose and cooperative effort amongst all who benefit from, or impact upon, the natural and human environment. This is particularly relevant in the coastal zone where many of the costs and benefits of using coastal resources are borne by society in general, and where many resources exhibit "common property" characteristics.

In South Africa there exists a variety of strategies aimed at the management of individual use of coastal resources. Formal responsibility for these is fragmented and uncoordinated with a wide range of national, provincial and local authorities involved. In 1988/89 the Council for the Environment (an independent statutory advisory body to the then Minister of Environmental Affairs) established a Committee for Coastal and Marine Systems, and tasked it with developing recommendations for the formulation of a coastal management policy. Policy principles and objectives, and guidelines for coastal land-use were prepared and published in 1989 and 1991. These guidelines are termed "A coastal zone management policy", but are really part of a strategy to achieve the aims of ICZM, and should not be regarded as policy *per se*. Nothing can be done to enforce it other than by persuasion and the invoking of goodwill to rectify unsound practices in the coastal zone which may come to the attention of the DEA & T or the provincial authorities. The Minister of Environmental Affairs has indeed discretionary powers to determine a general policy (section 2 of the Environmental Conservation Act, Act No. 79 of 1989). Problems were experienced, however, in implementing these guidelines as a consequence of restricted institutional capacity, lack of broad support, and the absence of an appropriate legal framework. It was also recognised that the biophysical aspects of the coastal zone had been emphasised in the Council for the Environment's documents (listed above), at the expense of the social and economic aspects.

A new approach to policy formulation to expand upon the earlier work in order to include social and economic issues was therefore instigated by the DEA & T. The DEA & T's Sub-Directorate: Coastal Zone Management recently prepared a project proposal entitled: "Towards a coastal zone management policy for South Africa: A proposal for a participatory policy formulation process (May 1994)". In the drafting of this policy formulation process, emphasis was placed on consultation with a broad range of interested parties, including labour, business, community-based organisations (CBOs), NGOs, national, provincial and local authorities. This policy formulation process is in line with the Reconstruction and Development Programme of the new government and is therefore appropriate, technically feasible and achievable, and will hopefully result in a policy which is endorsed by a broad spectrum of interested and affected parties (IAAPs). The above proposal was endorsed by the National Minister of Environmental Affairs and Tourism in 1994, on condition that additional funding be obtained from outside the department. This has subsequently been obtained from the British Overseas Development Administration which offered to fund the first two year phase of this project to the tune of some R 10 million. It is envisaged that a subsequent three year implementation phase will complement the first phase. The pro-

gramme is under the direction of a Policy Steering Committee (with equal representation by government and other interest groups), with the support of a project management team, which is in the process of being appointed. This initiative promises to provide a robust framework for addressing the many complex problems that have thwarted past ICZM efforts, and will have to achieve a dynamic balance between human needs and aspirations and the constraints of the natural environment. It will provide a basis for consistent decision making at a national level while also providing the clear directives needed by coastal provinces and local authorities for the preparation of more specific policies, strategies, action plans and legislation at the regional and local level.

In the first phase, to be completed in two years, interested and affected parties will assist with the formulation of a practically implementable policy. In the second, three year phase, attention will be focused on effective implementation of the policy. The programme has been structured so as to foster partnerships between the relevant government agencies and to encourage the active participation of all interested and affected parties at the national, provincial, regional and local levels. To ensure that issues of real concern are addressed, the policy formulation process will be guided by the following key principles:

- To create a "people-driven" process through meaningful participation by all interested and affected parties.
- To draw from, and build upon, existing information and knowledge bases (scientific, indigenous, etc.) in a manner which promotes scientific integrity and social learning.
- To develop a practically implementable policy that is integrative in its approach and subject to revision over time.

The DEA & T has produced guidelines for Integrated Environmental Management (IEM) which aim at ensuring that environmental concerns are taken into account in all development actions, from the planning of a project through to decommissioning. If IEM were to be made mandatory in the coastal zone it would make the current decision-making process more consistent and transparent.

As mentioned above, DEA & T has recently promulgated regulations to control certain potentially harmful activities in sensitive coastal areas. This initiative is currently being expanded from the pilot site to include additional coastal areas. The intention of these regulations is to prevent environmentally insensitive development and to minimise the impact of "legitimate" development. These regulations will go a long way towards protecting sensitive coastal areas.

Although the Environmental Conservation Act makes provision for the Minister to stop activities which in his/her opinion may have a substantial detrimental effect on the environment, it creates two problems. Firstly, the activity must first start, and secondly the Act states that compensation has to be paid if property rights are restricted. This has meant that the Minister has never used this act to stop any such activity.

Enforcement

South Africa's marine resources are constantly under threat from illegal harvesting and over-exploitation, owing to a critical shortage of both manpower and funds to protect the marine resources along the entire South African coastline. Failure to protect marine resources will have catastrophic results for the South African economy, and especially for those coastal communities dependent on them.

In order to utilise all available resources as effectively as possible, the Sub-Directorate: Marine Control has already taken several steps to address this issue, including:

- The establishment of a sophisticated communications and operations room to collate information and coordinate inspections.
- Cooperation with the South African Police Service (SAPS), including the establishment of a Joint Marine Law Enforcement Committee (against organised smuggling syndicates), the Endangered Wildlife Unit of the SAPS and revitalising the system of Honorary Fisheries Inspectors.
- Improved inspections of foreign fishing vessels, specifically tuna vessels from Japan and Taiwan, and developing a computerised vessel tracking system and database.

Despite this, fishery law enforcement has come to a virtual standstill, particularly along the Eastern Cape coast. Along stretches of this coastline, local communities have recently started invading marine reserves and plundering intertidal resources, as they claim that they were forcefully removed during the apartheid era to create these coastal and marine reserves. Notwithstanding the political causes, scientists are in agreement that the current level of exploitation is unsustainable. In the Hawston area near Cape Town extensive poaching of abalone and spiny rock lobster has been an ongoing problem. Lives are threatened in this highly lucrative black market business. Dried abalone is exported to the Far East, where it fetches premium prices. It is feared that if this continues much longer, both the abalone and spiny rock lobster stocks will collapse.

To date the Cabinet Treasury Committee has refused requests for additional funding to remedy this situation. Large stretches of the South African coast, especially in the Eastern Cape (former Transkei) are inaccessible and virtually impossible to control. Local communities are not informed about the fisheries regulations, or the need for such controls. Without proper education, marine enforcement will remain problematic. Sea Fisheries inspectors receive a salary which is on average 86 percent lower than that of beach constables! This, together with the problems mentioned above, has resulted in ineffective law enforcement and low morale amongst the inspectorate.

Problems with enforcement are also encountered in the terrestrial side of the coastal zone. A major drawback is the lack of compliance with conditions of approval. Approval for development projects often includes stringent conditions. However, there are no structures to ensure compliance or to ensure the rehabilitation of damaged areas. Although there are various laws which can be applied, no environmental protection monitoring or enforcement is applied universally, and it is often left to the public to act as environmental watchdogs. Even when authorities are approached by such watchdogs, or concerned members of the public, the fragmentation of functions and legislation (whether local, provincial or national) makes effective and rapid action problematic. The new provinces have obtained more powers under the federal dispensation. However, people still regard the National Minister of Environmental Affairs and Tourism as having the final word. This causes confusion and frustration amongst the public. The situation is further exacerbated by the fact that the individual powers of the three levels of government have not yet been clarified. Further, environmental legislation needs to be rationalised to ensure effective enforcement. These grey areas are being exploited, for example, by illegal developers in the former Transkei.

Although fines for contraventions of legislation dealing with marine resources are adequate, many other fines relating to environmental damage are ridiculously low. For example, a developer prosecuted for destroying protected milkwood trees might only be given a fine of R500 (R4.5 = US\$1). It is also quite possible that the developer will walk away scot-free and that the bulldozer driver will be prosecuted! Often it is easier to do something without permission and then ask that it be condoned afterwards. Examples of this are the erection of jetties and slipways, and bank stabilisation in tidal rivers in terms of the Sea Shore Act (Act No. 21 of 1935). A further concern is that in certain instances legislation is delegated to Ministries in the provinces that have not yet got the capacity to deal with it, both in terms of resources and experience.

Investment and Funding

Funding of ICZM has decreased over the last few years, as government budgets are redirected to more short term priorities such as housing, water supply and job creation. This has had a negative effect on effective ICZM, including policy formulation, capacity building, forward planning, gathering of baseline information, enforcement and research funding etc. The British Overseas Development Administration has agreed to sponsor an extensive participatory policy formulation programme (detailed previously). Initial discussions have also been held with the Danish Cooperation for Environment and Development (DANCED) towards implementing a pilot Integrated Coastal Area Management (ICAM) study in KwaZulu-Natal.

Stakeholder Participation

The institutionalisation of an inclusive democratic system has only just begun in South Africa, starting with the national elections of April 1994, and the recent local authority elections in 1995/96. Whilst it is reasonable to expect that the political parties will eventually develop and further specify their environmental positions, currently one should look elsewhere for focused organisations with a particular stake in environmental issues, such as, for example, the multitude of South African NGOs.

The government has recognised the need for participatory policy formulation and decision-making processes, and is trying to include all interested parties in such processes. This resulted in severely stretching the capacity of NGOs, CBOs and other stakeholders. In order to facilitate participation, NGOs and CBOs are rightfully requesting that there should be some coordination between the different policy processes. There have been suggestions and initiatives for the creation of a common forum for all environmental organisations, but so far without any result. Arising out of CONNEPP, there are recommendations for National, Provincial and Local Environmental Advisory Forums. While participatory processes are desirable and lead to a sense of ownership and more effective and efficient implementation, they are time-consuming and costly. Nevertheless, the Sub-Directorate: Coastal Zone Management has accepted the principle of participatory policy formulation and is using it with great success.

Capacity (technical and human)

Except for a small staff complement at national level there are no dedicated staff at provincial or local level that concentrate exclusively on ICZM. Transformations in South Africa's

government service are drastically affecting the current pool of expertise and many new role players, with little experience, are being placed in positions of control. In the short term this could have a negative effect on ICZM in South Africa. It is crucial that new and existing staff be given all the support that they need. In this regard, CMAP can play an important role.

CMAP is playing a key role in capacity building, but due to severe manpower and financial constraints all needs cannot be addressed. More programmes and projects aimed at specific communities in the coastal zone need to be developed in co-operation with these diverse communities. There is also a need to raise the levels of awareness nationally through popular projects, preferably focusing on hands-on education and training programmes. These should be developed in a co-ordinated way at the national level in order to avoid duplication, but it is vital that local communities and regional structures be involved throughout the planning and implementation of these projects. There is also a need to pool resources and co-ordinate initiatives with NGOs, CBOs and other organisations working in this field, through an effective networking structure.

In summary, public awareness of coastal issues and developments is increasing. Coastal managers are no longer lone voices in the wilderness, but are joined by a vocal and often enthusiastic conservation-oriented public.

Research and Monitoring

The South African Network for Coastal and Oceanographic Research (SANCOR) has established a forum, leadership group and several coordinating groups. These structures are working well and hold great potential for the future. Not only has a democratically elected leadership been created, but structures have been set up to involve all stakeholders. In this regard special mention should be made of the excellent functioning of the coordinating groups. However, the future of these structures is from time to time threatened by new management within the FRD and the government questioning the merits of structures that were set up before the elections. This is further exacerbated by re-prioritising and budget cuts within both the FRD and DEA & T.

Despite years of international isolation forced upon the research community by the apartheid policies of the previous government, a high standard has been maintained. South Africa's coastal and marine scientists are internationally regarded as being of high standing. In many instances, for example the integrated research conducted as part of the Benguela Ecology Programme, South Africa is recognised as being amongst the world leaders. Since the elections in 1994, a slight increase in internationally collaborative research has taken place. It is envisaged that this will escalate in future and it is predicted that South Africa will make a significant contribution to coastal and marine research in Southern Africa, especially in the South African Developing Countries (SADC) region.

Despite the research communities' good track record, funds have decreased considerably over the last few years. The government's new priorities of housing, infrastructure and job creation, amongst others, have resulted in a reallocation of funds. This, coupled to the weakening of the Rand on the international financial market and an annual inflation rate of between 10 and 15 percent, has severely reduced funds available for research. The Department of Environmental Affairs and Tourism previously made a significant financial contri-

bution to research, particularly that conducted by universities, but this has decreased considerably over the last few years. Although the Department's own Sea Fisheries Research Institute (SFRI) is still very active, mainly in marine research, budget cuts have forced it to re-prioritise its research projects, which has resulted in the scaling-down or termination of certain projects. Sea Fisheries is also finding it increasingly difficult to adequately finance and maintain South Africa's only research vessel fleet.

Although international funding opportunities have become available to the research community following the election of a new democratic government, applications for funding have been relatively unsuccessful to date. This is partly because the South African research community and government are unfamiliar with the operations of the various co-ordinating and funding bodies, for example the detailed functioning, application and evaluation procedures of the Global Environmental Facility. It has proven to be extremely difficult for researchers to place themselves in a position where they can tap into this source of funding. Applications entail considerable effort with no guarantee of success. Further to this, time lapses between application, approval and eventual implementation is problematic.

Specific programmes that have been implemented over the last four years by the FRD to stimulate research in former marginalised universities have met with mixed success. This is as a result of the lack of a research ethos and equipment at these institutions. Practise has shown that there is currently a severe shortage of disadvantaged people and social scientists that are interested or qualified in the field of coastal and marine science and monitoring. The new "Sea and the Coast" programme attempts to address this problem. It is human centred and encourages multi-disciplinary and inter-institutional research. Specifically, it encourages social scientists and people from previously disadvantaged groupings to become involved in coastal and marine research projects.

Despite efforts by the SANCOR "Sea and the Coast" programme to bridge the gap between managers and scientists, this is an area that still needs much attention. Efforts should continue to ensure that this gap is bridged and scientists and managers become partners of one team.

Since most research projects are of limited duration, there is a need for more long term data sets, including both physical and biological monitoring. The only components of the coastal environment that are adequately covered are the commercially exploited marine resources, various marine environmental parameters, and sea level variations. While some monitoring of coastal water quality is undertaken in the vicinity of ocean outfalls, this monitoring needs to be extended to include many of the estuaries. Limited monitoring of subsistence gathering in the rural areas is also undertaken.

Lastly, there is a limited number of permanent research positions available, which is demoralising for young researchers and has resulted in researchers either seeking employment outside the environmental field or leaving the country.

Progress with Implementation of the Arusha Resolution

South Africa was not represented at the Arusha Conference and is not a signatory of the Arusha Resolution. However, South Africa is, in principle, in agreement with the contents of the resolution signed by several of the East African countries in 1993 and is looking forward to playing a constructive role in Integrated Coastal Zone Management (ICZM) in

the region. The following headings are quoted directly from the Arusha Resolution and progress made in South Africa over the last three years is indicated.

1. Establishing policies that promote and enhance integrated planning and management of coastal areas by integrating the coastal zone into economic and physical planning.

For some years now South Africa has made significant progress in integrating the coastal zone into physical planning. A system of Guide Plans, Regional and Sub-Regional Structure Plans, and in certain cases Local Structure Plans and Zoning Schemes cover large sections of the South African coastline. Normally an environmental analysis forms an integral part of the compilation of these plans. Over the last three years additional plans have been compiled. To date, economic planning has received less attention.

2. Developing and implementing ICZM programmes which address environmental concerns, particularly resource over-exploitation, environmental degradation and loss of biodiversity, and emphasise action at local level.

Despite pressures for increased quotas, and in certain cases heavy poaching, the Chief Directorate: Sea Fisheries and its scientific advisory arm, the Sea Fisheries Research Institute, have largely been successful in managing the country's commercial marine living resources sustainably.

Sensitive coastal areas have been identified and regulations have been promulgated in a pilot area to control potentially harmful activities. These areas are being expanded. A series of guidelines has been published to encourage integrated environmental management (IEM), which is a broad procedure encompassing environmental impact assessments (EIAs). Draft regulations have been published for comment, and are in the process of being finalised. Although applicable to the entire country, these regulations will also have a positive impact in the coastal zone.

Loss of biodiversity is high on South Africa's agenda and South Africa is signatory to several international agreements. The Committee for Environmental Coordination has established a sub-committee dealing with all aspects of biodiversity, including coastal Ramsar sites – wetlands of international significance, specifically for waterfowl, other wetlands, estuaries and sub-tidal areas. Over the last number of years the DEA & T has also developed and implemented a Natural Heritage Programme, which encourages landowners to request registration of conservation-worthy sites. This is continually being expanded. Coastal and marine ecosystems are also given formal protection (National Parks, Provincial Reserves, Local Reserves, Private Reserves and two National Lake Areas). Over the last three years several additional conservation areas have been formalised and a number are in an advanced stage of negotiation.

3. Promoting effective sectoral implementation of ICZM programmes through creating mechanisms and means of cooperation of and coordination among sectoral agencies, and among regional, national and local agencies.

As in most countries, cooperation and coordination amongst sectoral agencies is difficult. Nevertheless, an Inter-departmental Committee has been established (IC-COAST) to facilitate coordination and cooperation as far as the coastal management policy formulation programme is concerned. The feasibility of giving this committee more formal status and establishing it as a sub-committee of the Committee for Environmental Coordination is currently being explored. A representative coastal policy committee has also been established to guide the current policy formulation pro-

gramme. This committee consists of 50 percent non-government and 50 percent government members (one from national government and one from each of the coastal provinces). Also, in the Western Cape a committee (WHELIC) has been formed to encourage interaction between the national departments of Water Affairs and Forestry; Health; Environmental Affairs and Tourism; Agriculture and the two provincial departments Land-use Coordination and Finance and Environmental Affairs.

4. Clarifying the jurisdictional mandates of agencies and governmental units (geographical, sectoral and trans-sectoral) governing the use of coastal resources and assessing and clarifying all legislation (formal and customary) relating to access to coastal resources, in particular property rights, occupancy patterns, and user rights in coastal areas.

The Interim Constitution has gone a long way to clarifying the geographical extent and powers of the provinces. It also defines national responsibilities, for example marine resources management. Following the democratic elections in 1994 and the incorporation of the former homelands, good progress has been made towards rationalisation and harmonisation of legislation covering coastal and marine resources. Access to resources is addressed in some detail in the draft fisheries policy.

5. Promoting further links between marine and social sciences and the decision-making process.

The South African Network for Coastal and Oceanographic Research (SANCOR) structures and operating procedures (see Annex V) were formalised and implemented during the period following the Arusha Resolution. A marine research and development programme entitled "The Sea and the Coast" was initiated by the Foundation for Research Development and the Department of Environmental Affairs and Tourism and developed by the whole marine and coastal research community after much consultation. It aims to promote the wise use of marine and coastal resources through appropriate marine science, engineering and technology. The emphasis on application is intentional and it is expected that the programme will make meaningful contributions to national or regional economies through enhancing the information support available for decision-makers in the public and private sectors. This programme specifically encourages marine and social scientists to work together. In addition to the above, the department's education and information transfer program, CMAP, facilitates information exchange between scientists and managers.

6. Strengthening management capabilities of relevant agencies, particularly at the local level, for effective management of the overall environment, especially coastal areas.

As mentioned earlier, DEA & T has established a CMAP programme that facilitates information exchange and aims to strengthen the management capabilities of relevant agencies, particularly at the local level. The ICZM course held earlier this year was specifically aimed or targeted at increasing the management capabilities of coastal managers.

7. Implementing and rigorously enforcing effective legislative instruments and supporting incentives to reduce resource use conflicts as well as to prevent and control environmental degradation in coastal areas.

Sensitive areas of coast have been identified in an attempt to control environmental

degradation. Regulations have been promulgated to control potentially harmful activities (removal of vegetation, earth works, dune stabilisation and dredging). These have been implemented in a pilot area and are being extended to other areas. A series of guidelines have also been published to encourage integrated environmental management (IEM). Draft regulations in this regard have been published for comment. Although broadly applicable, they will also positively impact on the coastal zone.

A statutory policy has been promulgated to control the use of off road vehicles along the coast, including their use on beaches and other sensitive areas such as wetlands. Interdicts have been obtained to stop the activities of illegal housing developers in the former homeland of Transkei and proceedings have been instigated to prosecute them.

8. Investing in public education and awareness programmes to create a broader and stronger constituency for proper management of coastal areas.

DEA & T has established an education and awareness programme (CMAP) that also targets the general public. In addition, a total of 25 percent of the current coastal policy formulation budget is being devoted to capacity building. Apart from CMAP, the media section of the Chief Directorate: Sea Fisheries also plays a prominent role in education and raising awareness of issues related to coastal and marine resources.

9. Promoting approaches and strategies such as alternative livelihood programmes and economic diversification to reduce pressure on coastal resources.

This aspect has not received much attention, but activities that are not dependent upon the coast are discouraged from locating on the coast where they could limit options for more appropriate activities.

10. Promoting the involvement of all stakeholders in the development and implementation of ICZM programmes particularly the involvement of local communities including women and resource poor groups.

DEA & T seeks to actively involve all stakeholders in coastal zone management issues and decision making. Examples include the highly participatory coastal policy formulation initiative, involvement in designing regulations to control certain harmful activities in sensitive coastal areas, the development of an integrated coastal area management pilot study in KwaZulu-Natal, Rietvlei Nature Reserve interpretative sign etc. Local communities and resource poor groups are, for example, involved in the development of their own fish monitoring system at the Olifants estuary and the negotiations for the establishment of a national park along the West Coast.

11. Providing appropriate incentives and guidelines for the private sector to develop environmentally friendly economic activities.

Several guidelines have been developed over the last number of years to encourage environmentally friendly development and management of the environment, including the coast. These include the Council for the Environment's Guidelines for Coastal Land-use, IEM guidelines, the Aide Memoire for Environmental Management Programme Reports (EMPRs) produced by the Department of Mineral and Energy Affairs and documentation produced by CMAP and other environmental NGOs. Data, such as archaeological and vegetation data, have also been synthesised, but still need to be extended to other environmental components. Resource economics is still a new

field in South Africa. A current resource economics project will also address incentives for the private sector to develop activities in an environmentally friendly way. This looks broadly at environmental issues throughout the country, and is not restricted to the coast.

12. Promoting bilateral and multilateral training relationships between countries of the Eastern African region, and between these countries and other countries with more highly developed coastal zone management capability.

South Africa has been excluded from the international community for many years. It is only since the first democratic elections in 1994 that the opportunity to explore the above issues has arisen. Initial informal discussions have been held with Mozambique, Namibia and Angola.

13. Supporting the building of local capacity, *inter alia*, through establishment of ICZM training in the region, such as Mbengani Fisheries Training Centre.

Through CMAP, DEA & T has been involved in the development of local ICZM capacity. It regularly runs workshops and one-day courses and makes inputs into university and technicon courses. It also facilitated the first three-day workshop on ICZM this year.

The Foundation for Research Development has for many years played a positive role in developing human and institutional capacity relating to coastal and marine research and, to a lesser extent, management. In recent years the emphasis has been on historically marginalised universities and disadvantaged groupings.

14. Encouraging the preparation and implementation of contingency plans for handling oil pollution disasters.

South Africa has developed and implemented comprehensive contingency plans for handling oil pollution disasters. Plans are regularly updated and have been used with great success on several occasions. Legislative changes have also been made to decrease the probability of oil spills within our territorial waters.

15. Establishing and strengthening other appropriate institutions, such as the proposed Marine and Coastal Biodiversity Centre in Seychelles.

As in 3.12 above.

16. Giving consideration to special problems faced by small island states.

While South Africa recognises that small island states face problems, and agrees that they should be afforded special attention, South Africa does not fall into this category.

17. Scientists should adopt a multi-disciplinary research approach involving ecological, economic and other social sciences to holistically address management problems in coastal areas.

The South African Network for Coastal and Oceanographic Research (SANCOR) marine research and development programme entitled "The Sea and the Coast" stresses a multi-disciplinary and holistic approach. While South African marine and coastal researchers have traditionally focused mainly upon the ecological sciences, they are now expanding into the social and economic sciences. There are also a number of multi-disciplinary university courses, such as the Environmental Sciences masters course aimed at training students to look at environmental problems in a holistic manner.

18. Scientists should provide information, including documentation on indigenous knowledge relevant to coastal development and management, particularly in providing a diagnostic profile of the coastal areas; resource evaluation and environmental accounting; identification and analysis of resource use conflicts and their resolutions; policy and management options as well as investment opportunities.

Scientists have always played an important role in supplying baseline data and information to decision makers. However, over the last few years they have increasingly become involved in making inputs into government policies, such as the fisheries and maritime policies, and decision making. Many have been involved in the undertaking or evaluation of environmental impact assessments. They are recognised as a major interest group in the current coastal zone management policy formulation initiative. Nevertheless, it is felt that they still need to give more attention to the specific areas mentioned in this section of the Arusha Resolution.

WHAT NEEDS TO BE DONE?

In the following section, some of the obvious shortcomings and impediments to effective ICZM, and recommendations to counteract them are briefly listed (not necessarily in order of priority).

Lack of Political Support

The environment in general has always been low on the political agenda in South Africa. Although a few of the political parties have produced statements on the environment, very few actually see this as a priority at present, given the other pressing needs such as housing and job creation. It is essential that the environment, and specifically the coastal zone, be given political recognition and support. Without this any attempt to implement ICZM will fail. It is thus essential that political leaders and officials in key positions be informed and convinced about the economic and social value of coastal resources. It is of the utmost importance that they ensure that positive actions are taken without any further delay and that the necessary financial/manpower resources are made available to support ICZM.

No Clarity on the Position of ICZM in Terms of Draft Constitution

South Africa is currently going through a period of considerable change. For the first time a fully democratic election was held (27 April 1994). South Africa is also changing towards a more federal system and it is unclear what impact this will have on coastal zone management. It would appear from the draft Constitution that coastal zone management is considered an area of "concurrent responsibility" i.e. where the national and the provincial governments together have active roles to play. This requires further debate and consensus needs to be reached between the national and provincial authorities as to roles and responsibilities.

Institutional Capacities and Funding

Environmental expertise in this country is now having to be spread over nine provincial authorities. These authorities vary greatly in their capacity to manage environmental resources and, in particular, coastal resources. Institutional capacities at all levels of government should be investigated as part of the coastal policy process with a view to strengthening them. Effective structures to implement strategic and day to day ICZM along the entire coastline need to be established. These structures need appropriate human and financial resources to ensure that all aspects of ICZM are effectively addressed.

No Legally Entrenched National ICZM Policy

The principles and objectives for ICZM and the guidelines for coastal land-use developed by the Council for the Environment (1989) are not legally enforceable. Consequently, vitally important ICZM principles will not necessarily be integrated into planning and decision-making processes, nor are they applied consistently by the various authorities responsible for addressing environmental concerns in land-use planning and coastal development. The Environment Conservation Act (Act No. 73 of 1989) empowers the Minister to promulgate national ICZM policy which will be legally enforceable. There is an urgent need for such an over-arching policy. It may also be argued that minimum standards, norms and guidelines should be developed by the national government, in collaboration with the provincial governments and other stakeholders. It will be the prerogative of the provincial governments to decide whether they wish to develop further detailed policies and legislation within the framework provided by the national coastal zone management policy. It is thus recommended that the current process of developing a national coastal zone management policy should be pursued with vigour. It should, however, be cautioned that such a participatory process takes time.

Lack of Capacity in ICZM amongst All Stakeholders

In order to ensure that all stakeholders can play an active part in formulating and implementing an ICZM policy, it is essential that a concerted awareness and education programme form an integral part of the policy formulation programme. The fact that the coast is a limited and unique resource subject to increasing pressures should be brought to the attention of all decision makers as well as the general public. They need to understand this, accept that the coast needs to be managed in a holistic manner, and act accordingly. The importance of such a programme is especially relevant given the current political changes taking place in South Africa. Many experienced staff members of the "old regime" have accepted severance packages, leaving a temporary vacuum as far as qualified and experienced coastal zone managers are concerned. Many officials and politicians, at all levels of government, who have no previous experience of ICZM will be required to make decisions affecting the coast and it is essential that they be given full support. The department's Coastal Management Advisory Program (CMAP) can, and must, play a major facilitation role in this regard. It is recommended that CMAP's resources be considerably strengthened to undertake this crucial task. In general, the government needs to employ more environmentalists and should ensure that related staff such as town and regional planners receive adequate environmental training.

Endorsement of International Treaties, Conventions and Protocols

South Africa is signatory to a number of international agreements, as detailed in Annex III. However, South Africa is not party to a number of international agreements relating to ICZM, such as the Nairobi Convention and its protocols. It is recommended that the merits of becoming a party to these be further investigated.

Fragmented and Uncoordinated Administration

The multiplicity of authorities responsible for specific aspects of legislation frustrates an integrated approach to ICZM. Cooperation between and amongst national and provincial departments is inadequate. Even within the DEA & T there is insufficient communication between the Chief Directorate: Sea Fisheries and the Sub-Directorate: Coastal Zone Management. It is recommended that a sub-committee Coastal Zone Management be established under the Committee for Environmental Coordination as a first step to coordinating

actions within the government. The existing informal inter-departmental committee (IC-COAST), established to coordinate governmental inputs into the ICZM policy process, can be absorbed into this formal structure. Most importantly, a lead agency for ICZM needs to be established.

Lack of Emphasis on Environmental Issues at Provincial Level

Two years into the new dispensation, many provinces are failing to take adequate environmental management steps to protect the broader environment. There is still a lack of adequate structures and human and financial resources to address these issues. Most of the provincial conservation budgets are still spent on conserving plants and animals.

Plethora of Legislation

The majority of laws affecting the use of coastal resources are not aimed specifically at promoting effective ICZM. Consequently poor environmental practices may be carried out without effective control despite the abundance of legislation. It is recommended that a critical review of legislation applying in the coastal zone be undertaken with a view to rationalising this situation. It is additionally recommended that the coastal policy process investigate the merits of a coastal zone management act.

Limitation of Criminal Sanctions

There are serious limitations to the use of criminal sanctions which could further the objectives of ICZM. Pollution and environmental degradation may not be seen to be a crime by the general public, particularly by groups whose livelihood may depend on the exploitation of certain coastal resources. The criminal process is effective only if it serves as a deterrent. The fines, or other penalties, imposed on those who pollute or degrade the coastal environment are, however, frequently ridiculously low, particularly when compared with the gains from illegally exploited resources. Usually there is no requirement to rehabilitate the damaged environment. It is recommended that these issues receive attention.

No Legal Requirement for EIA

There is no statutory requirement for administrative bodies or private individuals to undertake environmental impact assessments before implementing development proposals. Short-term financial considerations, therefore, almost invariably take precedence over the longer-term environmental implications of a development proposal. In South Africa, environmental impact assessments are undertaken according to the DEA & T's Integrated Environmental Management (IEM) procedure. The IEM procedure provides for extensive public participation in establishing the overall terms of reference for the impact assessment study. Despite the fact that the IEM procedure has been widely acclaimed, both in South Africa and internationally, there is no legal requirement for its application at present. It is recommended that IEM-based environmental impact assessments be mandatory along the entire coastline.

Lack of Control of Sensitive Coastal Areas

A mechanism is urgently needed to control potentially harmful activities in sensitive areas along the South Africa coastline. Such a mechanism has now been implemented in a pilot area along the Garden Route coast. It is recommended that these regulations be made applicable to all sensitive areas of our coast.

Inadequate Review of Administrative Actions

In South Africa, one minister or department cannot prescribe to another minister or department on the same level of government, or take another department to court. Furthermore, discretionary powers exercised by administrative bodies are generally not subject to independent review, even if such actions result in substantial environmental impacts. Consequently there is little control over administrative actions likely to cause environmental harm. It is recommended that this be opened for public debate as part of the general environmental policy process currently underway (CONNEPP).

Dominance of Private Rights over Public Interest

Roman-Dutch law, the basis of the South African legal system, strongly upholds private rights even though at times this may not be in the interest of society. This can adversely affect the effective implementation of ICZM. Ownership encompasses extensive rights to use property. The perception of many South African property owners and developers is that they have a right to develop rather than a right to apply for development. This issue should be debated as part of the current ICZM policy formulation initiative.

Compensation for Loss of Development Opportunity

Much of the zoning of land in South Africa, in particular in urban areas, took place before environmental issues were recognised as being important. The zoning of land entrenched development rights which are often in conflict with present environmental thinking. The Environment Conservation Act 73 of 1989 can be used to stop certain potentially harmful activities, but stipulates that compensation must to be paid to land-owners who may suffer loss as a result of limitations imposed in terms of the Act. Currently the government does not have sufficient funds to pay such compensation with the result that there is generally no effective way of protecting the public interest against individuals exercising private development rights. Expropriation subject to the payment of compensation based on the true nature of the land, that is on the basis of public open space value and not the "loss of opportunity" value, is a matter which requires serious attention. In addition, development rights should automatically be revoked after a few years.

Alienation of State Land in the Coastal Zone

Some areas of the seashore, such as the Admiralty Reserve and Coastal Forest Reserve, have traditionally been held in trust by the State for the benefit of the public. Unfortunately, other traditionally state-owned areas of coastal land e.g. harbours managed by the former South African Transport Services, have been privatised. This raises the possibility that "public property" could be alienated for exclusive private development and use. While accepting the need to promote opportunities for development and private initiative, the limited area of coastal land and the common property nature of many coastal resources nevertheless means that every effort should be made to retain state land as far as possible for the benefit of the general public.

Administrative Boundaries and Ecological Boundaries

In some cases, ICZM is hampered by the fact that administrative boundaries do not correspond to ecological boundaries. Responsibility for managing a single natural ecological system may, therefore, be divided between different authorities with inevitable coordination problems. In addition, awareness of the relationship between catchment land-use and coastal resources needs to be raised. This needs to be considered when Integrated Coastal Area Management (ICAM) plans are developed.

Lack of an Effective Marine Inspectorate

Inadequate law enforcement is a problem. Every effort should be made to strengthen the marine inspectorate. In addition, serious consideration should be given to enhancing cooperation between the marine law enforcement function of the DEA & T and the South African Police Service. This could involve the establishment of a national marine law enforcement unit, possibly in conjunction with the existing Water Police Unit or the Endangered Species Unit. The South African Police Service would be in a favourable position to enhance marine law enforcement due to the excellent infrastructure that already exists in the Service.

Coastal and Marine Research

Every effort should be made to ensure that the current SANCOR structures are maintained and that the current level of funding for coastal and marine research is not decreased any further. At the same time researchers should be encouraged to become involved in regional cooperative research programmes. The FRD should play a leading role in facilitating this, and particularly in accessing international funding.

Baseline Studies of Coastal Resources

Baseline studies to document coastal and marine resources have not been completed. Many layers of information are still lacking, especially in the former independent homelands. We need to know what we are managing and where the sensitive/important areas are. It is recommended that a programme be initiated to collect and synthesise this missing information. This should be used to develop decision-support systems to facilitate decision-making, especially at the local and provincial levels.

Plans for the Entire Coastline

A series of planning documents for the coast have been prepared, but some areas have not yet been covered, while others are outdated. These plans need to be expanded to cover the entire coastline and must be regularly updated. Such plans should also identify "no go" areas, as well as areas where specific kinds of developments will be encouraged.

Rationalise Coastal and Marine Parks

It is recommended that existing parks be reassessed, and new parks identified to ensure a representative system of coastal and marine parks. This evaluation process should be based on internationally recognised criteria, as well as taking local socio-economic considerations into account.

AVISION FOR THE FUTURE

From the above it is clear that there is much that still needs to be done as far as ICZM in South Africa is concerned. However, it is also abundantly apparent that South Africa, even though not a signatory of the Arusha Resolution, has made major advances over the last number of years towards implementing many of the recommendations made in that agreement. Perhaps the most significant and exciting development in ICZM in the history of South Africa has been launched recently. Over the last three years, a large number of national interest groups have developed and endorsed a participatory policy formulation programme. This has been approved by the South African government as part of their Reconstruction and Development Programme. This comprehensive programme is directed, for

the first time in the history of ICZM, by a fully representative Policy Steering Committee consisting of 50 percent government and 50 percent non-government groupings. The initial two year policy formulation phase will be followed by a three year implementation phase and will to a large extent address the shortcomings highlighted in the section above. What makes this programme so special is the emphasis on participation of all interest groups and the fact that some 25 percent of the entire budget (supplied by the British Overseas Development Agency) will be directed towards education and capacity building. Indeed, South Africa is poised on the brink of major advances in the field of ICZM over the next five years. It is predicted that South Africa will become a major force in the advancement of all spheres of ICZM in the Eastern African region and the African continent as a whole. At a national level, the Department of Environmental Affairs and Tourism is committed to the principles of ICZM. In collaboration with the coastal provinces and other stakeholders, it will expedite current initiatives and actively pursue new goals and strategies, ensuring that the coastal environment is adequately protected and used rationally to ensure benefits not only for this generation, but also for generations to come.

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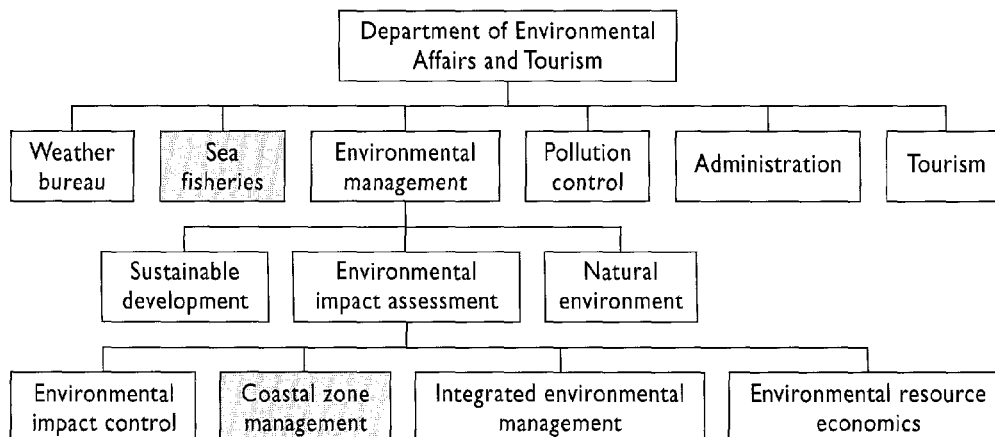
ANNEX I

National Departments

Agriculture
Arts, Culture, Science and Technology
Constitutional Development
Correctional Services
Education
Environmental Affairs and Tourism
Finance
Foreign Affairs
Health
Home Affairs
Housing
Justice
Labour
Land Affairs
Mineral and Energy Affairs
National Intelligence
Office of the Minister for Public Service and Administration
Office of the President
Office of the Public Service Commission
Public Works
South African National Defence Force
South African Police Service
South African Secret Service
Sport and Recreation
State Expenditure
Trade and Industry
Transport
Water Affairs and Forestry
Welfare

ANNEX II

Department of Environmental Affairs and Tourism – structure



ANNEX III

Conventions, treaties and protocols administered by the Department of Environmental Affairs and Tourism

Convention/treaty/protocol	Signed	Ratified	Went into force
Antarctic Treaty	1 December 1959		12 June 1961
Convention for the Conservation of Antarctic Marine Living Resources (CCAMLR)	11 September 1980	23 July 1981	7 April 1982
Convention on the Control of Transboundary Movements of Hazardous Waste and their Disposal (Basel Convention)	5 May 1994	(Acceded)	5 August 1994
Framework Convention on Climate Change	15 June 1993	Not yet	April 1994
Convention on Biological Diversity (CBD)	1993	2 November 1995	31 January 1996
Convention on the International Trade in Endangered Fauna and Flora Species (CITES)	1973 (No definite date available)	15 July 1975	13 October 1975
Convention on Wetlands of International Importance, especially as Water-fowl Habitat (Ramsar Convention)	12 March 1975	12 March 1975	21 December 1975
Convention on the Conservation of Migrating Fauna Species (CMS)	1 December 1991	29 February 1992 (Acceded)	
Convention on the Conservation of the World's Cultural and Natural Heritage Amended London Guidelines for the Environmentally Safe Management of Toxic Chemicals Protocol on Environmental Protection to the Antarctic Treaty (Madrid Protocol)	October 1991	3 August 1995	
Convention for the Conservation of Antarctic Seals (CCAS)	9 June 1972	15 August 1972	
Convention to Combat Desertification in those Countries Experiencing Serious Drought and/or Desertification, particularly in Africa	9 January 1995	Not ratified	
Convention on Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade (PIC Convention)	not signed		
Convention of the World Meteorological Organisation (WMO)	11 October 1947		23 March 1950
International Convention for the Conservation of Atlantic Tunas	14 May 1966	17 October 1967 (Adherence)	21 March 1969 (Effective)
Montreal Protocol on Substances that Deplete the Ozone Layer	Did not sign	15 January 1990 (Acceded)	14 March 1990
London Amendments to the Montreal Protocol		12 May 1992 (Acceded)	10 August 1992
Copenhagen Amendments to the Montreal Protocol		Not yet	
Vienna Convention for the Protection of the Ozone Layer	Did not sign	15 January 1990 (Acceded)	15 April 1990
International Whaling Convention(IWC)	December 1946		
Law of the Sea Convention		December 1982 (Adopted)	

ANNEX IV

Details of the Directorate of Resource Exploitation and Control and legislation applying to marine resources in Natal

The mission of the Directorate of Resource Exploitation and Control is to ensure, through effective marine law enforcement, the orderly exploitation, protection and sustainable utilisation of the marine resources of South Africa. To this end the functions resulting from marine control include, among others:

- Law enforcement patrols along the approx. 3 000 km coastline of South Africa, in order to enforce the Sea Fishery Act, 1988, and the regulations promulgated in terms of this act. This function includes quota control, enforcement of size limits, bag limits, closed seasons and closed areas, marine reserves restrictions on catching of certain species, catching gear and methods.
- Fishery patrol within the fishing zone, from the mouth of the Orange River to Ponta do Ouro, for the purpose of enforcement of the Act, Regulations, permit conditions and quota control.
- The provision of a patrol vessel fleet as an effective platform from which the fisheries law enforcement function is carried out at sea. The fleet consists of one deep sea vessel (range 200 miles), six medium patrol vessels (range 25–50 miles) and various ski-boats and inflatable craft for inshore patrols.
- The management and maintenance of twelve proclaimed fishing harbours at Still Bay, Arniston, Struis Bay, Gans Bay, Hermanus, Gordons Bay, Kalk Bay, Hout Bay, Saldanha, St Helena Bay, Berg River and Lambert's Bay (i.e. all harbours situated in the Western Cape).
- Inspections of fishing boats, fish processing plants, hotels, restaurants and any other place used for the storage or sale of fish or fish products.
- The manning of mass-meters at fishing harbours and landing points for the purpose of quota control.
- Special investigations in southern Africa in cooperation with the South African Police for the purpose of investigating organised crime syndicates and international smuggling of marine resources.
- The provision of an operations control centre for the coordination of all fishery law-enforcement patrols, to monitor all fishing vessel movements and to provide effective communication channels with patrol vessels, the South African Navy and Air force during joint law-enforcement operations.

The Directorate: Resource Exploitation and Control has a staff component of 323, of which 137 posts are utilised for law-enforcement, 60 for the operation of the patrol vessel fleet, 53 for harbour maintenance, eight for administration and 65 for general labour tasks.

Marine law enforcement personnel are based at the following stations:

Capc Town, Bredasdorp, Doring Bay, Elands Bay, Gans Bay, Gordons Bay, Hermanus, Hout Bay, Jeffreys Bay, Kalk Bay, Knysna, Kommetjie, Laaiplek, Lambert's Bay, Mossel Bay, East London, Port Alfred, Port Elizabeth, Port Nolloth, Saldanha, St Helena Bay, Still Bay, Struis Bay, Arniston and Yzerfontein.

Legislation - Natal Parks Board KwaZulu-Natal

The Natal Parks Board administers the Sea Fishery Act, 1988, and its regulations in respect of the commercial and recreational line fish fisheries, and monitors catches landed at Richard's Bay and Durban by crustacean trawlers. Utilisation of biological resources in tidal waters, the inter-tidal zone and fish caught from the sea shore are controlled by the Natal Parks Board and the Natal Fisheries Licensing Board in terms of the Natal Nature Conservation Ordinance 15 of 1974. The NPB also administers the Sea Fishery Act, 1988, and regulations in the three main marine reserves off the Natal coast, namely Trafalgar (south coast) and the St Lucia and Maputoland Marine Reserves, which were promulgated to protect the southern-most coral reefs on the east coast of Africa and certain line fish breeding stocks.

Legislation - Cape Province

Cape Nature Conservation and, since June 1995, the Chief Directorate Sea Fisheries, administers the following acts with regard to the marine environment:

- Sea Fishery Act of 1988 (Act No. 12 of 1988) and regulations promulgated
- Sea Birds and Seals Protection Act of 1973 (Act No. 46 of 1973)
- Territorial Waters Act of 1963 (Act 87 of 1963) – with regard to the declaration of the fishing zone

The following laws applied in the former Republics of Transkei and Ciskei:

- Environmental Conservation Decree of Transkei, 1992 (Decree No. 9 of 1992)
- Nature Conservation Act of Ciskei, 1987 (Act No. 10 of 1987)

The above laws will be incorporated in the Sea Fishery Act, 1988. Thereupon the only exclusions from the Sea Fishery Act, 1988, would be the tidal water, inter-tidal zone and sea shore of KwaZulu-Natal and an area bordering on the sea which has in terms of the National Parks Act, 1976 (Act No. 57 of 1976), been declared a national park or part of such park, or which has been declared a lake area under the Lake Areas Development Act, 1975 (Act No. 39 of 1975).

ANNEX V

South African Network for Coastal and Oceanographic Research (SANCOR)

The South African Network for Coastal and Oceanic Research (SANCOR) coordinates, facilitates, stimulates, reviews and endeavours to resource marine science, engineering and technology in South Africa, to promote the wise and informed management of the use of the marine and coastal environments.

Terms of Reference

To achieve its objective SANCOR takes the lead in

- Maintaining and providing a forum for interaction and collaboration to exchange information on regional, national and international developments in marine science, engineering and technology (MSET), and where issues can be brought for debate and the development of approaches for their resolution.
- Contributing to strategies for MSET which take into account present and expected future demands on the marine and coastal environments and resources in southern Africa.

- Coordinating and integrating MSET activities aimed at achieving specific objectives, *inter alia* by stimulating appropriate inter-disciplinary and inter-institutional activities.
- Contributing to the development and optimal utilisation of financial, technical and logistical resources.
- Promoting capacity building, leading to full participation in MSET activities by all sectors.
- Marketing the benefits of MSET and promoting the use of its findings in the management of South African marine resources.
- Act as a "broker" between funding agencies, both national and international, and agencies capable of executing MSET projects.

Composition of SANCOR

To fulfil the above objective and terms of reference, SANCOR is comprised of three components with overlapping functions:

- forum
- leadership group
- coordinating groups

Forum

The SANCOR forum is a broadly based, consultative, communication and advisory body accountable to the MSET community and to the leadership group.

The membership of the forum:

- Consists of accredited representatives of institutions identified at the founding meeting.
- Can be expanded to include accredited representatives of other institutions wishing to be members.
- Includes members of the leadership group.
- Includes chairpersons of coordinating groups.
- Includes observer participants.
- Is representative of regions and disciplines.

The current membership comprises fifty-five organisations. The forum meets at least once a year in one of the regional coastal centres.

The role of the forum is to:

- Serve as a platform to exchange ideas and to discuss topical issues in MSET.
- Receive and comment on report-back by chairpersons of coordinating groups.
- Consult, communicate and advise on marine science, engineering and technology.
- Promote the implementation of MSET findings in the management of South African marine resources.
- Receive report-back from and comment on the activities and initiatives of the leadership group.
- Make inputs to future marine science, engineering and technology strategy.
- Initiate and advise on new thrusts.

The forum elects four members to the leadership group, one of whom will be the chairperson of the forum.

Leadership Group

The organisational activities emanating from the leadership group are funded by the Foundation for Research Development (FRD) and the Department of Environmental Affairs and Tourism (DEA & T). The leadership group will be accountable to them and will be responsive to their needs. The leadership group will also be responsible for representing the collective interest of members of the forum. Other stakeholders are welcome to join this initiative. It is accepted that there are other stakeholders who operate autonomously of SANCOR and with whom collaboration is essential. The composition of SANCOR can be changed subject to approval by the stakeholders.

The leadership group:

- Is composed of ten members serving staggered terms of office for a maximum period of two consecutive years at a time. Six members will be appointed by the FRD and DEA & T and four members, including the forum chair, will be nominated by the forum.
- Is mandated to expand the membership when necessary.
- Has the power to co-opt members for specific purposes or tasks.
- Will be as representative as possible of the different regions, disciplines and the composition of the South African society.
- Will meet frequently.
- Needs four members for a quorum for a meeting.

One of the members of the leadership group is appointed by the FRD and DEA & T as an ex officio secretary for a period of three years at a time.

The role and functions of the leadership group are to:

- Ensure that the objectives of SANCOR are met.
- Consult with the forum as appropriate.
- Provide continuity, direction and leadership.
- Assess and review programmes and products.
- Make inputs to MSET strategy.
- Promote the use of MSET findings in the management of South African marine resources.
- Provide advice on for example the overall priorities, gaps and funding.
- Consult, inform and lobby members of the public and decision makers as appropriate.

Coordinating Groups

The coordinating groups:

- Comprise scientists and other interested persons sharing a common interest and actively involved in a defined topic of research (irrespective of whether or not they are directly funded by The Sea and the Coast Programme).
- Promote interaction amongst people with a joint interest in a defined topic.
- Secure to communicate, discuss and develop findings of scientists involved in research on that topic.
- Provide a forum for networking with groups including those which may be active outside The Sea and the Coast Programme.
- Assist with the identification of research needs.
- Invite additional persons with relevant expertise to participate.
- Report to Thrust Management Groups and/or Programme Advisory Committee of the programme.

Whenever a critical mass of research effort is identified a motivation for the establishment of such a specific coordinating group will be considered.

Task Groups

Task groups are set up as and when necessary to do specific tasks. These are usually of limited duration.

Programme Management

The Sea and the Coast Programme

A marine research and development programme entitled "The Sea and the Coast" was initiated by the FRD and DEA & T and developed by the whole marine research community after much consultation. It aims to promote the wise use of marine and coastal resources through appropriate marine science, engineering and technology. The emphasis on application is intentional and it is expected that the programme will make meaningful contributions to national or regional economies through enhancing the information support available for decision-makers in the public and private sectors.

For the sake of convenience, the programme has been developed as separate but interacting thrusts which focus on:

- communities and living marine resources
- the coast as a resource
- offshore living resources and society
- mariculture

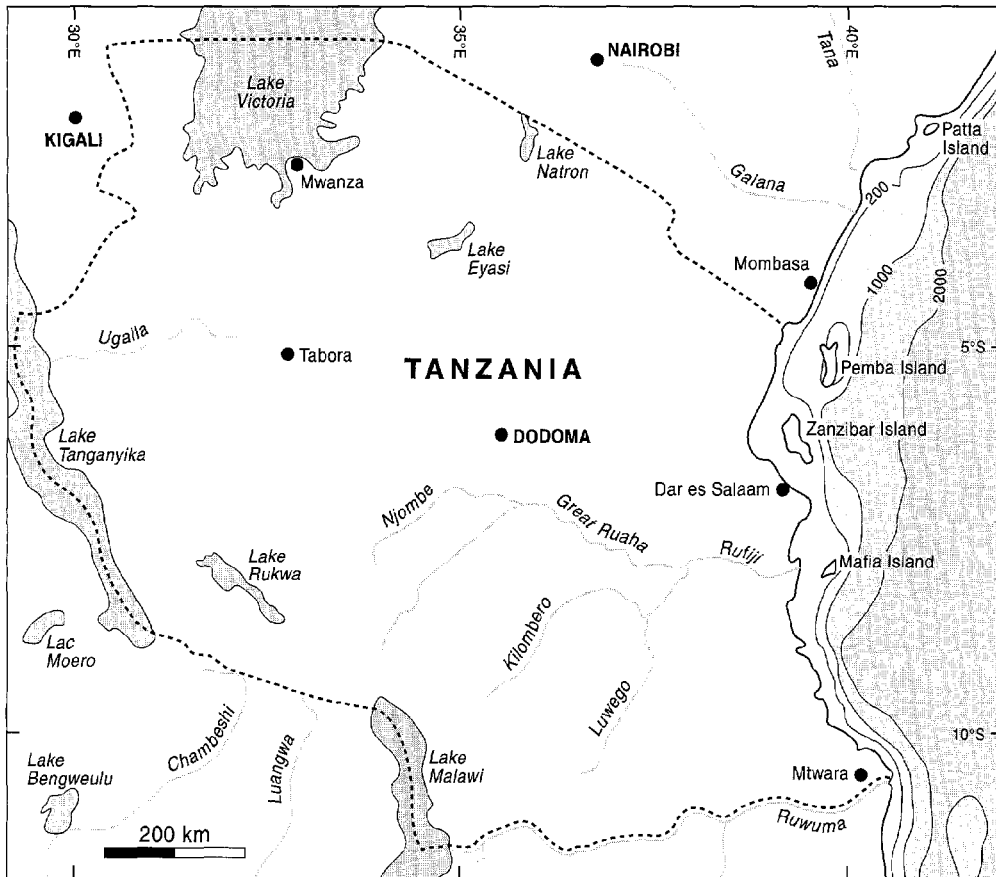
The Marine and Coastal Resources Programme

A programme developed as part of the FRD's new portfolio of programmes, complementary to the aims and objectives of The Sea and Coast, but having a broader focus and aimed at enhancing competitive research in SET, corrective action and academic-government/industry cooperation. In addition to the thrusts listed above this programme has the following thrusts:

- biodiversity and conservation
- ocean dynamics and coastal geomorphology
- weather and climate

These programmes are managed by a Programme Advisory Committee and Thrust Management Groups. The terms of reference of these groups are available.

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Integrated Coastal Zone Management in Tanzania

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INTRODUCTION

Tanzania lies south of the equator, between latitudes 4°S – 11°45'S and 29°21'E – 40°25'E, covering an area of 945 200 km². The coastline of Tanzania is 800 km long and the land area of the coastal zone is approximately 30 000 km². The width of the continental shelf ranges between four and 35 km. The islands within the continental shelf include Unguja, Pemba and Mafia, as well as numerous small but beautiful islands and reefs such as Latham, Tutia, Songo Songo and Mbudya. About two thirds of the coastline has fringing reefs, often close to the coastline and broken by river outlets such as the Rufiji, Pangani, Wami and Ruvuma. The coastal ecosystems include major estuaries, mangrove forests, coral reefs, sand beaches, cliffs, seagrass beds and muddy tidal flats. These ecosystems sustain a tremendous diversity of marine life and are an important source of subsistence for most coastal communities.

The total population of Tanzania is about 27 million, and the coastal population accounts for about 16% of the total. The largest concentrations of the population are in coastal urban areas, particularly Dar es Salaam, Zanzibar, Tanga and Mtwara. The combination of poverty, rapid population growth, poor understanding and management of resources and limited institutional capacity has resulted in a number of environmental problems in some coastal areas. The main coastal environmental problems are: marine pollution, over-exploitation of resources and destructive fishing methods, coastal erosion, and loss of coastal and marine biodiversity.

In an attempt to address these and other related environmental issues, the then Ministry of Tourism, Natural Resources and Environment of Tanzania, the University of Dar es Salaam and the Swedish Agency for Research Cooperation with Developing Countries (SAREC) organised a workshop and a policy conference on Integrated Coastal Management in Arusha, 22–23 April, 1993. The workshop and policy conference were co-sponsored by the United Nations Food and Agriculture Organisation (FAO), Inter-governmental Oceanographic Commission (IOC), Swedish International Development Authority (Sida), United Nations Environment Programme (UNEP) and the World Bank. The Workshop provided an analysis of the environmental problems in the coastal areas of East Africa and the Western Indian Ocean.

Problems discussed included pollution; coastal erosion, over-exploitation of renewable resources, loss of marine biodiversity and unique habitats, and gaps and overlaps in laws and institutional responsibilities. A number of technical recommendations were agreed by the participants. The recommendations were related to policies, laws and institutions, planning, regulations, incentives and disincentives, public education and capacity-building, involvement of local communities, research, public investments and international organisations and donor agencies. The conference discussed and considered the recommendations of the workshop and provided policy guidance on addressing the issues through an

ICZM approach to the management of coastal and marine resources and an inter-and multi-disciplinary approach to scientific research. The governments of the region were also urged to ratify, if they had not already done so, the Nairobi Convention on Protection, Management and Development of the Coastal and Marine Environment in the Eastern Africa Region and related protocols, as well as other conventions relevant to coastal zone management.

The Government of Tanzania was given the responsibility of coordinating the inter-sessional initiative on ICZM within the region and of working closely with the Government of the Seychelles for the preparation of the next Ministerial Conference on ICZM in Eastern Africa and Island States in October, 1996.

Three years after the Arusha Conference, it is worth reflecting on the successes and failures of Integrated Coastal Zone Management in Tanzania, based on the recommendations and resolution of the Arusha Conference.

The first part of this paper provides a description of management activities undertaken in the coastal zone during the last three to five years. The areas of institutional and legal framework, law enforcement, investments and funding, stakeholder participation, capacity building, research and monitoring have been covered. This is followed by an analysis of these aspects in relation to what has taken place in the country during those years. The paper closes with a discussion on what needs to be done to maintain or improve the situation.

DESCRIPTION OF COASTAL ACTIVITIES

Institutional Framework

There are numerous institutions in the country involved in research, planning and management of coastal and marine resources as well as enforcement of laws and regulations relevant to the marine environmental issues, as shown in Table 1. These institutions have been facing similar problems, such as limited funding and human resources and lack of coordination. They are sometimes forced to make decisions based on political pressure. They are also characterised by inability to carry out duties, undefined demarcation of responsibilities and non-involvement of relevant stakeholders in their decisions. In an attempt to address some of these problems, the "Third Phase" government has made significant changes in the institutional framework. These include:

- *Institutional changes.* Environmental issues have been shifted from the former Ministry of Tourism, Natural Resources and Environment to the Vice-President's Office. Consequently, the Division of the Environment and the National Environmental Management Council (NEMC) are now under the Vice-President's Office.
- *The abolition of regional and district development committees.* During the 1996/1997 budget session, the Government abolished regional and district development committees so as to consolidate powers in district councils. This is aimed at enhancing responsibility and bringing services closer to the people.
- *Establishment of the Mafia Island Marine Park (MIMP).* The park was officially gazetted in April, 1995. A number of important decisions concerning the operations of the park have been taken in the past year. These include the appointment of the Board of Trustees, the establishment of participatory framework for villages and staff training.

- *Development of area-specific coastal zone management programmes.* Several area-specific coastal zone management programmes are being implemented or are planned. Those that are being implemented include the Tanga Coastal Zone Conservation and Development programme and the Rural Integrated Project Support (RIPS) for the Mtwara and Lindi Regions. Those at the planning stage include Kunduchi Integrated Coastal Area Management programme (KICAMP) and Menai Bay Conservation Area in Zanzibar.

Table 1. Key institutions involved in the administration of coastal and marine activities in Tanzania

TANZANIA MAINLAND	ZANZIBAR
<p>National level (ministries) Vice President's Office Prime Minister's Office Attorney General Office Natural Resources and Tourism Land, Housing and Urban Development Trade and Industry Water Agriculture and Livestock Development Foreign Affairs Energy and Mineral Resources Health Communication and Transport Home Affairs</p> <p>Local government Regional Administrative Secretaries District Councils Village Councils</p> <p>Parastatals Investment Promotion Centre National Planning Commission National Land Use Planning Commission National Museum National Environmental Management Council Tanzania Petroleum Development Corporation Tanzania Fisheries Corporation Tanzania Harbour Authority</p> <p>Research, training and development institutions University of Dar es Salaam Tanzania Fisheries Research Institute (TAFIRI) Commission for Science and Technology (COSTECH) Kunduchi Fisheries Training Institute Mbegani Fisheries Development Centre</p> <p>Non-governmental organisations Wildlife Conservation Society (WCST) World Wide Fund for Nature (WWF) Frontier</p>	<p>Central government (ministries) Water, Construction, Energy, Lands and Environment Agriculture, Livestock and Natural Resources Information, Culture, Tourism and Youth Communication and Transport Planning, Minister of State Office of the President Planning Commission – President's Office Finance</p> <p>Local government Regional and District Development Office Regional and District Offices – responsible for Natural Resources, Trade and Industry, Health Energy and Water and Mineral Resources Officer District Council District Administrative Officer Village Council</p> <p>Parastatals Zanzibar Tourist Corporation (ZTC) Zanzibar Fisheries Corporation (ZAFICO) Zanzibar Wharfage Zanzibar Investment Promotion Agency (ZIPA)</p> <p>Research institutions University of Dar es Salaam Zanzibar Agricultural Council</p>

Legal Framework, Policies and Enforcement

The Government of Tanzania, in its attempt to address the environmental problems currently facing the country and ensure sustainability of coastal resources, has issued or reviewed a number of laws and policies. Despite problems in their implementation, their existence alone provides evidence of government commitment to management and conservation of coastal marine resources. The legislation and policies issued include:

- *Marine Parks and Reserve Act (1995)*. The Act provides for the declaration of marine parks and reserves, designation of zones and preparation of management plans for the conservation and sustainable utilisation of marine and coastal resources.
- *Environmental legislation for Zanzibar*. The environmental legislation for Zanzibar was approved by the House of Representatives in February, 1996 and signed into law by the President of Zanzibar in July, 1996.
- *National Conservation Strategy for Sustainable Development (NCSSD)*. The NCSSD aims to integrate environmental issues into the development planning process. The strategy realises that environmental issues are multi-sectoral and cross-sectoral in nature, and thus require an institutional and legal framework which ensures maximum coordination and enforcement amongst institutions. Since conservation and development issues are strongly interlinked, sectoral activities must be mutually supportive and aimed at a common goal.
- *National environmental action plan (NEAP)*. The NEAP issued in 1994 is the country's first step towards integrating environmental issues into national planning and development. The NEAP has also produced complementary, sector-oriented strategies for land use, agriculture, water, urban areas, industry, wildlife and biodiversity, forestry, fisheries, energy, mining, transport and communications, tourism, trade, science and technology.
- *The Zanzibar Nature Conservation Trust (ZNCT)*. The establishment of the ZNCT was approved by the Government of Zanzibar. The Trust draws its membership from a wide spectrum of government and non-government organisations. The Trust intends to support the Government in undertaking conservation activities through formal agreements.
- *The national environmental policy for Tanzania*. The long awaited draft of the policy is in the final stage and is expected out soon. The Government has promised to distribute copies of the draft to all stakeholders for their comments.
- *Ratification of international environmental conventions*. The Tanzanian Parliament in its sitting in February, 1996 ratified three coastal zone-related conventions. These were the Nairobi Convention on Protection, Management and Development of the Marine and Coastal Environment in the Eastern Africa Region and related protocols, the Convention on Biological Diversity and the International Convention on Climate Change. The President of Tanzania signed the Instruments of Ratification for the three conventions in March, 1996.

Investment and Funding

A number of activities and initiatives in the area of marine and coastal environment are currently ongoing or have been completed. These activities, as shown in Table 2, cover a wide range, from capacity building – institutional, human, technical and research – to creation of databases and management of resources. They were initiated through national, regional or international efforts. Most of these activities are donor-funded, with some donors concentrating on specific areas. For instance, NORAD has supported a number of activities in Tanzania in the area of coastal and marine environment. These include research, training, capacity building and continuing support for implementation of the mangrove management plan. Sida-SAREC is currently supporting several institutions and activities related to coastal and marine environment. Research, human and institutional capacity building, establishment of management plans and strategies are among the areas receiving Sida-SAREC support.

Owing to financial constraints, government involvement is mainly in initiation, planning and provision of most of the required manpower and working space, as well as some facilities for implementation of coastal and marine environment projects.

The contribution by the private sector to investment and funding for coastal and marine environmental conservation projects is still small. One exception is the project undertaken by a company known as "Fox Tracks". It has developed a sea turtle hatchery at Mkwaja Ranch and rears the juveniles for release to the sea.

Stakeholder Participation

There are many stakeholders of the coastal zone in Tanzania, including the local communities, business community, institutions and organisations. These stakeholders need to be involved in the formulation of coastal and marine policies and in planning and implementation of coastal and marine-related activities. Their participation in the process is important to ensure their support of project activities. The national conservation strategy for sustainable development (NCSSD) and the national environmental action plan (NEAP) state very clearly the need to involve stakeholders in conservation and development activities.

Most recent coastal and marine related programmes in the country have used a participatory approach at different levels of their planning and implementation. They are listed below:

- *Mafia Island Marine Park (MIMP)*. A management plan for the MIMP was developed after extensive consultation and input from stakeholders who will play a continuing role in the decision-making process. The structure of the MIMP is designed to involve the local communities and to ensure that there is adequate consultation and participation. MIMP management intends to develop a detailed strategy to liaise with its local communities.
- *Tanga coastal zone conservation and development programme*. In this programme, stakeholders, particularly the local communities, are involved in identifying the problems and taking actions. The programme provides training in a wide range of skills and appropriate technical methods for government officials, extension workers and villagers. Community based initiatives taken so far include new by-laws, gear inspection, mangrove planting, reef zoning and closures.

Table 2. Donor-funded marine programmes in Tanzania

Funding agencies	Local organisation	General objectives (duration) and description
CIDA (US\$800 000)		Assistance for the development and management of marine and coastal resources of Zanzibar To provide professional services and strengthening staff capabilities in fish stock assessment, environmental impact assessment and coral reef monitoring. To strengthen the extension and marine science capability of the Institute of Marine Science.
Government of Denmark (US\$0.3 m)	DoE	Support for environmental policy formulation and an introduction of cleaner production technologies (1994–1995)
Government of Denmark (US\$0.3 m)	IRA	Preparation of an environmental impact assessment training manual (1994–1995)
European Union	IMS	Interlinkages between Eastern African coastal ecosystems (1992–1995). To elucidate the functional interdependence of mangroves, seagrass beds and coral reefs, for the purposes of contributing to the scientific knowledge that is necessary for the formulation of sound management and exploitation policies concerning the coastal fringe ecosystems in Eastern Africa.
European Union	IMS	Macrobenthos of East African mangroves (1997–1999) To study the population dynamics, reproductive biology, larval dispersal and recruitment to adult populations, and long-time migrations of commercially important mangrove fauna of Eastern Africa.
European Union	IMS	Anthropogenically induced changes in ground water outflow and quality and functioning of Eastern Africa near shore ecosystems (1997–1999) To assess the significance of changing inputs of ground water and the anthropogenic substances it contains for East African near shore ecosystems.
FAO (US\$5.4 m)	Regional Remote	Land cover mapping of East Africa based on satellite remote sensing (1994–1997) Production of land cover map at 1:250 000 Centre and 1:500 000 scale, based on satellite remote sensing and strengthening of of Nairobi indigenous capacities for land cover mapping and for monitoring of changes at the regional and country levels, for the purpose of maintaining a new geographic database.
FAO (US\$84 000)	COLE	Environmental legislation for Zanzibar (Jan 1994 – June 1995) To assist the Revolutionary Government of Zanzibar to identify and prioritise areas for legislative reform and draft new legislation in the priority areas. Furthermore to identify an appropriate institutional structure for implementation.
FAO/UNDP	University Library	Information support for biodiversity Creation of bibliographic environmental database
FAO/GEF/UNDP (US\$10 m)	SCF/NEMC	Institutional support for the protection of East African biodiversity. (June 1992 – Dec 1996) Institutional capacity building through education, in-service training, awareness and on-the-ground conservation activity.
FINIDA (US\$1.8 m)	COLE	Zanzibar integrated land and environmental management project (1994–1996) Capacity building for COLE in the areas of land management, land use planning and environment.
FINIDA (US\$14.2 m)	Mtwara and Lindi regional administration	Rural integrated project support (RIPS), Mtwara and Lindi regions (1994–1998) To reform, strengthen and create decentralised rural institutions that can interact with local people and assist them to adapt, secure and diversify their livelihoods.

Funding Agency (donor organisation)	Local Organisation	General Objectives (duration) and description
IRISH AID (US\$2.2 m)	Tanga regional administration	Tanga coastal zone conservation and development project (1994-1997) Capacity building for integrated management of the coastal zone, by working with regional resources management and planning authorities and coastal communities.
Government of the Netherlands (US\$2.4 m)	Department of Environment, Zanzibar	Netherlands assistant to the Department of Environment (NADE), Zanzibar (1993-1996) Institutional capacity building with emphasis on environmental education, chemical waste management and coastal erosion.
NORAD (US\$200 000)	Division of Environment	Institutional building of the Division of Environment (1994) Assist the division to improve its performance by providing staff training, office building, transportation facilities and office equipment.
NORAD (US\$ 1.1 m)	Forest and Beekeeping Division	Mangrove forest management project (1994-1997) To enhance the contribution of the mangrove ecosystem to the national and local economy by sustainable management and controlled use of the resources. One important component of the project is the initiation of community-based initiatives for the management of the forests through a partnership between the community, District Councils and Forestry Division.
NORAD (US\$600 000)	Fisheries Division of the Ministry of Natural Resources and Tourism	The Mafia Island Marine Park (1994-1997) To create and implement programmes for the conservation of the marine ecosystems around Mafia Island through sustainable use of its resources by the residents of Mafia Island. Material support for the demarcation of the park area and zones, the patrol, monitoring, research, buildings and infrastructure.
Sida (US\$2.6 m)	NEMC	National Environment Management Council (1993-1996) To assist NEMC in developing capability for execution of its main functions and responsibilities.
Sida	NEMC	Kunduchi Integrated Coastal Area Management programme (1997-) The project will concentrate on awareness, information, training, applied research on coral reefs, mangroves and sand/limestone mining, as well as an analysis of the socio-economic reasons behind dynamite fishing, beach erosion, mining and marine pollution.
Sida-SAREC	IMS/Dept. of Botany	Sweden-Tanzania bilateral marine science programme and Eastern Africa regional marine science programme. To assist Tanzania in building research capability that eventually will provide a basis for sound environmental management and a platform for future development. To strengthen the capacity to carry out research concerning the sustainable use of coastal and marine resources and environmental management of the coastal zone.
UNDP (US\$400 000)	NEMC	Establishment of Environmental Information Centre at the National Environment Management Council (1992-1995) To establish an Environmental Information Centre with computerised and non-computerised techniques of data gathering, processing, storage and dissemination of information.
UNDP (US\$696 000)	Dar es Salaam City Council	Managing the sustainable growth and development of Dar es Salaam City The project's objective is to promote environmentally sustainable development and growth in Dar es Salaam.
UNDP/GEF	IRA	The East African coastal biodiversity project (1992-1995) The study has three components: socio-economy of forestry, climate and hydrology, and mapping and database. The forest resource mapping sub-component involved among others the following activities: - Compilation of relevant maps available for the Pugu/Kazimzumbwi coastal forest - Collection of multi-temporal remote sensed data - Interpretation of SPOT Satellite data

UNEP/FAO	NEMC and COLE	Assessment and control of pollution in the coastal and marine environment of the Eastern African region (EAF/6) To increase the capability of the Eastern African states to assess and control marine pollution.
World Bank	Division of Forestry and Beekeeping/IRA	The Tanzania Natural Resource Information Centre (TANRIC) To collect, organise and develop a computerised information system to store, manipulate and maintain both point and spatial data on natural resources and environment, as well as to act as repository for published reports of environmental information for Tanzania.
World Bank	IRA	National reconnaissance level land use and natural resources mapping (NRLNRM) The project aims at providing countrywide baseline forest resources information regarding forest areas and forest types, providing baseline information about other land uses particularly agriculture, facilitating an assessment of natural resources and land use changes over time, relating the changes to possible causes. The project will be utilising Landsat TM (for Tanzania Mainland) and SPOT (for the islands of Unguja and Pemba) Satellite data sets to produce land use and land cover maps for the whole country at the scale of 1:250 000.

- *Rural integrated project support (RIPS) for the Mtwara and Lindi regions.* This project aims to reform, strengthen and create decentralised rural institutions that can interact directly with local communities in diversifying their livelihoods.
- *Menai Bay conservation area, Zanzibar.* The local communities around the bay were involved in the planning stages of the project and are currently being consulted in the development of the management plan.
- *Kunduchi integrated coastal area management programme (KICAMP), Dar es Salaam.* The KICAMP extensively used the participatory approach during its planning process. All stakeholders, including the local community, business community and institutions, were involved in planning and in formulation of the project proposal. A logical framework analysis was used during the process.

Capacity Building

Both human and technical capacity to manage the coastal and marine environment is still low in Tanzania. However, several efforts are currently being made to address these problems as described below.

Short-term Training

A number of national and regional workshops, seminars and conferences have been organised in Tanzania in recent years. They involved different interest groups, including decision-makers, academicians, technicians, students, the local community and the business community. These training activities covered a wide range of subjects such as coral reefs, seaweed farming, coastal zone management, beach erosion and physical oceanography (Table 3). They have been instrumental in laying the foundation for cooperation among national and regional institutions, promoting the use of the same or comparable techniques in field work and laboratory studies, as well as contributing to greater awareness and dissemination of information.

Table 3. Workshop/seminars/conferences related to coastal and marine issues undertaken in Tanzania in the period 1993–1996

Regional Intercalibration Exercise on Nutrient Analysis	SAREC/IOC	5–16 April, 1993
Planning Workshop on an Integrated Approach to Coastal Erosion, Sea level Changes and Their Impacts	IOC/UNEP/ WMO/SAREC	17–21 Jan, 1994
Regional course on Algal Phycology, Cultivation and Nitrogen/ Carbon Metabolism	SAREC	19–23 Sep, 1994
The Third Session of the Editorial Board of the International Bathymetric Chart of the West Indian Ocean (IBCIWO)	IOC	3–7 Oct, 1994
Regional Basic Course in Marine Zooplankton and Fish Larvae Ecology	SAREC	17–28 Oct, 1994
Physical Oceanography Workshop	SAREC	12–13 Nov, 1994
Training course on Nutrient Analysis and Water quality Monitoring	IOC/UNEP/FAO	21–26 Nov, 1994
Workshop on the Conservation of Menai Bay	WWF	2–4 May, 1995
Tanzania National Workshop on Integrated Coastal Zone Management	SAREC/World Bank	8–12 May, 1995
Marine Sciences Curriculum Workshop	CIDA	12–15 June, 1995
Workshop on Principal and Methods of Sciences and Environmental Education	CIDA	18–22 Sep, 1995
Workshop on Socio-economic and Environmental Impact of Seaweed Farming on the East Coast of Unguja, Zanzibar	CIDA	3–5 Oct, 1995
Regional Workshop on Social and Cultural Aspects of Integrated Coastal Zone Management in Eastern Africa	SAREC	9–12 Oct, 1995
Regional Workshop on Laboratory Safety and (GLP) "Good Laboratory Practice"	SAREC	7–12 Jan, 1996
Regional course in Ecology and Physiology of Tropical Seagrasses	SAREC	12–18 Feb, 1996
Scientific Data Presentation Course	SAREC	18–22 March, 1996
Regional Workshop on Phytoplankton Primary Production and Bacterioplankton Secondary Production Methods	SAREC	26–29 March, 1996
Workshop on Cooperative use of Research and Training vessels in East Africa	FAO	May, 1996

Long-term Training

A number of Tanzanians have been trained abroad up to M. Sc. and Ph. D. levels through scholarship programmes provided by various international organisations such as Sida, SAREC, CIDA, NORAD, AIDAB, British Council, GTZ and JICA. Recently, long-term training in marine sciences, in which the student spends most time in his or her country to work on a local research problem, has become common. There are two modes of training under such an arrangement. In the first, a candidate is registered at an overseas university, data collection is undertaken in the home country, and data analysis and work on the thesis is done at the university. In the second version, a candidate is registered at the University of Dar es Salaam and conducts research and part of the data analysis there. The remaining

analysis, literature reviews and thesis write-up are done in overseas universities. SAREC, through bilateral and regional marine sciences programmes, has been providing M. Sc. and Ph. D. training using both modes.

Trained manpower capacity in marine sciences at the University of Dar es Salaam has continued to improve as several members of the staff have completed their Ph. D. studies. In mid-July, 1995, only one researcher at IMS had a Ph. D. degree, and currently there are six staff members with a Ph. D. at the Institute and three others are in the last year of their doctoral programmes. Staff development is also improving at the Department of Zoology and Marine Biology.

As a result of these efforts, the country now has many more marine scientists available to address some of the research needs of the coastal zone.

Equipment

The problems of the training and research, as well as institutional infrastructure, are well documented and so are the causes of these problems. These include limited scientific equipment, transport and communication snags, electricity and water interruptions and lack of laboratory and office space. Despite its limited resources, the Government has taken steps to address some of these problems. However, the majority of contributions to rectify this situation have come from the donor community. For example, NORAD and the Dutch Government, respectively, have provided to the Division of Environment of the Union Government and the Department of Environment of the Zanzibar Government, support in terms of equipment, facilities, vehicles and office expansion. Moreover, Sida-SAREC, through its bilateral and regional programmes, has provided IMS and the Department of Botany with scientific equipment, including a spectrophotometer, boats, pH meters, inverted microscope, pressure gauge, to mention just the few. Video production facilities have also been granted to IMS by CIDA.

Attention has also been paid to improving library facilities at some institutions through increasing book donations and providing funds for journal subscription. A number of organisations have provided support to different government institutions in matters related to library services. DANIDA is assisting the UDSM Library in the establishment of an environmental database, the Environmental Information Centre at NEMC is funded by UNDP, and book and journals have been donated to various institutions by Sida-SAREC and the British Council.

Research and Monitoring

Research in marine sciences in Tanzania is being carried out mostly by the University of Dar es Salaam, government institutions such as the Tanzania Fisheries Research Institute (TAFIRI), consulting organisations and to a lesser extent by individuals. In the recent past, a number of collaborative research projects have been undertaken, primarily by the institutes and departments of the University of Dar es Salaam in collaboration with universities overseas.

Research Programmes

- *Sida-SAREC Sweden-Tanzania bilateral and East African marine science programmes.* The research projects covered under these programmes include studies on the environmental impact of seaweed farming, distribution and concentration of anthropogenic toxins

in coastal ecosystems, population dynamics of lagoon fish, nutrient dynamics in coastal waters, coastal hydrodynamics, mangrove distribution and productivity, carbon and nitrogen metabolism of marine algae, waste water treatment by cultivation of algae, coral reef ecology, and marine geology and geochemistry. Most of these studies were carried out at Chwaka Bay and Paje on the eastern coast of Zanzibar.

- *Canadian International Development Agency (CIDA)*. The research components of the CIDA-funded projects concentrated on the social and environmental impact assessment of seaweed farming in Zanzibar, artisanal fishery and a holothurian (sea cucumber) stock assessment, as well as the impact of sewage on the reefs off Zanzibar Town.
- *European Union (EU)*. The EU-supported the research project titled "Interlinkages between Eastern African coastal ecosystems", where several studies were carried out on species composition and the relative abundance of fish and macro-crustaceans in the mangroves and seagrass habitats, nutrient dynamics, hydrography and phytoplankton primary production in the mangrove and seagrass ecosystems.
- *Frontier*. The Frontier Tanzania project, a joint activity between the UK based Society for Environmental Exploration and the University of Dar es Salaam, has carried out a number of research projects on coastal forests and on ecology of coastal marine environments on Mafia and Songo Songo Islands. Part of the funding was obtained from NO-RAD.
- *Other organisations*. A number of feasibility studies have been supported by different organisations, for example, the WWF provided funds for a study on ecological parameters of Menai Bay and a socio-economic status of communities around the bay, while the Dutch government, through the NADE project, funded a survey of beach erosion problems on Unguja Island.

Monitoring Programmes

- *Coral reef monitoring programme*. Some reefs around Unguja Island have been selected for long-time monitoring of their status. This programme, which was initiated three years ago, is undertaken jointly by IMS staff and Canadian experts. The Tanga coastal zone conservation and development programme has been training villagers to undertake regular monitoring of the health of the reefs.
- *Water quality monitoring programme*. One of the main recommendation of the series of training workshops organised jointly in the early 1990s by IOC and SAREC, was to initiate a water quality monitoring programme in the western Indian Ocean region, with a maximum of six sampling stations in each country. The parameters to be sampled are nutrients, dissolved oxygen, human pathogens, total suspended solids, phytoplankton pigment, temperature, pH and salinity. The funding for the programme has been approved and work should begin this year.

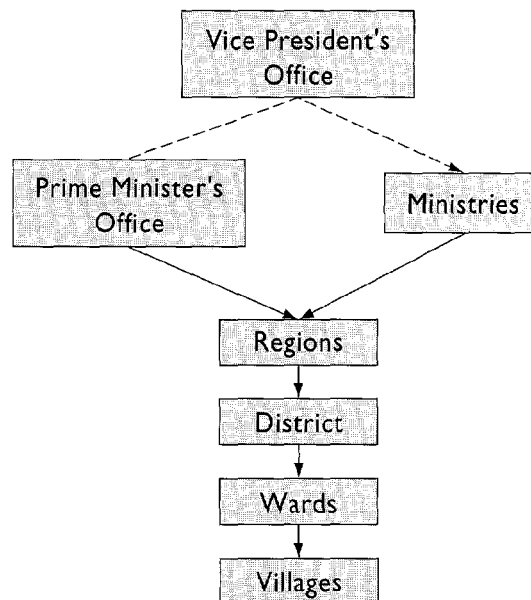
CRITICAL ANALYSIS

Institutional Framework

According to Scura *et al.* (1992), effective and efficient management system must embody integration and coordination. That is, the planning and implementation processes must be multi-disciplinary and integrate all relevant issues, since management actions will have to be implemented by various sectoral agencies. The responsibilities of individual institutions involved in coastal and marine issues have not been rationalised in Tanzania. The current division of responsibilities, which lacks strong coordination, has resulted in overlaps in research and investigations, unnecessary expenditure of labour and money, and disputes between institutions engaged in marine management. While sectoral institutions acknowledge the importance of coordination, they are still putting forward proposals to strengthen and expand their individual responsibilities. For instance, in the NCSSD, NEMC is recommending a wide range of responsibilities for itself, including setting standards, monitoring, coordination, and preparing and approving EIA guidelines. Problems of coordination between local authorities and central institutions responsible for the management of various natural resources and land use planning are also common.

In an attempt to strengthen coordination among different sectors dealing with environmental issues, the Government has shifted the institutions dealing with environmental issues from the former Ministry of Tourism, Natural Resources and Environment to the Vice-President's Office. However, it is not known what mechanism the Vice-President's Office will be using to coordinate with different sectors on environmental issues on either the national level or the local authority level. Whereas it is generally understood how various ministries and parastatals are linked to the Prime Minister's Office for coordination and administrative purposes, the details of how the Vice-President's Office will interact with other ministries and parastatals involved in environmental issues, have not yet been established (Fig. 1).

Figure 1. The Government organisation chart in line with the recent changes in government structure. The broken line indicates the possible coordinating mechanisms for the Vice President's Office within the existing organisation chart.



Regional and district administrations have a crucial role to play in the identification of priorities and action plans at local level. Recently the Government took some positive steps towards decentralisation. However, decentralisation without central government surrendering some of its enforcement responsibilities to the district and village administrations may lead to waste of resources and time, as well as to further degradation of the environment.

Legal Framework and Enforcement

Legislation and regulations are based on a command and control approach while in reality the Government does not have adequate infrastructure (funding or trained personnel) to enforce the regulations. When legislation is enacted, the responsible ministry is required to devise its own strategies and structures for management, in most cases with no requirement for coordination with other relevant sectors.

For most legislation, relevant ministers or directors are required to enact rules or regulations to implement the new laws. However, for most of the legislation, rules and regulations have not been issued. For example, although the Director of Fisheries is required by the Fisheries Act of 1970 (amended in 1982 and 1989) to issue regulations controlling closing periods, number of fishing vessels and gears to be employed in a particular fishing site, none have yet been issued.

Some areas are not covered by existing legislation. These include environmental impact assessment, public access to information, requirements of environmental management plans, standards for emission and the quality of the environment. Efforts are being made to include these in the new legislation which is currently being drafted.

Lack of enforcement of current legislation and regulations is mainly attributed to resource constraints (inadequate funding and staff) as well as lack of political will on the part of the Government to enforce them, due to pressure from various interest groups. This is compounded by the structure of the legislation itself. For example, institutions which are established for management of various natural resources are always appointed by the relevant minister. This implies that they do not necessarily reflect the various interests involved in the development of the legislation or who will be involved in its enforcement.

Investment and Funding

The long-term benefit of investment by donors and funding agencies in the area of coastal resources conservation and management is proved by the fact that there are now a number of well-trained marine scientists, research institutions are provided with basic scientific equipment, and government institutions such as NEMC have the basic infrastructure for execution of their responsibilities. As the total requirements of the country in terms of training, laboratory equipment, and institutional infrastructure are not fully known, it is difficult to assess the significance of investment by the donors and funding agencies in the area of coastal resources conservation and management.

Almost all coastal resources conservation and management programmes in the country are dependent on donor support for both planning and implementation. In most cases project proposals for submission to donor agencies are characterised by often hurriedly prepared without adequate local consultation, due to deadlines for submission of proposals, and the objectives of the proposals are tuned towards donor interests with little concern for priori-

ties of the local communities. Moreover, most donors and funding agencies attach conditions to their funding, particularly regarding use of their own expertise even when there is local expertise. Finally, most of the donor-supported projects are short in duration, on average about three to five years. Experts in developmental projects agree that this is a short time for a project to have a significant impact on the target groups.

Stakeholder Participation

The application of a bottom-up or top-down approach in ICZM depends mainly on the political, cultural and socio-economic conditions prevailing in the country concerned (Scura *et al.*, 1992). In Tanzania, the political and cultural conditions since the period of the one party system have encouraged the people's consultation and involvement in the process of making major political decisions, including the introduction of a multi-party system. However, as evidenced on many occasions, the political leadership has the final decision-making authority.

Most of the recent coastal and marine conservation programmes have used a stakeholder participation approach at different levels of the planning and implementation stages. However, the approach has been used differently for each of the projects. The difference lies in the mechanisms to involve the stakeholder, stage of involvement and the type of stakeholder. The Kunduchi Integrated Coastal Area Management programme is the only programme that involved the private sector, among others, during the planning stages. In other programmes the stakeholders involved were mainly the local communities and representatives of government institutions.

Though the participatory approach is still new in the country, where it has been applied it has proved to be a powerful tool. The process of involving stakeholders in this effective way is always time consuming and tends to be more expensive than the normally used top down approach. But these shortcomings are outweighed by the advantages. However, involvement of stakeholders calls for expertise in which Tanzania is still weak. There are only a few experts or facilitators to adequately undertake the process.

Capacity Building

Despite several efforts by different institutions in the country to increase their human and technical capacity in managing the coastal and marine environment, there are still some aspects that need attention. These areas, which are critical during the planning and implementation stages of ICZM, include:

- Sociology – community consultation and participation and social and cultural issues that are pertinent to coastal communities.
- Environmental economics – macro-economic policies and their implications for conservation and management of coastal and marine resources, cost-benefit analysis of different management options.
- Legal expertise – legal framework and its implication for conservation and management of resources.

Though there are many well trained sociologists, economists, and legal experts in the country, few of them are conversant or interested in coastal and marine environmental issues. Their involvement in conservation programmes, with simultaneous on-the-job and short-term training in their respective fields, is the best way of integrating them into the ICZM programme.

Other important areas include:

- Remote sensing – interpretation of the remote sensing images, applications of remote sensing as a management tool.
- Geographical Information Systems (GIS) – application of GIS in coastal studies and resources management and planning.

Sida-SAREC and UNEP have, through their Eastern African Regional Marine Sciences Programme and Eastern African Coastal and Marine Environment Resources Database and Atlas, respectively, initiated projects to address capacity building in these areas.

Research and Monitoring

The success of the ICZM approach depends mainly on the availability of baseline data and information and on understanding of the relationships among key factors, in order to identify and prioritise management issues.

Research in Tanzania is characterised by the following problems:

- Absence of priority setting mechanisms for research at the institutional level, or even at the national level.
- Poor dissemination and communication of research results to various interest groups.
- Most research is single discipline and not geared towards addressing issues relevant to the planning and implementation of ICZM programmes.

Important research areas for ICZM are: understanding interactions in coastal resource systems; identification and prioritising of management issues, identification methodologies and tools. With the exception of the Tanga programme, which has and is continuing to collect information in these areas, other programmes are still only addressing parts of the interactions of coastal resource ecosystems.

Summary

Since the workshop and policy conference on Integrated Coastal Management in Arusha, 22–23 April, 1993, Tanzania has made considerable progress in the development of policies and activities that promote the application of an Integrated Coastal Zone Management (ICZM) approach in the management of coastal resources. These include:

- Establishment of site-specific integrated coastal zone management programmes. Experience from these programmes has shown that multi-sectoral, inter-disciplinary cooperation and collaboration among the participating institutions of central and local governments, universities, and NGOs is possible and feasible.
- Development of human resources through training technical personnel and policy-makers in coastal zone management.

- In an attempt to increase and promote public awareness, several national and regional workshops, seminars and conferences have been conducted. Participants included top decisions makers, scientists, technicians, community leaders, representatives of non-governmental organisations and donor institutions. These activities have assisted these important stakeholders to better understand the interdependent relationship between development and environment in the coastal zone.
- The Government, the local communities and other relevant stakeholders are involved in the planning and implementation of coastal zone management programmes.

Others activities include the adoption of a National Mangrove Management Plan, the passing of the Marine Park and Reserve Act, the establishment of the Mafia Island Marine Park, the establishment of the Nature Conservation Trust for Zanzibar and many others. Furthermore, for the purpose of strengthening coordination of different institutions dealing with environmental issues, the Government of Tanzania has shifted responsibility for environmental affairs into the Office of the Vice-President.

Despite these achievements, Tanzania is still facing a number of problems, including the absence of an overall organisation charged with coordinating development activities along the coastal zone, a tendency by institutions to address issues on a sectoral basis, the exclusion of most stakeholders in the planning and implementation of environmental and development projects, and high dependence on donors through financial support and provision of foreign expertise.

WHAT NEEDS TO BE DONE?

First, it is important to emphasise that the application of an integrated approach to coastal zone management is still a very new concept in Tanzania. Given time, Government and institutions involved will improve their efforts as more experience is gained. Most of the initiatives taken so far are still in the very early stages of implementation. In view of the issues and problems discussed in the previous sections, the following recommendations can be made:

- To rationalise responsibilities and better coordinate efforts among competing sectoral interests within the new government organisation structure, it is important that an inter-ministerial committee be formed at the Vice-President's Office. The committee will coordinate and bring together all relevant institutions dealing with coastal and marine environment issues.
- The process of decentralisation that has begun should be continued. The Government should be willing to share more of its responsibilities with the local administration. The role of the Government should be to safeguard national interests and facilitate sound use of resources, while ownership rights should be turned over to the local administration.
- Environmental affairs committees should be formed at the village and district level as well, so as to involve the local communities and make them part of all conservation and management efforts. At the district level, the committees should be comprised of repre-

sentatives of relevant departments. At the village level, selected individuals will form the committee.

- The existing specific sectoral legislation pertaining to environment needs revision to reflect a multi-sectoral approach to environmental management, increase penalties to realistic levels, establish workable and clear management structures, create cross-sectoral coordination mechanisms, establish means for public participation and increase incentive programmes.
- Serious resource conflicts are anticipated in the coastal zone in the coming few years. Hence, setting research priorities should assume increasing importance at a national level, so that the Government is able to develop mechanisms in time to address the anticipated conflicts.
- The Government should ensure that appropriate research is conducted for all relevant aspects of coastal and marine environment. The data generated should be used as a basis for the development of management plans, issuing of regulatory guidelines and for ensuring adequate linkages between research and conservation, management and development.
- There is a significant amount of information and data on various aspects of the coastal zone, which is scattered among different national, regional and district institutions. There is a need to collect this information at a few key national institutions. This is an important activity for producing situational profiles for different sites of interest.
- In the absence of adequate scientific data and information on various aspects of the coastal and marine environment, the precautionary approach should be applied widely to conservation, management and exploitation of coastal and marine resources. This approach should take into consideration uncertainties relating to the size and status of the resources, as well as environmental and socio-economic conditions.

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Case studies

The Integrated Coastal Area Management Initiative in the Nyali - Bamburi - Shanzu Site, Mombasa, Kenya

B. A. J. MWANDOTTO

INTRODUCTION

A process was initiated two years ago in Mombasa to provide a starting point for addressing urgent coastal issues facing the area. The process included profiling the issues and developing management strategies to solve the urgent human and environmental needs so that resources in the site can be utilised by all stakeholders in a sustainable manner.

This initial effort involved a multi-institutional team made up of the Coast Development Authority (CDA), Kenya Wildlife Services (KWS), Fisheries Department, Mombasa Municipal Council and the Kenya Marine and Fisheries Research Institute (KMFRI). The team receive technical assistance from the University of Rhode Island's Coastal Resources Centre, with some consultation from MOI University's Department of Environmental Education. Funding was provided by the United Nations Environment Programme (UNEP), Food and Agricultural Organisation (FAO) and the United States Agency for International Development (USAID). The major events that were accomplished in this phase were:

- Putting together a research and planning team.
- Profiling the site issues.
- Establishing stakeholders consensus on the issues by holding stakeholder workshops and private consultations at two sites.
- Developing management strategies, demonstration and activity plans with national stakeholders at a national workshop.
- Summarising the results in a strategy document.
- Overseas training of six members of the working team in ICAM.

**Table 1. Coastal management issues in the Nyali-Bamburi-Shanzu area:
potential causes and probable consequences of mismanagement**

Inadequate infrastructure and public service	Rapid pace of tourism development and urbanisation of the area	Increased demand for constant supply of water and electricity to local businesses and residents
Degrading water quality – ground water	High density of septic tanks and soakage pits	Contaminated drinking water, Threats of public health
Degrading water quality – marine and coastal	Pollution discharges from industry, business, domestic sewage and solid waste, Storm water, Periodic oil spill from ships. Siltation from dredge spoils, Seepage from septic tank and soak pits. Direct discharge of waste water from hotels	Degraded fish habitat and declining fish production. Public health threats from consumption of contaminated seafood and recreational contact. Poor aesthetic quality and odours. Degraded coral reef quality. Potential public health threats from water contact. Declining number of tourists and associated revenues
Decline in reef fishery	Over-fishing. Destructive and inappropriate fishing practices. Degraded reef quality from tourism use and pollution	Low income of fishermen. Reduced fish supply/increased prices for buyers
Degraded marine habitats – mangroves	Over-cutting and over-harvesting for poles and fuel wood, Pollution from oil spills. Pollution from waste dumping. Increased sediment inputs. Improper oyster harvesting and fish catch	Declining supply of fuel wood and mangrove poles for Swahili house construction. Loss of economic livelihood for mangrove cutters. Loss of breeding habitat for fisheries and associated impacts of declining
Degraded marine habitats – coral reefs	Trampling by snorkellers. Anchor damage from boats. Degraded water quality from oil pollution; siltation; and sewage discharges	Declining tourist visits and associated revenues to business and marine park Decline in livelihood opportunities for tour boat operators, guides etc. Decline fish catch and incomes of fishermen
Degraded marine habitat – seagrasses	Degraded water quality	Reduced erosion protection Loss of habitat
Degraded marine habitat – beaches	Erosion, Construction of sea walls, Removal of natural beach vegetation	Loss of nesting habitat for turtles. Loss of scenic and aesthetic values for tourism
Coastal erosion	Natural shoreline processes. Human induced coral reef destruction. Inappropriate construction of sea walls and revetments. Accelerated sea level rise. Removal of natural beach vegetation	Loss of nesting habitat for turtles and scenic and aesthetic values for tourism. Damage to improperly sited shorefront structures and hotels, Increased costs to build infrastructure to protect property
Water and land use conflicts	Intensifying use of coastal and marine areas, Inadequate water and land use zoning schemes, Inadequate conflict resolution mechanisms	Public safety threats. Negative visitor experience. Encroachment on existing plots/reduced access. Decline in visitors, tourism revenue

MAJOR ISSUES

The major issues identified in the Nyali-Bamburi-Shanzu site, and their possible causes and consequences are shown in Table 1.

Interlinkages amongst the identified issues exist, in that the causes of the issues are strongly linked to the economic life of the inhabitants of the area and indicate lack of integrated planning by the sectoral institutions.

During the initial planning process, the team sensitised the relevant sectoral institutions as to the intentions and objectives of the programme including the selection of a pilot site which illustrates many potential issues that could be used to demonstrate the importance of ICAM in Kenya. Strategic stakeholders were then engaged in an interactive and participatory manner by the team to verify the issues. Counter- or multi-interactions and verifications of the findings of fact were done as found necessary. The identified issues were further solidified by direct input of two independent stakeholder fora and private or personal communications, which helped develop the strategies and that were presented to the national stakeholders for final deliberations and endorsement/adoption. Technical specialists in the team undertook the tasks relevant to their professional interests in order to ensure technical competence in tackling the issues and building the constituency that would be important in implementing some of the delineated strategies.

Both immediate action and planned strategies were developed based on analysed issues. The strategies pertaining to *declining fisheries*, *declining water quality* and *degradation of coastal and marine habitats* are mentioned below to indicate short and long term plans. The immediate actions will test the feasibility of new policies and commitment of concerned parties to the whole ICAM process.

Decline in Fisheries

Action Strategy

The actions that were planned for the improvement of fisheries were:

- Rehabilitation of fisheries infrastructure support facilities at Kenyatta Beach.
- Enforcing existing Kenya Wildlife Services (KWS) conservation and management actions and fisheries regulations, focusing on reducing night poaching in the marine park and enforcing KWS rules in the reserve.
- Developing a task force for surveillance and enforcement of existing conservation and management actions.
- Establishing an education programme for fishing organisations regarding sustainable use of the resource.
- Supporting reef restoration projects and activities.

These strategies are aimed at maintaining a small sustainable artisanal fishery which is profitable for the fishermen and of economic benefit to the area.

Planning Strategy

In order to make the current fishery profitable and sustainable, a fisheries management plan is required which would regulate inshore fisheries and increase the income of the site's fishermen. Such a planning effort should include:

- Clear delineation of park boundaries and encouraging a joint decision-making process that includes fishermen, community based groups, tourism industry representatives and relevant government agencies.
- Institution of management measures that protect marine resources from further degradation, i. e. regulating fishermen numbers, gear restriction, closed seasons and net sizes.
- Delineation of landing sites and legalising their status with title deeds.
- Support to additional joint research in inshore and offshore fish stock assessment.
- Inclusion of industry stakeholders in planning process.

Leadership roles in these activities will be played as appropriate by the Fisheries Department and the Kenya Wildlife Services.

Declining Water Quality

Action Strategy

Strategies were formulated to restore ground water quality to potable standards, improve coastal and marine water quality for safe fishing and swimming, for healthy coastal reefs, mangrove ecosystems and associated seagrass beds, and to protect local populations from drinking contaminated ground water. The immediate actions planned that would accomplish this objective were:

- Installation of water purification systems for establishments relying on ground water.
- Publish health education campaigns on health risks in areas that rely on contaminated ground water.
- Increase and diversify sources of water supply.

Planning Strategy

On a long-term basis, plans were formulated that entail:

- Possible construction of a centralised waste water treatment plant at the site.
- Establishment of a regular monitoring programme for ground water.
- Review of existing institutional structure and programmes to ensure maintenance of a water pollution management plan.

Lead roles in the strategic management of quality water were planned to be shared by the Mombasa Municipal Council and the Ministry of Land Reclamation Regional and Water Development.

Degradation of Coastal and Marine Habitats

Action Strategy

Management strategies were also formulated that would establish sustainable use and conservation of coral reef, seagrass and mangrove habitats; restore degraded marine habitats to support sustained use, and enhance the protection and management of turtle nesting sites, thus:

- Develop a comprehensive environmental educational and awareness programme to enhance public awareness of the value of marine habitats, and to foster public support for initiatives to protect habitats for a sustainable balance of uses.
- Initiate small-scale projects that will protect marine habitats and demonstrate ICAM concepts.

Planning Strategy

On long-term basis, sustainable strategies were also formulated:

- Development and implementation of conservation and enforcement activities jointly between Forest and Fisheries Departments and KWS for reefs, mangroves, seagrass beds and turtle nesting sites.
- Establish monitoring schemes for each habitat.
- Establish projects to protect and restore marine habitats like mangrove rehabilitation, snorkelling and free diving sites and sanctuaries for turtles.
- Promote multi-disciplinary research on natural forces of habitat degradation, and devise simple management recommendations for actions based on research results.
- Develop accurate habitat maps which include relevant user information that can be employed for management purposes.

For effective implementation, leadership roles were planned to be shared by the Forestry Department, CDA, KWS, and the KMFRI.

CAPACITY BUILDING AND EXPERIENCE SHARING

In the process of developing the ICAM to this level, the on-the-job experience gained by the planning team and other collaborating groups is highly valuable. Six officers have now received formal ICAM training at the University of Rhode Island and in Thailand and Canada. One team member participated in the development of the ICAM initiative in Mozambique and the experience gained there was shared at the *International Coastal Zone Conference*, in Florida, 1995 and at the *4th Session of the Inter Africa Committee on Oceanography Sea and Inland Fisheries*, in Congo, 1996. After these conferences, it was recommended that all coastal African countries initiate ICAM as a tool to ensure wise management of their coastal resources.

IMPLEMENTATION

To foster the short and long-term activities that have been planned, and to institute the ICAM programme within the overall government framework, a Coastal Resources Management Committee (CRMC) is being put in place (see Box 1). Some of the early actions are being implemented on the ground by working groups led by technical expertise from relevant lead institutions. These actions are designed to demonstrate ICAM feasibility and value. The Mombasa site experience is hoped to be replicated in north and south coasts of Kenya, as we evolve a comprehensive special area management programme for the Kenyan coastal ecosystem. So far, we do not have any stable financing arrangements for long-term implementation, but partnerships will be sought as we go along.

Box 1

RECOMMENDED MEMBERS FOR THE COASTAL MANAGEMENT STEERING COMMITTEE

Coast Development Authority
Kenya Wildlife Service
Kenya Marine and Fisheries Research Institute
Fisheries Department
Mombasa Municipal Council
Provincial Administration
National Environment Secretariat
Tourism Department
Baobab Trust
East Africa Wildlife Society
Kenya Power and Lighting Company
National Water Conservation and Pipeline Corporation
Kenya Post Office and Telecommunications Company
Representative of the Boat Owners Association
Representative of the Mombasa Coast and Tourist Association
Forest Department

SUMMARY

An ICAM process was started two years ago in Mombasa to profile management issues at the Nyali - Bamburi - Shanzu site, and to develop appropriate short and long-term management strategies that would insure sustainable use of the coastal resources by all stakeholders. The strategies were developed to ensure:

- A small but economically viable artisanal fishery.
- Potable ground water, quality water for fishing and swimming, healthy coral reefs and seagrass beds.
- Development and maintenance of a water pollution management plan.
- Establishment of sustainable use and conservation of coral reef, seagrass and mangrove habitats, and restoration of degraded marine habitats to support sustained use and to protect turtle nesting sites.

As a result of this, a strategy document has now been realised, that sets the relevant action for the strategies and leadership roles for the institutions that have clear mandates and expertise for the implementation of strategies. The document also spells the functions of the CRMC and the working groups. The current effort is to establish some demonstration activities on the ground, to institutionalise ICAM in the Government structure, and to continue working funding for the bigger planned activities including taking the initiated ICAM process to the north and south of the Mombasa site.

Integrated Coastal Area Management of the Xai-Xai District Gaza Province, Mozambique

HELENA MOTTA AND S. TRUTA

BACKGROUND

Mozambique has a surface area of about 800 000 km², of which 44% represents areas which once were under the maritime influence and are now littoral valleys not higher than 200 m. The coast line is about 2 700 km long and, of the 110 districts of the country, 42 are coastal. About 40% of the Mozambican population lives in these coastal districts. The high population density puts a very high pressure on the coastal ecosystems. These ecosystems are *per se*, very fragile and degradation has already been seen, specially deforestation, mangrove depletion, acceleration of erosion, soil salinisation and coral destruction.

The Ministry for Coordination of Environmental Affairs (MICOA) gives the coastal zone the highest priority and has decided on the elaboration of a programme for coastal zone management of Mozambique.

With the support of the UNEP/FAO funded EAF/5 project, MICOA initiated an ICAM pilot project at a selected site with the following expected outputs:

- A coastal profile of the selected area.
- A management strategy for the selected issues.
- A national workshop for the proposed management strategy adoption and implementation.

In Mozambique, the district of Xai-Xai was chosen as the pilot area, and in February 1994 a first version of the "Perfil da Area Costeira do Distrito de Xai-Xai" (The Coastal Area Profile of Xai-Xai District) was elaborated and published in Portuguese. In this profile some information was outdated or missing, particularly on marine environments, coastal dunes belt, water resources and tourism.

In May 1995, a team was formed to work on Xai-Xai ICAM with technical assistance from the Priority Actions Programme/Regional Activity Centre (PAP/RAC). The first joint mission of the team took place in May, 1995, in Maputo and Xai-Xai.

GOALS, OBJECTIVES AND STRATEGIES

The process of applying Integrated Coastal and Marine Area Management (ICAM) to the particular natural and socio-economic characteristics of the Xai-Xai district coastal area as pilot site for the Mozambique's coast requires identification of a set of overall goals and strategic objectives, that collectively set policies and direct actions and provide ongoing feedback from all users of the coast. In Xai-Xai, ICAM is not a substitute for sectoral planning, plans or projects, but focuses on the linkages among sectoral activities to achieve more comprehensive goals.

Definition of the Xai-Xai Coastal Area

The Xai-Xai district is located at the south of the Province of Gaza – an area of 1 745 km² representing about 2.7% of the total area of the province. The length of the coastline is 67 km. The capital of the district (and province) is the city of Xai-Xai with about 150 000 inhabitants over an area of 131 km².

At the beginning of the coastal profiling, the entire district of Xai-Xai was considered to be the relevant coastal area. As work progressed, it was more and more evident that for the purpose of the ICAM pilot project, the Xai-Xai coastal area should be defined as follows:

- Near shore sea or coastal water extending several kilometres seaward.
- Coastal dunes belt extending up to ten kilometres landwards and along the entire coastline.
- The Limpopo lower valley, up to Xai-Xai town.

The terrestrial area of the Xai-Xai district contains three basic geographic entities: the belt of coastal dunes, the Limpopo River valley and the area of inland dunes. The first two entities are typical in terms of the physical and socio-economic environment of the coastal area. The third, the area of inland dunes, extends beyond the district boundaries and, although it contains some physical elements of the coastal area, lacks typical coastal activities.

The near shore sea and the belt of coastal dunes are fragile environments with natural resources constantly exploited by the local population and visitors. Given that the pressure upon this precious coastal resource will significantly increase in the future, particularly with development of tourism, the main attention of this project was directed towards this area.

The Limpopo River course, influenced by the ocean tide with saline water intrusion, is also given attention within the coastal profile, particularly the river mouth or small estuary.

Agriculture, the main activity in the area of inland dunes, presently has a limited impact upon coastal resources. The development of drainage and irrigation schemes and appropriate land use in this area was subject of another study in which full attention was given to the environmental issues. It must also be noted that in this area there is no significant economic activity which exploits the coastal resources or has impact on them. The only serious environmental threat is municipal liquid waste from Xai-Xai town which is discharged into the Limpopo River, and consequently the area of inland dunes was given less attention, particularly in elaborating the management strategy.

Institutional Structure

Although the project is under the responsibility of MICOA, the team has experts from different line ministries and research institutions, namely, a tourism expert (from the Ministry of Industry, Commerce and Tourism), a hydrologist (National Directorate of Waters), a geologist (University) and physical planners (Physical Planning National Institute, both at national and provincial level). The team leader, marine biologist, sociologist and GIS expert are all from MICOA. A regional planner, a coastal engineer and an environmental engineer from PAP/RAC contributed to the elaboration of the project.

Overall Goals

- To contribute to the economic and social welfare of the local population by identifying the available resources and development potentials.
- To ensure that natural resources are rationally exploited and equitably divided between generations.
- To preserve ecological integrity through establishing ecologically sustainable limits for resources use.
- To recognise and support a wide range of values: ecological, economic and cultural.
- To encourage private/public partnerships.
- To provide a mechanism for capacity building and planning.
- To provide a mechanism for collecting, analysing and incorporating data as well as ongoing feedback and review.

Strategic Objectives

1. *Conservation objectives*: creation of protected areas, application of the precautionary principle in development, protect and restore important biological areas and species, prevent ecosystem loss and support ecosystem rehabilitation.
2. *Resource management objectives*: prepare and implement site-specific and industry-specific management plans, use research and monitoring in ICAM and management plan processes, ensure stakeholders are involved in planning process.
3. *Education and public awareness objectives*: gain better understanding by stakeholders and therefore support for responsible actions, develop appropriate programmes and feedback opportunities for diverse target groups.
4. *Research and monitoring objectives*: encourage environmentally sustainable activities, determine ecologically sustainable levels of input and change, monitor application of activities, encourage exchange of information, use as a basis for prescription of areas and activities, and use to evaluate the ICAM process and management plans.
5. *Integrated planning objectives*: encourage consistency, complementarity, and coordination in planning and actions to achieve conflict resolution and ecologically integrated approaches, respecting on – and off-site areas as well trans-boundary areas, establish timely review mechanisms.
6. *Legislative objectives*: achieve streamlined procedures and regulations for enforceable implementation, establish means for stakeholder input, review and amend boundaries, management goals and permitted use, respect the local communities as the most-closely affected stakeholders.

The approach towards the realisation of sustainable development of Mozambique's coastal areas requires that a strategy be developed bringing together the coastal issues and problems, goals and objectives, and the ICAM principles into a cohesive strategy that will guide the scope, scale and siting of development and conservation activities. Having this in mind, the proposed management strategy for the Xai-Xai coastal area is based on the principles described below.

STRATEGIC PRINCIPLES

Biodiversity and Environmental Protection

Given the important role of coastal and marine habitats, biodiversity and environmental concerns are considered first, and from there the level of development an area can withstand is determined. It is essential that upstream impacts as well as the impacts of adjacent activities are accounted for. Criteria for the establishment of "Environmentally sensitive areas" are developed as a basis for allocation of different groups of protected areas. This is integral to the overall biodiversity strategy for the Xai-Xai coast that takes into account the role of existing and potential pressure on natural environment including pollution loads. It is important that the process of privatisation and tendency to create relatively small development areas do not inhibit large-scale areas needed for management and conservation of dunes and wetlands.

Tourism and Conservation

Tourism is increasingly recognised as an important source of foreign exchange. Given the relatively good health of the natural environments, environment-based tourism, that is not only sensitive to coastal and marine habitats but which also enhances their quality, is the most compatible development option for the Xai-Xai coastal area. Tourism should be organised in specific clusters with a range of interventions that enhance the environment and provide a variety of economic opportunities to the local communities. The integrity of the coastal marine environment, dunes hillside ecology and aesthetics need to be maintained. Protected areas (nature reserves, marine reserves, scenic landscapes) are focal points that can attract people and therefore generate funds to both local communities and national treasuries. Linking tourism with nature conservation, through the establishment of protected areas, not only provides an incentive for environmental standards for facilities but also ensures that large areas of nature are protected.

MAJOR EVENTS COMPLETED AND PLANNED

Besides elaborating the outputs, coastal profile and management strategy, an even more important goal of ICAM in Xai-Xai is the training of a multi-disciplinary team. This goal is to be achieved mainly through "on-the-job training" while carrying out the following activities:

- Collection of information during the fieldwork and interviews, from aerial photos, maps, relevant studies and projects on physical environment, natural resources base, socio-economic context, physical systems and institutional issues.

- Diagnosing the problems and selecting the environmental and development issues to be managed.
- Carrying out stakeholders seminars in order to set out the objectives and assess the proposed ICAM strategy.
- Carrying out a public education and awareness campaign.
- Elaborating and carrying out a small demonstration project.
- Organising a national workshop to discuss and adopt the management strategies.

As far as the activities of the project are concerned, the coastal profile has been prepared, the preliminary management strategy has been drafted and two stakeholders seminars took place at the site. At the first stakeholders seminar, the problems and possible solutions indicated in the coastal profile were defined, while at the second which took place on 26 July, 1996, the management strategy was presented, reinforced and approved.

The completion of the ICAM strategy report, elaboration and execution of the demonstration project and the national workshop are now the only steps before the end of the project.

MAJOR AREAS ADDRESSED

One of the main constraints to the development of the district is poverty and concentration of population within the fragile coastal ecosystem. Deforestation caused by cutting the trees for fuel wood and charcoal production, soil erosion induced by deforestation and agriculture on erosion prone areas (inland and coastal dunes); extinction of wildlife caused by loss of habitat, and over-harvesting of mussels, oysters and lobster in the beach rock intertidal area are the main existing environmental problems in the coastal area of the district. Besides, lack of institutional capacity brings also additional threats to the environment: tourism development is uncontrolled and explosive, there is no control or taxation on game fishing, conflicts arise from land concessions both to locals and foreigners, and so on.

On the other hand, the resources potential in this district is very high, as far as agriculture and livestock are concerned, specially in the fertile Limpopo River valley. The potential sustainable fishery in coastal sea is outstanding (about 16 000 tones a year) and is almost unexploited. Finally, the potential for tourism in the district is of the best in Mozambique, owing to the beauty of the beaches. Some four miles off the central part of the coastal beach lies a coral reef which seems to be in a pristine state, perhaps the best in Mozambique.

With this in mind, the following issues were selected by the team and approved in a stakeholders seminar:

- Management of the fisheries development in order to utilise the available marine resources, among others including: (a) education and training of the local fishermen and rural population, (b) providing boats, tools and equipment for the fishery.
- Management of tourism development in this environmentally fragile coastal and marine area, bearing in mind the low level of development and the transition period of the country after the war.

- Provide harbour and (or) landing facilities for the fishing and tourism boats.
- Management of the coastal dunes and inter-tidal areas (beach rock and beaches) developing the appropriate conservation, protection, rehabilitation and monitoring practices.
- Identification of the main characteristics and appropriate protection measures for the Baixos de Inhampura coral reefs.
- Assessment of the agricultural potential of the Limpopo lower valley with basic management proposals in harmony with the wetland environment (Limpopo estuary, mangroves and river galleries).
- Build the national framework for Integrated Coastal Zone Management, looking beyond the pilot site, including proposals for institutional strengthening and capacity building.

Biodiversity Protection Strategy

Three important Environmentally Sensitive Areas (ESAs) and the relevant sub-areas can be recognised in the Xai-Xai district coastal area: coastal dunes, the Limpopo River and Baixos de Inhampura coral reef.

Coastal dunes in the Xai-Xai coastal area are a segment of the one of the world's highest vegetated dune ranges, stretching several hundred kilometres along southern Mozambique's coast. The strip of coastal dunes of Xai-Xai incorporates three major environments:

- Inter-tidal zone including the narrow belt of beach rocks and sandy beaches either open to the ocean waves action or confined within lagoons formed by the beach rocks.
- Densely vegetated or partially eroded dune hills.
- Back-set of the coastal dunes in the form of temporarily flooded longitudinal valleys and/or a chain of small mainly fresh water lakes.

The average width of the coastal dunes belt is about 4.5 km, while the average height of this chain about 60 m (the highest peak is 126 m). Being only the segment of the coastal dunes belt which stretches into the neighbouring districts (provinces) the protected areas should extend beyond the Xai-Xai district boundaries.

As proposed above, the entire coastal dunes ESA should be protected as managed resource protected area (Terrestrial Marine – Category VI IUCN). Specific protection and conservation requirements should be designed for each of the sub-areas (inter-tidal zone, dune hills, dunes back-set) governing the choice of compatible types of tourism development or other appropriate activity. Consequently, within the segment between the Xai-Xai and Chongoene Beach, the development of housing and tourism accommodation capacities, related infrastructure and services should be allowed, but planned and controlled. The relevant management proposals for the sub-areas (protection, conservation, restoration and regime of activities), as well as the entire segment which is dedicated to the tourism development and comprising the elements of all three sub-areas will be elaborated in more detail, within particular selected issues in the Xai-Xai project final report.

The Limpopo River, while a unique ecosystem proposed as a habitat/species management area (Category IV IUCN), could from a management point of view be divided in two spatial units:

- River mouth or small estuary, including wetlands on its right bank.
- River course in the lower valley, including the mangroves on its banks.

The river mouth or small estuary can be defined as the segment of the river course which stretches through the belt of coastal dunes (about 6 km long). Only the western side of the river mouth carries the notable characteristics of the estuary (salt march and mangroves). The area is already protected (nature or forest reserve) but notable improvement of the environmental conditions in the area is not yet achieved (signs declaring the protection of the site have been removed by the local population).

Although small in size, the estuary is not only important as a nursery ground for shrimps and a habitat for mangrove crab, but also presently as the only fishing ground (sardines) that can be reached by local fishermen possessing only small canoes without engines. If planned and strictly controlled within the management regime (IV Category) the fishing activity would be allowed in the area with even the creation of the small artisanal fishery centre possible. Agriculture and wood cutting would be restricted in this area.

The river course – the remaining part of the river (from the Xai-Xai town to the sea) – meanders through the valley partially bordered by dikes built as a protection against flooding. The rehabilitation of the dikes, drainage and irrigation system in the Lower Limpopo valley should respect the preservation and restoration of the riverine environment dominated by mangrove systems along the river banks.

Baixos de Inhampura coral reef is situated at 250°10' S, and parallels the coastline at an average distance of about three kilometres from the shoreline. The reef is approximately 20 km long, stretching in ENE–WSW direction, almost from Chongoene Beach to some 8 km from the Limpopo River mouth. The reef rises from 20 m (seaward side) up to 1.5 m at the highest point, with an average five metres depth of the reef flat from the lowest neap tide. In its central part, the reef consists of three parallel ridges. There are abundant coral colonies on the reef (pers. comm.).

In available literature and the listed references there is no information about the reef. There is an evident need for the identification of the main characteristics of this reef, among others, to answer the crucial question whether the reef is entirely built by corals or if there is only the presence of the coral colonies on the rocky ground such as the beach rocks along the shoreline.

Applying the precautionary principle, the Baixos de Inhampura coral reef should at least be protected as a species habitat management area (IUCN Category IV). Later on, if the necessary and envisaged survey of the reef shows its greater biodiversity the protection category could be raised even to the establishment of a marine national park.

Specific protection and conservation requirements should be designed for each of these Specially Protected Areas (SPA) consequently governing the choice of appropriate management framework and types of activities compatible with the area (e.g. tourism development). The biodiversity protection scheme – to be further developed into detailed action plans of environmental conservation and restoration for each identified area – will also pro-

vide the basis for planning the development of tourism and related infrastructures compatible with the protection of marine, wetland, and terrestrial environments.

Sustainable Development Strategy

Consolidation of the political situation in the country has created much better conditions for development within the Xai-Xai district coastal area. Considering the unfavourable national and provincial economic and social heritage, the focus of development expectations will be on natural resources. With its valuable natural resources, such as unspoiled beaches, abundance of water, and fish stocks, the coastal area of the Xai-Xai district is among the first to benefit from the free flows of capital, goods and visitors. Benefits from some of these resources could be evident in the short term (fishery), while the significant benefits of the others will be felt only in the longer term (tourism). The most significant opportunities for development are agriculture, fisheries and tourism.

Agriculture

Development of agriculture, which is essential for the subsistence of the local population, should be directed towards the area of the Limpopo lower valley and interior dunes. Protection against flooding and restoration of the drainage and irrigation system, as part of the integrated watershed management, are prerequisites for rehabilitation of the agriculture in this area. This project should be designed such in a way as to preserve the natural ecosystems of the lower Limpopo River, particularly the mangroves along the river banks. Agricultural activities within the coastal dune should be avoided. Development of agriculture in the valleys in the back-set of the coastal dunes can be planned taking into account the importance and vulnerability of the relevant ground water aquifer.

Fishery and Harbour Development

Fisheries, which are now almost non-existent in the district could become a notable economic activity. Although the district's coastal waters are not the most abundant fishing grounds of Mozambique, they offer opportunities for the development of significant artisanal fishery. If the necessary facilities, tools and training are provided to the local population, the fisheries could provide steady source of income, whether the catch is sold within the country or exported (South Africa), or, like the agricultural products, delivered directly to hoteliers and tourists.

There are favourable but limited conditions for the development of an artisanal fisheries centre in Xai-Xai Beach and in the Limpopo River mouth, where a fishermen's settlement already exists. Both of these two locations have some advantages, but also limits. Taking into account all these advantages and disadvantages it seems reasonable to propose the development of artisanal fisheries centre in the Limpopo River mouth, if further surveys prove the availability of resources for such a development. At the same time, the Xai-Xai Beach seems to be suitable as a tourist port, including a small fleet of fishermen's boats to serve for game fishing and excursions (visits and diving on the coral reef).

Tourism, Housing and Infrastructure Development

Within the 67 km long coastline of the Xai-Xai district, tourism residential and related infrastructure (roads) development should be confined to and concentrated where these activities already exist, i.e. the area between the Xai-Xai and Chongoene Beach. Any development of tourism accommodation capacities outside of this area should be prevented

in order to protect the remaining uninhabited and unspoiled environment of the coastal dunes. In such a way the alteration of the natural environment is confined to a relatively small section of the coastal dunes (9 km in length or about 13% of the district coastline). Development of the settlements within the coastal dunes should be restricted except within the segment of Xai-Xai to Chongoene Beach. The most appropriate area for this purpose is the interior dunes, including the back-set of the coastal dunes where there is already a chain of small villages.

The existing infrastructure cannot meet the demand and requirements of the proposed tourism and settlements development. The future infrastructure investments, in general, should serve the local population and the tourism development. It is important to ensure that investors in tourism carry an adequate share of costs in infrastructure development.

PLANNING PROCESS

The following steps were taken during the process of elaboration of the coastal profile of the Xai-Xai district:

1. Selection of a multi-disciplinary team to carry out the work, select the area and define the boundaries.
2. The coastal profile – description of physical characteristics, resource base, socio-economic situation and institutional framework. It should be noted that the information needed for the elaboration of the profile was based on what was existent at the time. A number of sectoral reports and studies (study on coastal dunes, MICOA/IUCN report for south coast of Mozambique, agriculture study on land use, fishery studies and survey, tourism master plan for entire coast, agriculture study on land use, water resources study and water supply study etc.). Based on this and surveys by the authors (data from maps and aerial photos, interviews and observation during field visits) each member of the team did sectoral reports on the relevant issues.
3. Conduct interviews with local communities, stakeholders, stakeholders seminars, on site interviews with limited field work. It should be noted that there always was a good understanding between team members and local communities, especially fishermen and farmers. While work was in progress MICOA organised a seminar in Xai-Xai attended by the local authorities aiming to set the effective measures to prevent the current illegal fishing and development by foreigners.
4. Selection of main environmental and developmental issues.
5. Elaboration, discussion on and adoption by the team of an integrated management strategy and proposals for management for each of the selected issues.
6. Organising of stakeholders seminar after issues selection and strategy definition in order to inform of and get response on findings of facts, proposed strategy and follow-up actions. The contacts, including the stakeholders seminar, were divided in phases: (1) familiarisation with the area and existing problems; (2) justification of the identified problems and selected issues to be managed; (3) presentation of a preliminary strategy, to seek opinions and necessary inputs from the stakeholders.

7. The proposed strategy will be presented at a national (or final) workshop and considering recent reactions is expected to be adopted by the relevant authorities and stakeholders.

ANALYTICAL FRAMEWORK

During the elaboration of this ICAM plan, different approaches were used for different activities and areas. Thus, bottom-up and top-down approaches were used.

For instance, in examining the issue of development of artisanal fishery, the desires and opinions of the fishermen were fully surveyed and taken into account, in a bottom-up approach. The desires of the fishermen were then reconciled with the available resource base, and the team proposed the basic inputs for the development of the artisanal fisheries project in the area.

In the case of tourism, where tourism master plans for Mozambique emphasised the area as a priority for coastal tourism development, the top-down approach was applied. But, while developing the issue on sustainable tourism development, the resource base and the stakeholders intentions were thoroughly assessed and appropriately applied.

In a third example, both approaches (top-down and bottom-up) were equally applied. This was the biodiversity protection issue, particularly for the marine environments. In this case the plans at the national level and the local population's desire for the protection of the environment meet. This was particularly important for the coral reef.

Another approach was the trade-off between biodiversity conservation and development in limited and controlled areas. In order to secure environmental quality with sustainable use in most of the areas of the district, there has to be a sacrifice of a small portion of the dune area between Xai-Xai and Chongoene beaches. The ICAM strategy designates an area for building in coastal dunes, although it proposes that the building should be on less steep slopes. This is the result of an understanding that at this stage of development and land concessions in the area, the only thing to do was to try to minimise or reduce the impacts on the fragile environment. At the same time, in similar areas along the dunes, the precautionary approach is implemented and protection is envisaged.

IMPLEMENTATION AND FOLLOW-UP ACTIVITIES

Priorities

Given that the elaboration of ICAM in Xai-Xai is still in progress, the implementation of proposed plans and management measures is in an early stage. It must be noted that the proposals and measures to be implemented vary from short to long term. At present, the priority and most important are (a) ICAM is recognised as an important instrument in managing coastal resources and activities on a sustainable basis by the local authorities and stakeholders, and (b) coordination between authorities dealing with coastal zone management is necessary and urgent. As a first result, the coordinating body of relevant local institutions to manage coastal resources was established.

Implementation and Follow-up

Besides elaboration of the Xai-Xai ICAM pilot project, MICOA is elaborating several other projects which are related to the implementation of the ICAM. A number of environmental and development projects are in preparatory or implementation phases. The following activities should be mentioned in relation to implementation of ICAM in Xai-Xai :

- The proposed management strategy for the Xai-Xai Beach (administratively a part of Xai-Xai municipality), especially issues relevant to tourism, residential and infrastructure development are accepted as part of the Xai-Xai Municipality Master plan which is under preparation.
- MICOA, particularly its department responsible for coastal zone management is implementing the project "The Management of Coastal Resources by Local Communities (a project proposal for Xai-Xai Beach)", and preparing a project on reforestation of the south Limpopo River coastal dunes, all in harmony with the Xai-Xai ICAM project.
- A coordinating body for coastal zone management at the provincial level comprising representatives of Physical Planning Services, Tourism Department, Wildlife and Forestry Department, Agriculture and Fisheries, Marine Authority and the City Council has been established. The official request was done by the Minister of MICOA to the Governor of Gaza and today the body has meetings regularly to decide on land concessions in the coastal area. One of the most recent issues is the introduction of EIA as compulsory study for the approval of land concessions or facilities building. This decision is even more important, considering that EIA is not yet a legal procedure in Mozambique, and is done only occasionally at an informal level.
- The working team has recognised the public awareness campaign as important instrument in implementing ICAM. This project attracted some attention from the public of the area. Usually, a journalist joined the team's trips and as a result series of articles were published in a weekly magazine.
- Xai-Xai is to be the location for the Sustainable Development Centre for Coastal Zones, once rehabilitation of premises is completed.
- Besides the already mentioned fishery project and the watershed management plan of the Limpopo River, which should be a trans-boundary initiative, the Xai-Xai ICAM follow-up includes a number of plans/projects/activities, such as: a) the master plan for the area dedicated to tourism development, including a land use plan and preliminary infrastructure projects, b) management proposals for especially protected areas, c) project on inter-tidal management (mussels and oysters) and d) a project for a small port development.

Experience gained in ICAM in Xai-Xai will be an important input in the preparation of the coastal zone management programme for Mozambique, set as priority by MICOA. Within this programme, the land use plan of coastal zone (including terrestrial and sea zones) will be elaborated. The approved methodology for the elaboration of this programme is the following:

1. The elaboration of a macro-diagnosis of all the information available concerning coastal area (i.e. physical assessment, natural resources base, socio-economic situation, institutional framework, etc.).

2. From the macro-diagnosis, a list of gaps and priority areas of intervention will be defined. During this phase, the definition of the coastal area will be agreed. Although there is agreement as far as the sea limit is concerned (the territorial waters or the 12 miles limit) the inland limit is still under discussion, (ecological, geomorphologic and administrative criteria).
3. In a third step, selected priority areas will be studied by multi-disciplinary teams, and detailed information collected. Stakeholders seminars will be held for the identification of the main issues.
4. Lastly, a management strategy will be proposed, together with a physical plan for the area.

It is still premature to evaluate the success of tools proposed for the implementation of ICAM and other projects in Xai-Xai.

Financing

The projects relevant to the coastal zone management in Mozambique are financed by the Government and international donors. In general, the Government supports the work of local authorities, while the international donors provide financial support. It is not expected that the Government will, in the near future, secure stable financial resources for implementing the larger projects without international help. It is anticipated that the private investment share in sustainable coastal development, particularly tourism and fishery, will rise significantly.

The project named "The Management of Coastal Resources by Local Communities (a project proposal for Xai-Xai Beach)" which implements some of the Xai-Xai ICAM proposals and is sponsored by European Union (about US\$380 000) illustrates the interest of international donors. The goals of the project can be summarised as follows:

- To enable the local communities in implementing the sustainable exploitation of the inter-tidal resources, specifically respecting the seasonal cycles for harvesting mussels and lobsters.
- Dune vegetation recovery and reforestation, in the areas where the forest was cut for fire wood and charcoal production and for processing of mussels.
- Development of alternative activities for local communities who make their living on inter-tidal resources, specifically planting fruit trees, planting trees for fuel and charcoal in designated areas, and production of honey and vegetables for subsistence and consumption in the tourism industry.
- Development of a strong campaign on environmental education either for local communities institutions, tourists and school children.

Another project is to be submitted to Danish assistance. That project, valued at about US\$200 000, will enable the planting of two nurseries of *Casuarina* to be planted along the eroded dunes of the beach strip between Zongoene (at the Limpopo River mouth) and

Bilene (a lagoon south of the Xai-Xai district). Local populations will participate in the planting of trees for fire wood and charcoal.

Funds have also been pledged through the EAF/5 Project (US\$65 000 and US\$75 000) for a first priority project identified within the strategy and with the approval of the stakeholders.

Obstacles

The most important obstacles are the lack of data, particularly for marine environments such as coral reefs, fishing grounds and stocks, near shore currents and navigation possibilities for small port construction. There is also a lack of adequate maps, lack of horizontal coordination between responsible authorities, lack of precise procedures and responsibility in issuing concessions on land particularly in handling tourism development ventures, lack of experience in dealing with foreign developers, and lack of land-use plans and management schemes.

Another important constraint to the implementation of an ICAM strategy for the Xai-Xai district is the lack of legislation for the enforcement of the adopted plan and lack of a legal mandate for the local steering committee. Existing legislation deals with urban physical planning which is adopted and implemented by the City Councils. This means that the adoption of the ICAM strategy for the Xai-Xai district, at the present stage, depends upon the goodwill of local institutions.

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Coastal Zone Management in Mecufi, Mozambique

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BACKGROUND

One of Mozambique's greatest assets is its 2 700 km coastal stretch. The coastal ecosystem provides a wealth of terrestrial and marine resources which can serve as basis for development investments that are productive and sustainable. Though fertile, these coastal areas and their resources are also fragile. Over half the population of the country lives on a narrow coastal strip which extends no more than 50 km inland. Whilst the average population density nationally is about 18 persons per square kilometre, along the coastal strip it is estimated to be 75 persons per square kilometre, and may be higher.

The reasons for this population concentration are both historical and a consequence of the recently ended war. Access to the rich fish resources was always a strong attraction. The colonial system established a trading and commercial network along the coast that attracted people into the area.

With this rapid influx of people to the coastal zone come severe degradation and loss of many of the coastal resources upon which sustainable socio-economic development in the country must be based. For example, increasing demand for agricultural land has prevented farmers from leaving land fallow, resulting in a reduction in soil fertility and soil erosion. At the same time, local degradation of mangrove forests have been observed, as these have become the principal source of wood for coastal communities and also are transformed into solar salt pans, while increasing fishing pressure is placing the coastal fishery, the principal source of animal protein for coastal people, under a growing threat. The case study described here is designed to address these issues while strengthening national institutional capacity to manage Mozambique's coastal resources.

There are few development activities taking place in the project area (northern province of Cabo Delgado). But many take place in the coastal zone and have environmental impacts or implications. There is no institutional structure available in the province to provide the necessary advice and guidance, to ensure that development initiatives occur in such a way as to guarantee sustainable use of the natural resources base. Neither is there adequate advice on how to improve management of existing agriculture and fishing. This is particularly important given that good resource management ultimately depends on the producers themselves.

Government institutions have sectoral concerns and donor projects generally have a single focus, yet coastal ecosystems are complex and interdependent. Over time, stress on parts of the ecosystem caused by current activities may affect all institutions and projects, as their sectors are affected in diverse ways by the decline of coastal ecosystems.

The long-term development objective of the project under discussion is the establishment

of sustainable socio-economic development in coastal zone of Mozambique through environmentally sound use of the region's coastal resources. The immediate objectives were defined as follows:

1. Reduce the pressure on the natural resource base of the coastal zone through the introduction and adoption of sustainable management practices which enable people to meet their basic needs. Particular attention is being put to gender and entitlement issues.
2. Create popular awareness and understanding through environmental education, and encourage direct local participation in the improved management of the resources base.
3. Overcome existing institutional barriers to sustainable development by:
 - (a) sensitising institutions and projects to include environmental components in their activities.
 - (b) creating structures for inter-sectoral collaboration, both in governmental and non-governmental organisations.
 - (c) institutional strengthening through training in environmental management.
4. Establish a strategy for coastal zone management in Cabo Delgado, to be used to improve coastal zone management in other regions of the country.

The project is located in Mecufi, the southern-most district on the coast of Cabo Delgado Province, is funded by the Norwegian Agency for International Cooperation Development (NORAD) and implemented by the Ministry for the Coordination of Environmental Affairs (MICOA).

The project was planned to take three years, and started in December 1992 with an initial preparatory phase concentrated upon the establishment of a wide range of necessary contacts and working relationships with people, institutions and organisations at local, district, provincial, national and even international levels, creating the necessary physical infrastructures in the project sites, and conducting rapid rural appraisal and survey of natural resources.

The implementation phase has been concentrating on many activities which are at various degrees of completion and include continued inventory and survey work and mapping of the resources for their use towards management systems. They are: implementation of community initiated small-scale projects; agro-forestry activities; mariculture; environmental education; training of extension workers and field assistants; surveys of fisheries resources and marine ecosystems; studies on the role of the traditional structures in the management of natural resources; empowerment of the villagers in order to influence planning and decision-making; and institutional cooperation and strengthening.

COASTAL AREA MANAGEMENT ISSUES AND STRATEGY

Given the limited knowledge about the environmental and development problems of the Mecufi district at the time of the start of the project, it was not possible to outline with much detail expected outputs or any activity plan. These were developed during the preparatory phase and then presented and discussed at the local level.

It was possible, however, to identify the major areas of activity which the project would pursue. They are described below.

Coastal Resources and Community Survey

In order for the project to closely target the most important resource management issues, an inventory of the coastal resources was carried out. During the first phase of the survey only preliminary data on the distribution and condition of the resources were collected (Batton & Massinga, 1994). This was followed by the preparation of detailed maps showing the distribution of the natural resources of the district, its ecological zonation and proposed land use planning (Inguane, 1994; Tovele, 1996).

Combined with the information collected through the community survey (Massinga *et al.*, 1993) this provides an important planning tool for the district. The community survey took a form of participatory rural appraisal (PRA) and was used to identify the principal problems of the local communities, and in particular those related directly and indirectly to management of the natural resources base.

Promotion of Sustainable Use of Natural Resources

This field had two major components. First, actions designed to assist local communities directly in the field and second, those designed to assist the government to develop and apply policies and practices which will assist in achieving an equilibrium between people and the coastal zone.

Local communities: Drawing upon the results of the coastal resource and community survey, the project is identifying and supporting the development of small-scale community initiated economic activities in order to improve the economic income of the households.

Policy: In the long term, field activities require support by sound government policy on coastal resource use. To assist in the development of such policy, the project is calling upon the assistance of other government institutions in addressing a number of critical issues. Those being considered include collaboration in establishing an effective system for the evaluation of the fish stocks, monitoring the impact of current agricultural practices and the state of the soils, assessing the environmental impact of existing and potential tourist developments, supporting programmes to improve sanitation, and providing guidance and support to environmental aspects of resettlement of people displaced as a result of the recently ended war.

Establishing Conservation Areas

Critical coastal ecosystems identified during the resource survey are being evaluated for the feasibility of managing them as conservation areas. Special attention is given to working with local communities currently using these resources, in order to establish management which is socially sound.

Among the resources identified to be protected through conservation areas are coastal woodlands, mangroves, coral reefs, and rare and vulnerable marine species such as the dugong and turtles.

Institutional Development

This project can only achieve its long-term goal if the capacity of Mozambique's institutions to manage coastal resources is enhanced substantially. The project is therefore pursuing this both through its day-to-day operations and through substantial investment in training. Specifically, the project is promoting an integrated, inter-institutional approach required for effective coastal zone management.

This is done by working closely with all governmental and non-governmental entities involved activities along the coast, and through a structure created for interagency coordination. This structure is the Advisory Committee and its activities.

Training is provided to all project staff and to close collaborators in associated Government and non-government institutions. Much is provided through short courses and project seminars, as well as through day-to-day interaction with the project's technical staff. Study tours to other projects with similar activities are also being carried out.

COMMUNITY PARTICIPATION IN THE NATURAL RESOURCE MANAGEMENT

The participatory approach to natural resource management that has been developed by the project is still being tested. For methodological and practical reasons, at this stage it is only possible to include a limited number of villages in the comprehensive village natural resource management programme.

The participation of the community in natural resource management is a process which involves several stages. They are described below.

Raising of the Villager's Awareness in Preparation for Resource Management

This is done by means of discussions with the community and carrying out discrete measures in order to create an atmosphere of mutual trust and confidence. The village must show the willingness to work with the project. "We enter the village through the door that the villagers open for us (the discrete measures) but we already have our eyes on the whole (village land use programme)", as the project staff members describe this process. Most of the discrete measures implemented are for generating rapid income. The principal immediate needs of the village's population are discussed at a village meeting which is usually attended by the entire village community and the responsible extension workers. During this meeting, the extension workers and the project staff endeavour to call the attention of villagers to the problems of degradation of natural resources and the available possibilities for sustainable resource management. In general, the villagers have already developed an acute awareness of the problems.

Survey and Analysis of Natural Resources

This step initially involves a survey of the infrastructures and all natural resources of the area. The analysis of natural resources is done in three stages:

1. Description of the condition of the natural resources and socio-economic aspects in the past by the village elders: vegetation, fauna, croplands, condition of soils, agricultural production and yields, population, living conditions.
2. Description of the situation and the above-mentioned aspects as they appear at present by younger villagers, in conjunction with an analysis of the causes.

3. Comparative analysis of the past and present situations serves to reveal the problems. This is then taken as the starting point for a discussion of prospects for the future. As a rule, short-, medium-, and long-term approaches to solving the problems are considered:

- improvement, rehabilitation and recovery of the resources.
- changing land-use methods.
- planning and organisation of village resource management.

4. Establishment of the Village Management Nucleus.

The village elects the members of the Village Management Nucleus according to certain criteria presented in the statutes (for example, the members should be representative of the village population in terms of gender, they should be able to provide a certain guarantee that they will remain in the village, and they should be socially accepted). The Village Management Nucleus is responsible for coordinating and implementing the land-use plan, and for administering the planning instruments. It also represents the village in the contracts with the project, official government and other cooperating organisations.

ESSENTIAL FACTORS FOR THE ACHIEVEMENT OF THE PROPOSED OBJECTIVES

The success of the Mecufi Coastal Zone Management project in its present form is essentially due to the following factors (the order in which they are listed does not indicate any priorities):

Existing will of the village population to practice self-help

The willingness of the village population to practice self-help¹ in connection with resource-conservation measure grew as the project implementation progressed. The principal causes of this were:

- *The increasing pressure on resources.* The continuing inappropriate use of the resources is leading to accelerated degradation and destruction of natural resources. Shrinking croplands, falling yields and other problems are rapidly causing deterioration of the living conditions of the village communities. The people in Mecufi are consequently forced to devote thought to ways of solving the problems afflicting their own habitat.
- *National campaigns.* The willingness of the village population to practice self help in connection with resource conservation measures has been influenced by national programmes and campaigns aimed at raising their awareness of the problems and disseminating information about suitable ways of addressing them.

¹ Self help as used here means efforts undertaken by local population groups themselves to solve problems that they perceive as pressing. The focus is on communally organised efforts by local groups to overcome problems associated with the destruction of natural resources.

- *Technical topics and training measures.* Drawing from other similar projects in other parts of the world, the Mecufi Coastal Zone Management project was able to offer tried and tested resource conservation techniques. The farmers were immediately able to familiarise themselves by direct observation of these methods and their persuasive results, and to derive economic benefits from them.

The success of the propagated techniques has also been due to their simplicity and the fact that the villagers can easily learn to apply them. They can perform them using the locally available tools and materials they are familiar with. Many of the methods borrow from or are based on traditional practices, and can thus be readily understood by the village population. This enhances the self-confidence of those involved and increases their willingness to carry out the activities on their own, also contributing greatly to the sustainability and long-term effectiveness of the measures.

Because the project recognised the importance of training measures right at the beginning, high priority has been attached to their implementation in parallel to other project activities. They are well received by both the cooperating organisations and the villagers because the training topics and methods, as well as the teaching aids employed, take their orientation from the needs and possibilities of the target groups.

The contacts among project staff, village extension workers and villagers permit continual feedback and fast adjustment of the training topics where required.

The method of village land-use planning

The village (particularly) land-use planning approach applied by the project is successful because it is performed within the context of a dialogue between the villagers and the project and/or the cooperating organisations. The villagers contribute knowledge of and experience from the environment, and this body of information then constitutes the basis for joint analysis of the principal problems and identification of ways to get them under control.

This approach has stimulated positive changes in attitudes and behaviour in the villages. In particular, it is gradually effecting sustained management of village territories by the villagers in a spirit of independence and responsibility for their own actions. The village population is gaining a new perspective that is encouraging it to stay in the village and endeavour more strongly to conserve its natural resources.

The existence of village level organisations

The existence of organisations at the village level in the project areas (both traditional and established by the government) has been highly advantageous for the project in spite of the weaknesses of these structures – because they have facilitated communications.

The institutional framework for implementation of the project

The Mecufi Coastal Zone Management project was conceived as a "support project" for support of the Government and NGOs active in the project area. Consequently, the project does not "compete" with the others at the village level. Instead, the cooperating organisations benefit from technical advice, the training measures, and the material and logistical assistance that the project is able to make available to them.

The project has played an active role in establishing the cooperative relations that now link the Government administration and various Government services. An effective collaboration has emerged, based on the willingness of the institutions to work together and with the project. This cooperation has been institutionalised in the form of consultative body at the district level with the participation of some provincial institutions. The overall coordinated approach that this has permitted at the village level (with harmonisation of technical standards, technologies, methods, planning and organisation) is overcoming the insecurities of the village population, which had been caused by the uncoordinated and often conflicting advice given to them by different services and organisations, while substantially increasing their participation in the measures.

Favourable national framework conditions

The framework conditions in Mozambique are relatively good for the success of participation-oriented approaches in the field of resource management. This has manifested itself in the development of national plans and programmes that emphasise participation by the population and decentralisation of the responsibility for land-use decisions as the critical prerequisites for sustainable resource management. This has provided the requisite breadth of action for participation-oriented resource-conservation projects like the Mecufi Coastal Zone Management project.

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Development of Mafia Island Marine Park

GREG ANDREWS

DESCRIPTION OF THE PROGRAMME

The Mafia Island region contains estuarine, mangrove, coral reef and marine ecosystems. The coral reefs are particularly diverse for eastern Africa. Habitats in the area of the Mafia Island Marine Park (MIMP, 400 km²) include hard coral dominated reefs, soft coral and algal dominated reefs, sheltered back reef systems, intertidal flats with hard and soft substrate, mangrove and coastal forests, extensive seagrass beds, algal, sponge and soft coral subtidal beds. The area includes critical habitat for the dugong (*Dugong dugon*, vulnerable, status unknown) and sea turtles (*Chelonia mydas*, *Eretmochelys imbricata*, *Lepidochelys olivacea*, *Dermochelys coriacea*, all endangered, and *Caretta caretta*, vulnerable) and has been recognised as an important site for biodiversity.

The fisheries around Mafia provide much of the area's subsistence protein as well as a substantial income for the community. The productivity of Mafia's marine and coastal habitats are threatened by activities that include recent rises in the occurrence of dynamite fishing, increased use of seine and small-meshed nets, coral mining, mangrove cutting, clearing of coastal forests for agriculture and general unsustainable resource use. These pressures are further compounded by a continued population increase which poses pressure on the resources. In addition, unregulated tourist developments along the coastal strip pose an environmental and socio-economic threat through the development of scarce land, added pressure on limited water resources, disturbance to the traditional economic and social balance, and potentially adverse effects on the amenity value of the area.

Throughout Eastern Africa, integrated conservation management and policy development has generally concentrated on terrestrial ecosystems. However, the recognised economic and ecological importance of marine and coastal environments has prompted the Government of Tanzania to prepare a legislative base for marine protected areas by passing the *Marine Parks and Reserves Act* in 1994. An area around Mafia Island was proposed as Tanzania's first marine park. A management plan for the MIMP was developed in 1993 and the park was officially gazetted in April 1995.

Impetus of the Programme

Discussions on marine parks particularly in the Mafia region have been held at various levels for many years (Ray, 1968; UNEP, 1989). The first formal initiatives to create marine and coastal protected areas in Tanzania came in 1975 through regulations made by the then Ministry of Natural Resources and Tourism under the *Fisheries Act*, 1970. Seven small areas of reef were declared marine reserves for total protection, these included two areas around Mafia Island, Chole Bay and Tutia Reef.

Continuing studies initiated in 1988 by the Institute of Marine Science, University of Dar es Salaam, with financial support from Shell Petroleum Development Tanzania Limited, and in collaboration with other agencies including Frontier-Tanzania project, have provid-

ed important baseline information for planning development. Along with resource data accumulated for the area the socio-economics of the area were also studied.

In February 1991, a meeting held in Dar es Salaam discussed the concept of a marine park on Mafia. It resulted in the formation of a Steering Committee appointed by the Principal Secretary of the Ministry of Tourism, Natural Resources and Environment. This committee was responsible to further develop planning and propose the mechanism for creating and managing a marine park centred around Mafia.

The Steering Committee collated existing information and made full use of the cooperation extended by the Mafia District authorities and the Frontier-Tanzania project, which was producing information on resource use and the ecology of the area (Horrill & Ngoile, 1991). The Frontier group and local counterparts had also spent time discussing the idea of a multi-user marine park with residents of the area.

In developing proposals for a multiple-use protected area which tries to balance conservation and development objectives, the Steering Committee realised the need for the following two activities:

- An assessment of the existing legislative base for such a protected area and the generation of recommendations and draft documents for any new legal statutes required. A study of this kind had to review a wide range of Acts and Regulations and be fully informed of all aspects of the proposed park/reserve.
- A forum at which the inhabitants of Mafia Island and surrounding islands could air their views on the idea along with other users of resources in the area and interested outside parties.

Following a request from the Division of Fisheries (DOF), the FAO agreed to sponsor the first of these activities and a consultant began work in collaboration with a representative of the Attorney General's Chambers in September 1991. The legal team thought that there were various problems with the existing legal base. While formulating a specific legal structure for the Mafia Park, the team therefore regarded the Mafia plans as part of a longer-term programme anticipating future developments of marine parks and reserves. The result was the drafting of a Marine Parks and Reserves Act and Regulations.

The second concern was addressed in a workshop, funded by WWF, which was held at the Mafia Island Lodge 20–25 October, 1991. The workshop had the following objectives:

- To provide a mechanism for Mafia Island community and marine resource users to present their views on the concept of a Mafia Island Marine Park/Reserve and to participate in the development of a management approach.
- To bring together all institutions and bodies with an interest in a marine park/reserve in the Mafia area.
- To present the management proposals of the Steering Committee and to develop and approve an outline management structure and strategy.
- To forge agreement on the precise area concerned and approve a plan for legal establishment of the park/reserve.

- To recommend the appointment of a management committee and to outline its terms of reference.
- To produce a time-tabled plan for implementation of the actions identified.

The workshop brought together over 70 participants divided almost equally between the community of Mafia and mainland Tanzania. Several non-Tanzanian resource people made contributions in bringing descriptions and experience of Marine Protected Areas (MPAs) elsewhere.

The workshop provided a basis for the preparation of the General Management Plan (GMP) and was a start to a community participatory approach. With the recent appointment of the Board of Trustees and translations of various documents including the GMP it is hoped that, once the institutional framework is set up, the process for planning and implementation will continue. A process for developing the required plans and documents is briefly described in Table 1.

Table 1. Process for developing GMP and regulations

Time	Process
1996	
April	Gather information on resource use and stakeholder issues, identify problems and possible solutions and prioritise
May	Translation of legislation, review and redraft GMP, collate results of VHS determine roles and responsibilities of stakeholders
June	Villages and stakeholders allowed to digest and discuss above information in their own forum
July	–
August	Analysis of ideas and solutions, agreement on final plan, zoning and regulations
September	Back to village committees, village councils, district council, advisory committee and Board of Trustees for endorsement

Goal and Objectives

Under the overall goal of assisting the Government and communities of Mafia and surrounding islands to develop Mafia Island Marine Park (MIMP), and effectively conserve and manage the natural resources of the park ecosystems, the WWF project has two main objectives:

- To assist in the management of Mafia Island Marine Park so the ecosystem processes and biodiversity are maintained for the benefit of the people of Tanzania, and particularly the Mafia Island community.
- To facilitate the development of economic activities to reduce pressures on the park ecosystems, while ensuring all natural resources within the park are used sustainably.

Major Events Completed

- legislation passed
- park gazetted
- Board of Trustees appointed
- project moved and established in temporary quarters
- communications network set-up
- participatory framework for villages established
- process for community development detailed
- participatory rural appraisal exercise undertaken in all villages, data collated and reports compiled
- staff training undertaken
- major capital items purchased
- consultancies on community participation, alternate building technologies and ecotourism completed

Major Events Planned for Next Phase

- appointment of the MIMP advisory committee
- selection of a warden
- development of day to day management activities and park administrative procedures
- development of the permanent infrastructure
- implementation of community development activities
- appointment of additional staff
- further staff training

Institutional Structure

The *Marine Parks and Reserves Act (1994)* provides for the declaration of marine parks and reserves and designating of zones, and the preparation of management plans for the conservation and sustainable utilisation of marine and coastal resources. Under the Act, the Minister responsible for marine parks and reserves is empowered to make regulations for the sound management of the parks and reserves. The objective of this new act is "to provide for the establishment, management and monitoring of marine parks and reserves, to establish a Park and Marine Reserves Unit (*sic*), and to repeal certain provisions of existing legislation".

Under this Act, the principal requirements for the implementation of MIMP are:

- Appointment of a Board of Trustees by the Minister on advice from the Principal Secretary.
- Establishment of a unit known as the Marine Parks and Reserves Unit by the Director of Fisheries who shall in consultation with the Board, appoint an administrating Unit Manager.
- An Advisory Committee for the MIMP which shall be appointed by the Principal Secretary on approval of the Board.
- A Warden for the MIMP appointed by the Board from names proposed by the Advisory Committee.
- MIMP officers to be appointed by the Warden in consultation with the Board.

Board of Trustees

The Board of Trustees is appointed by the Minister for Natural Resources and Tourism (NRT) on advice from the Principal Secretary. The Board of Trustees will be the overall

governing body for all marine parks and existing marine reserves and will be responsible to the Ministry for the administration and operation of these areas. The Board of Trustees should represent the broad base of interest groups within marine parks including national and regional government, private business, the scientific community, local communities and international conservation NGOs.

The major roles of the Board of Trustees are:

- To formulate policies on marine parks and related facilities and activities.
- To oversee the use of the marine parks Conservation and Development Fund.
- To advise the Director of Fisheries on management of marine reserves.
- To advise the Minister (NRT) on approval, revision and amendment of the GMP.
- To advise and direct the Marine Parks and Reserves Unit Manager on the designation of specific marine and coastal areas as marine parks, marine reserves or buffer zones, and the drafting and implementation of regulations, and other matters affecting marine parks and reserves.

Marine Parks and Reserves Unit

The Marine Parks and Reserves Unit will be established by the Director of Fisheries within the Division of Fisheries. The unit's primary responsibilities are:

- To establish and monitor the control, management and administration of marine parks and reserves.
- To seek and expend funds for the establishment and development of marine parks and reserves.
- To implement and enforce the provisions of the *Marine Parks and Reserves Act 1994*.
- To promote interest in marine parks and marine conservation.

Mafia Island Marine Park Advisory Committee

For each marine park there shall be an advisory committee (AC) which shall be appointed, with the approval of the Board of Trustees, by the Principal Secretary for NRT. The duties of the AC will be advisory both with regard to the Warden and the Board of Trustees.

The composition of the Technical Committee for MIMP should also represent the broad base of interest groups within MIMP, including local communities. As with the composition of the Board of Trustees, there should be an approximately equal division between government and non-government representatives.

The major responsibilities are:

- To advise the Board of Trustees on MIMP management.
- To provide management oversight for MIMP.
- To consult with the Warden on technical, scientific and operational matters.

Mafia Island Marine Park Warden

A Warden for MIMP will be appointed by the Board of Trustees, on the advice of the AC, and will be directly responsible to the Board of Trustees for the affairs of Mafia Island Marine Park. The prime task of the warden will be the administration, coordination, monitoring, development and operation of all matters, pertaining to MIMP. These include staff, accounts, projects, enforcement including prosecution, all directives given by the Board of Trustees, and the monitoring of the management strategy for the MIMP with regard to its effect on the environment, resource use, the socio-economics of the local communities, and the district as well as national economies.

The Warden will have to liaise with local communities and business operations, investors or potential investors, the local, regional and national government offices and the conservation and scientific communities. In the execution of his or her duties, the Warden will be assisted by the MIMP staff appointed by him and approved by the Board of Trustees and WWF Technical Advisors and WWF staff.

District Authorities

Interaction with Government agencies will be primarily through their representation in the Board of Trustees (national) and the Advisory Committee (regional and district). It is through these forums that the Government agencies views would be most effectively represented. At district level, the MIMP staff, especially the Technical Advisor and the Warden will liaise closely with concerned agencies through direct contact as well as through the AC. Investment queries to the Investment Promotions Centre (IPC) concerning MIMP should be forwarded to the Marine Parks and Reserves Unit, before consideration by any other agency, and then be forwarded to MIMP. Upon acceptance, the investor(s) may then proceed to other relevant agencies.

The administration of MIMP has been designed so that existing Government agencies can effectively interact with MIMP management. This is especially important at the local level. MIMP has no claim on revenues raised by fishing licences issued by the District Natural Resources Office (DNRO). No park officer has any jurisdiction over any activity not covered by the Marine Parks and Reserves Act. Furthermore, no park officer has jurisdiction outside of the buffer zone, except in cases involving offences within MIMP or activities likely to affect MIMP. Within MIMP, DNRO officers or officers of existing enforcement agencies (such as the Police) retain the right to enforce laws and regulations (not modified in the Marine Parks and Reserves Act) including the laws and regulations of that Act. Where possible, MIMP will assist or facilitate assistance for the DNRO and other enforcement agencies in the execution of their activities.

Village Councils

Successful implementation of the project relies heavily on the active involvement of local villages. The structure of the MIMP is designed to involve the local people in the caring for their own environment and in expressing and meeting their own needs. To ensure that there is adequate consultation and participation, the MIMP management should develop a detailed strategy to liaise with its local communities. This should include the publication of information materials aimed at local communities.

Through the legislation, all villages within and around the park have been given the right to participate in the management and operation of the MIMP, although there is no real power in the hands of the community under the Act. Village communities and officials in all villages within or near the park will be encouraged to collaborate closely with the Warden and the Technical Advisor in ensuring that their rights are protected and that park regulations are respected.

The village council should determine how the village will be represented in dealings with the park administration and planning. Notwithstanding this, village councils will invite the Warden or TA to all meetings relating to matters that might concern the park. Each village must be consulted on reviews of zoning regulations, new developments, or any other issue which may affect their food or income source and/or cultural and social values, and at any time when the project objectives or activities are changed or other far-reaching actions

taken. They should also play a key role in the assessment of the impacts of proposed activities and developments could have on MIMP and their local community. The village committees or other representatives should provide a liaison facility between the members of the community affected by the park through the TA and Warden and their representation on the Advisory Committee.

MIMP Village Liaison Committees

Through the Village Councils, MIMP Liaison Committees have been formed in each village. The role of these committees is to:

- Articulate views and concerns of the village to the project team and Advisory Committee.
- Ensure village participation in project activities.
- Ensure a means of communication between the project and villages.
- Disseminate information from the management team throughout their respective villages.
- Maintain and manage equipment that is allocated to each village.
- Keep records of meetings and information relevant to their respective villages.
- Provide information on resource issues and aspects off access to resources.
- Provide community members to serve as (project-funded) community development assistants and monitoring assistants, as necessary.
- Advise the Warden and TA on village expectations.
- Advise the Warden and TA on appropriate steps in the advent of a conflicting views (these committees should be the first step in discussing disputes between the management team at the village level).

MAJOR AREAS ADDRESSED BY THE PROGRAMME

The WWF project seeks to support the establishment of the MIMP and the implementation of priority conservation and development activities. Proposed activities are focused on strengthening the communities on Mafia and surrounding islands to improve management of marine and coastal resources. Emphasis is placed on community empowerment and institutional capacity building, and the need to establish sustainable management systems which strengthen community participation in all aspects of decision-making. The links between community development and conservation are clearly recognised and community development is a major component of the overall project.

Clearly, the major beneficiaries must be the island communities. Extensive participation by the local communities is an integral part of developing the programme and strategies for management. The objective is to create a park "run for the people and by the people", the overall aim is to link conservation objectives and local development aspirations of the Mafia communities.

Villages within the area will benefit from training for improved resource management practices, improved access to information, opportunities for direct involvement in programme activities, access to alternative income generating activities and socio-economic benefits from improved resource management. Local natural resource officers will benefit from training, improved capacity, and improved access to information. These benefits will be expanded to include the institutions established for the park. The WWF project staff will benefit from training in project design and management, monitoring and evaluation, and specific technical areas.

Issues

All the inhabitants are highly dependent on the natural resources of the area for food and income. In addition, there are several commercial concerns whose businesses also directly depend on the natural resources. Exclusively artisanal at present, fishing is a key economic activity for the population of the Mafia district (33 054 people in the 1988 census), although other marine resources are also widely used on Mafia. A recent study (1992–93) of local communities operating in the proposed park area, has ranked local marine resource use in the following descending order of numbers of people involved: fishing for finfish and octopus, and collection of coral, shells, sea cucumber and lobster (Horrill & Ngoile, 1991). In addition, a related local industry includes boat building. Large dhows are constructed on the islands of Chole and Jibondo using timber typically from Lindi region.

Marine Resource Use

Most marine resource users in the area operate from boats. Notable exceptions to this are the women and school children of Juani and Jibondo Islands, who collect octopus on foot. The great majority of boats in the area are small *ngalawa* (sailing canoes with outriggers) and *matumbwi* (canoes), with only relatively small numbers of the larger *mashua* and *dau* (both being larger, 7–8 m sailing vessels, the former with a squared stern, the latter a pointed stern). The pattern of equipment ownership shows that the fishery has a traditional base, with boats and gear being passed down on a family basis.

The primary source of income for the vast majority of marine resource users in the southern Mafia area is fishing for finfish. More than 90% of the fish landed are caught by "traditional" methods. The main types of gear used are seine nets (2.5 inch or 1–1.5 inch mesh), shark nets (5–12 inch mesh), gill-nets, *madema* (box traps), *wando* (fence traps) and handlines. The primary catch is shark, emperors, rabbitfish, mojarras, snappers, groupers and rock cods.

The majority of finfish caught in the waters surrounding Mafia Island are exported to Dar es Salaam, with much of the catch sold at sea rather than landed on Mafia. Government fisheries statistics show that the number of resident fishermen/resource users operating in the Mafia district has remained relatively stable between 1984 and 1990 whilst the number of visiting fishermen has increased dramatically (ten-fold) in the same period. It should be kept in mind that local fisheries statistics cannot be relied upon for good data. The officers lack the capacity to undertake systematic data collection and many fishermen fail to register.

Many of the rocky intertidal flats are fished for octopus with sticks during spring tides. Until recently the majority of octopus was also exported to Dar es Salaam as well as Zanzibar. This has subsequently changed with the establishment of Hellas Tanzania Ltd., with a processing facility on Mafia Island, as the main buyer of octopus. Juani and Jibondo Island have organised cooperatives which send groups of collectors to the more remote reefs such as Tutia and Mange.

Fishing for shellfish, sea cucumbers and lobster are undertaken on an opportunistic and a small-scale commercial basis. Shellfish are utilised locally for food and are sold to Zanzibari buyers for export as part of the curio trade, with sea cucumbers being bought solely for export to the Far East. Sea cucumber collection is important as a primary income source at

Kitoni, Kilindoni and to a lesser extent Keigiani. The lobster fishery is still developing with the main buyer being Hellas Tanzania Ltd.

Within the Mafia district, people depend on coral stone and lime produced from coral and mangroves from the Rufiji delta for building purposes. Live coral for lime production and coral stone is mined from the adjacent reef flats and crests. Mangrove poles for construction are imported because local trees are too small whereas local mangroves are infrequently utilised as a source of fuel in the lime-making process.

Collection of coral is quite important as a secondary source of income for many of the marine resource users of Mafia. However, a small proportion of the islanders of Jibondo and Chole are particularly dependent on this income source.

Agriculture

Within the MIMP, agriculture is practised by two somewhat distinct groups. The first are those marine resource users that utilise agriculture as a subsistence crop or minor income source, and the second are the farmers around the coastal forest area at Mlola.

For the former group, coconuts and cashew nuts are the major crops of economic importance with cassava grown for subsistence. The islanders of Chole, however, gain significant income from the oranges and limes grown on the island. In Mlola, soils have significantly greater fertility and crops such as coconuts, maize, cassava, okra, tomato, sweet potato, mango, banana, and pineapple are grown. Livestock such as cattle, goats, sheep, ducks and poultry are also kept by both groups for subsistence and as a minor income source.

Coastal Forest

The coastal forest area is important to the local people as a source of building poles, fire wood, rubble for building, game, mushrooms and medicines. Most of these products, with exception of fire wood, are collected on a subsistence basis by the surrounding inhabitants. Fire wood has also been collected to produce lime from coral rag collected from the cleared forest areas.

Tourism

The coral reefs of Mafia offer good snorkelling and SCUBA diving opportunities. Conditions are excellent for swimming, sport fishing, sailing, and exploring historical sites, while the island scenery is very attractive. Despite such attractions, development of tourism on Mafia has been slow. However, with the rise of this sector in the national economy and the progress of a number of initiatives, this is set to change.

Currently, the two significant sites for tourist accommodation is the Mafia Island Lodge, run by the Tanzania Tourist Corporation and opened in 1971 and Kinasi camp opened in 1995. The Lodge has 40 double rooms and Kinasi has twelve. The island is receiving about 4 000 tourist nights per year at present. Development is hampered by lack of good infrastructure, particularly the road from Kilindoni to Utende and the airport at Kilindoni. Promotion of the area is in its early stages with Mafia yet to establish itself as a quality destination.

In summary the main environmental concerns expressed so far regarding the MIMP are:

- Destructive fishing techniques, particularly dynamite fishing.
- General over-exploitation of the fisheries resources, and the access to that resource.

- Excessive mining coral for aggregate and lime production.
- Excessive harvesting mangroves for building and fire wood.
- Clearing of the Mlola forest for agricultural use.
- Unmanaged tourism development.

Linkages among Issues

As stated earlier the objective is to create a park "run for the people and by the people", with an overall aim of linking conservation objectives and local development aspirations of the Mafia communities. To this end the development of a process for community development has been a high priority. Community development activities must have clear linkages to the conservation objectives. A process to ensure this has been developed by ensuring community participation and articulating agreed objectives of the MIMP to the community.

Planning Process

A management plan for the MIMP has been developed (GMP, 1993) with extensive consultation and input from stakeholders (users, government agencies and NGOs) who will have a continuing role to play in the decision-making process. In light of the passing of legislation and the time period from development of the original draft of the GMP, it is proposed to revise the GMP in an extensive workshop scheduled for the first year of implementation under the Board of Trustees (i.e. FY 96/97). The plan has been translated into Swahili and should be fully understood and agreed by the community before presentation upwards to the Minister for approval. The plan will then be subject to regular monitoring and evaluation to ensure flexibility of approach under changing environmental and socio-economic conditions.

This plan should be objective oriented and include the Zoning Plan and general regulations for the MIMP. The regulations should clearly define the roles and responsibilities as well as the functional mechanisms of the Board of Trustees, the Marine Parks and Reserves Unit, the MIMP Advisory Committee and the Warden. A separate plan, an operational plan (OP), should be developed in parallel with this plan to give clear direction to the on site staff to perform their day to day activities to meet the objectives of the GMP. The OP could be approved by the Advisory Committee level and should be a flexible document under the principles of adaptive management. This operational plan would fall under the overall objectives and goals expressed in the GMP. The management goals, which reflect the integration of development, environmental protection and sustainable resource use, were previously expressed in the General Management Plan of 1993 to:

- Protect ecosystem processes and areas of high species and genetic diversity.
- Stimulate the rational development of non-utilised natural resources including tourism.
- Promote sustainability of existing resource use incorporating recovery strategies for over utilised resources.
- Involve marine park users, especially the Mafia community, in the planning, development and management of the park, and to give priority of resource use and economic opportunity to the Mafia community.

These objectives are still very applicable. The MIMP is the first marine park in Tanzania and the WWF project therefore represents an important model with which to develop suitable management systems and institutional capacity not only for the MIMP but also all subsequent marine parks in Tanzania.

ANALYTICAL FRAMEWORK

Activity 1. Anti-dynamite fishing activities

Why chosen?

- Community priority.
- Fulfils objectives of GMP and WWF.

Lessons learnt

- Community and institutional priorities may differ.
- Institutions are reticent to empower communities in a real sense.
- There is a need for a more district level approach to problems.

New strategies

- Involve other stakeholders earlier.
- Identify and put in place process for accountability and identifiable milestones for implementation for Government officers.

Activity 2. Development of community participation process

Why chosen?

- Community and institutional priority (the Act specifies "full community participation" but fails to elaborate how this is to be achieved).
- Fulfils objectives of GMP and WWF.

Lessons learnt

- Institutions are very reticent to change even after articulating the will to do so.
- Real empowerment of communities does not appear to be a high Government priority.

New strategies

- Need to be aware of long time frames for institutional change.
- Need of specific strategies to deal with institutional change.
- Need to train institutional staff to accept new concepts and change authoritarian approach.

Activity 3. Community development

Why chosen?

- Government and community priority and the obvious links between development and resource use.
- Fulfils objectives of GMP and WWF.

Lessons learnt

- Government and community may be at odds with development approach.
- Community and Government priorities for development may not have links to the environmental objectives of NGOs and donors.

New strategies

- Need to have donor and Government objectives clearly articulated and agreed.
- Must have clear implementation agreement.
- Must have accountability for Government, community and donor interests.

IMPLEMENTATION ACTIVITIES TO DATE

Implementation activities have been prioritised through consultation with community members. This has been done through formal PRA exercise or forums such as the ecotourism workshop. The community has been allowed to express the priorities for activities within the framework of the legislation and the GMP process. The one consistent theme is dynamite fishing and community involvement and empowerment.

Implementation has been institutionalised at the community level by the appointment of committees through the Village Councils. This process has legal status under the Local Government Act. Further institutionalisation has been delayed due to the lack of the institutional framework detailed within the Act.

Both WWF and NORAD have long-term funding proposals for the Mafia Island Marine Park. Further analysis must be done for a more sustainable approach to MIMP operations. Tourism has been proposed as the largest potential for funding. Caution needs to be taken here as tourism is in its infancy and risks being over-taxed before it is established.

The least successful implementation tool has been the very top down authoritarian approach. Local communities are becoming more used to a participatory approach and are now less likely to adhere to management activities of which they have not been part.

OBSTACLES TO IMPLEMENTATION AND TRANSFERABLE TOOLS

- The institutional framework of our partners (i.e. Ministry of Natural Resources and Tourism) needs to be established and roles of players clearly defined.
- All players at all levels need to be held accountable for their actions.
- Project needs clear signed agreement with all institutional partners and a clear understanding of all the individuals roles.
- There is generally a failure to identify logistic needs of projects as a major requirement for successful project implementation.
- Projects need to be less ambitious and more finely focused.
- Time frames for all players need to be realistic and in the context of the institutions and location of project and point of entry.
- Projects need donors to be more transparent with each other and to agree on single goals and objectives before implementation.

- The concentration at the community level has been a major success. Communities see NGOs as a buffer between Government and themselves and as a means to facilitate and articulate their needs.
- Due to the level of trust generated by a very hands on community approach and the project having moved into the community, a high level of trust and commitment has been ensured from the community.
- The level of trust and commitment of the community has led to the community taking the lead role in challenging outdated and inappropriate top down decision-making.

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Establishing Coastal Management in Tanga Region, Tanzania

An Experimental Approach

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INTRODUCTION

The Tanga region is in the north-east of Tanzania, in the equatorial part of the Western Indian Ocean. It has a coastline stretching 150 kilometres, south from the Kenyan border. Over 150 000 people live along this coastline, in one large town and about 90 villages. They rely upon artisanal fishing for finfish, prawns, octopus and sea cucumbers. Processing and exporting of these catches, both regionally and overseas are also of importance to the economy. Small-scale farming is important but productivity is generally low. Sisal, timber and cashew nuts are the main commercial crops. Tourism is limited, but growing, based on game fishing. There are three administrative coastal districts within the Tanga region, namely Muheza, Tanga Municipal and Pangani.

TANGA COASTAL ZONE CONSERVATION AND DEVELOPMENT PROGRAMME

The Tanga regional government authorities recognised that there were growing environmental problems centred around Tanga. These included declining fish catches, use of destructive methods of fishing such as dynamiting, increasing pollution, increasing use and cutting of mangrove forests. They did not feel that they were effectively bringing these problems under control. They sought assistance from the Eastern African office of IUCN and Irish Aid. Together they developed a programme for funding and training for local residents and government officials to start dealing with the issues.

The programme's overall goal is to develop sustainable use of the area's coastal resources. This is to be achieved "through a series of integrated activities aimed at protection, sustainable use, and management of coastal zone resources" (IUCN, 1993). The two objectives of the programme are:

1. Improved capacity of government and community institutions to undertake Integrated Coastal Zone Management.
2. Coastal communities using coastal resources in sustainable ways, including restoring degraded environments.

The ways to achieve these objectives are not obviously straightforward and not easy. Recognising this, the programme, which is being run by both regional and district level govern-

ment officers, adopted the World Bank project cycle of listening, piloting, demonstration and mainstreaming (Picciotto & Weaver, 1994). During this first phase, we are listening to the concerns and ideas of the coastal villagers and main resource users. We are now testing some of those ideas in a small number of pilot villages, and methods of management and their enforcement. Also, we are testing potential ways of earning income which are sustainable, such as small-scale fish farming, seaweed farming and lobster ranching. Following this current phase, we hope to demonstrate the successful methods more widely and to take on other important environmental issues. Eventually, with enough experience and trained personnel, the methods that work will become standard Government practice, and mainstreaming will be completed.

There is an existing decentralised government structure in Tanzania. Local government works at district and village level. Villages have committees and elected officers and can make and enforce by-laws. District government offices have extension workers in forestry, fisheries, agriculture and community development. These staff provide advice and assistance directly to villagers. They are supervised by a district technical team, with officers from each of these areas. District officers are supported and given advice by regional officers. These regional officers have the role of ensuring that national government policies and programmes are undertaken.

The Tanga Coastal Zone programme's activities are carried out through this existing decentralised structure. There is a programme team with regional coordinators from Fisheries, Forestry, Community Development and the three coastal districts. The district technical teams are made up of district heads from these same departments, plus Planning and Agriculture. They draw up the work programmes and supervise extension workers. There are about 30 extension workers, half of whom are based in the pilot villages, who facilitate and assist the village activities. Except for a few administrative staff, all personnel are full-time Government employees who still participate within their own departments. There are four technical advisors, who are employed by IUCN. Work plans are reviewed by District Steering Committees, that include government officials and elected villagers. These work plans are approved by a Regional Steering Committee including regional government, district government, donor and IUCN representation.

Funding is provided by Irish Aid for a three-year period (mid 1994 – mid 1997), for three million Swiss francs. Percentage breakdown of funds according to type of spending is:

Capital equipment and buildings	16%
Operating costs	15
Local personnel and training	15
Technical advice and management	53

ENVIRONMENTAL ISSUES

Participatory assessments of the environmental issues (Gorman, 1995) show that most people agree which are the most urgent. At the top of the list is declining fish catches. More people are fishing today than in the past, but they catch fewer fish. Up to 80% of the adult men in coastal villages are involved in fishing. An increasing number would like to try alternatives such as fish farming. Women particularly are keen to take up economic activi-

ties such as farming seaweed, or other products which do not require the use of a boat. Subsistence farming is the second most important economic activity in the coastal villages. More than half of farming activities are carried out by women. Trading, especially of fish and various manufactured goods and petty businesses involves up to 30% of people in some of the larger villages. In one particular village, each fisher supports ten fish traders, with 80% being women. Important export products include sea cucumbers, prawns, octopus, seashells, shark fin and fish offal.

Destructive catching techniques such as dynamite and seine nets are being used. A recent survey (Horrell & Kalombo, 1996) shows that of the 93 coral reefs in the region, about 10% are damaged beyond repair, another 10% show no major signs of damage, and the remainder all show significant amounts of damage, but will probably recover if given some protection from future damage. Small-meshed nets are also being used and are dragged over the reef causing damage. Prawn trawlers are cited by the villagers as particularly destructive both in the way they disturb bottom habitats and their by-catch. In 1995 there were 19 registered trawlers. There is a closed season from December to February. The trawlers are not effectively excluded from inshore waters and direct conflicts with artisanal fishers do occur. Other important issues are the scarcity of firewood and cutting of mangroves, beach and soil erosion, beach pollution and low agricultural production.

Underlying all these issues is the general perception that the use of these resources is poorly managed (Tanga Regional Workshop Recommendations, 1995). The Government authorities generally have good policies regarding their use and management, but these policies are poorly enforced. It is recognised that the Government, with its limited financial resources and ever decreasing numbers of staff, has limited ability to enforce laws and regulations. Yet, there is a general consensus among local residents that the laws should be enforced, and that they are necessary to manage the use of resources such as fish and mangroves. Local communities have expressed and actively shown their willingness to be involved in the enforcement.

From our initial participatory assessments of the resources and uses, local resource users appear to understand the consequences of overuse and destructive techniques; and the importance of healthy coral reefs and mangroves to sustained fish catches. However, most people interviewed complained that they could see no way to change what was happening now. What are their alternatives? Awareness activities need to focus not on the consequences of unsustainable practices, but on "best practices", for example, how to fish without destroying the habitat.

Processes

As indicated above, our programme's emphasis in this phase is on listening and testing possible ways of dealing with the environmental issues. The issues were identified through participatory appraisals conducted in a sample of nine coastal villages and several commercial exporters. Government personnel who conducted these appraisals had never done such before. However, with training and experience, they developed confidence and saw the value of these techniques, not only to provide valuable information, but also to improve the existing poor relationships between government workers and villagers (see Box 2). The results of the appraisals were then presented for discussion at a regional workshop with

over 100 participants from all these sectors. The workshop was facilitated and participants agreed on the priority issues and what actions could be taken in the short-term and long-term to deal with these. These actions were then put into work programmes for both the government programme team and the villagers.

The proposed actions are now being developed and tested in several pilot villages. Two villages are dealing with dynamite fishing and developing proposals for zoning and closing off nearby coral reefs. This involves not only discussions and agreements among fishermen within their own village, but they also seek agreement with other fishermen known to use those reefs. Once agreements are reached, legal mechanisms must be developed to enforce those agreements. Possible options appear to be regulations endorsed by the Director of Fisheries or use of the recent Marine Parks and Reserves Act. These details are yet to be resolved.

Another two villages are dealing with the coastal erosion problem. They have passed village by-laws controlling building set-backs, and where sand, rock and building materials can be obtained so that their use does not contribute to coastal erosion. Extensive areas of both mangroves and beach plants have been planted to improve degraded areas.

A technical appraisal of the area's potential for mariculture has been completed. Possible species and areas have been identified and discussed with villagers. Eight villages will now start testing small pilots for finfish cages, lobster shelters, raft culture of seaweed and oysters or crabs. One of the villages developing a reef management strategy will also test the use of a fish attracting device.

The effectiveness of the actions to resolve the issues are being monitored by both the villagers and the programme team. More details are given in Box 3. At the end of Phase I, the lessons learned from these trials will be drawn into strategies to repeat the successful approaches and actions throughout the region.

Box 1

SIMPLE METHODS FOR CORAL REEF SURVEYS

There are nearly 100 coral reefs in the waters of the Tanga region. One programme activity is to find out the current state of health of these reefs. This needed to be done with existing Government personnel, especially the district fisheries officers. These officers had received fisheries diplomas, but had no specialised training in marine or coral ecology. Most were over 40 years old and had received their basic training numerous years ago. None could SCUBA dive and most had not even snorkelled. Therefore, widely-used survey methods, such as those developed in Reef-Watch had to be modified, because they assume the use of SCUBA (Horrill, 1995). Training in the new, modified techniques took up to six weeks and included basic skills in swimming, snorkelling and life saving, equipment maintenance, first aid, communications and emergency management and planning, as well as the survey techniques. Some fisheries officers did not finish the coral reef survey training. It appeared that they were not interested in learning new things. Only the motivated

officers were retained, which were just sufficient to form one survey team. Multiple teams would have seen the survey completed in shorter time and more variables measured.

At the end of this training period, the survey team was able to locate and do basic mapping of 93 reefs. They also sampled benthic cover, growth forms, coral death/damage, and counted several important target species (such as the Crown-of-Thorns starfish). The surveys were completed over five months of fieldwork. The technical advisor and regional coordinator completed surveys of fish and coral diversity during the same period. The results showed a very uneven picture of coral reef damage, with some reefs showing few signs of damage, and others showing extensive damage beyond the point of repair. During these surveys, fishermen from nearby villages accompanied the survey team into the water. Substantial effort has been made to understand the extent of villagers' traditional knowledge of the resources. The villagers showed the survey team 14 coral reefs that did not appear on existing charts.

The next step in this programme is to train villagers to undertake regular monitoring of the health of the reef. This will be combined with more intensive surveys and monitoring, using more elaborate techniques, to be completed by postgraduate marine science students. The "community-based" monitoring will thus be field tested for its accuracy.

Box 2

TRAINING AND LEARNING THROUGH DOING

First, training needs assessments were completed, especially for extension workers and villagers. This involved talking with villagers, extension workers and their technical supervisors about the role and effectiveness of the extension worker. This assessment (Chiwile & Salenge, 1994) revealed that lack of technical skills was not a problem, but lack of communication skills was. Paternal attitudes and mismatch between tasks of extension workers and expectations of villagers had caused bad or non-existing relationships with villagers. This was partly a result of the fact that most extension workers working in the coastal area are not from the coast, resulting in a lot of misunderstanding. Therefore one of the aims of the training programme for the extension workers was to give the extension workers the necessary communication skills and understanding of coastal villagers to be able to build a good relationship with the villagers.

The total training programme included participatory appraisal and learning techniques, communication, facilitation and animation skills, coastal ecology and coastal culture, and analysing and planning skills. They were also trained as trainers in planning and in business management skills. The training courses were given at intervals. In between, the teams of four extension workers went to live in the villages, to use their new skills and to build a working relationship with the villagers. Their task was to

facilitate villagers to choose their priority issues, to analyse causes and consequences of problems, to come up with and analyse possible solutions and to plan agreed actions. They had to work as a team, thus giving each other support in this new approach.

The approach resulted in villagers learning to analyse their problems and possible solutions and taking the responsibility of planning and implementing activities themselves. As soon as the analysis process ended and committees were formed to coordinate and monitor certain actions, villagers also came to training courses and feedback meetings with the extension workers. An assessment of factors influencing success or failure of village projects showed that one of the factors causing failure was lack of organisational and financial management skills. Therefore, the extension workers and a number of villagers were trained as trainers in planning and business management skills in order to be able to teach these skills to a wider number of users. The trainers in planning skills trained about 100 villagers how to plan their actions, resulting in village action plans. The trainers in business management skills teach villagers who conduct alternative income generating activities like mariculture how to manage their business and cash flow. Villagers are also trained in appropriate mariculture and monitoring techniques.

Box 3

MONITORING AT VILLAGE LEVEL

The process of monitoring at village level begins with the village action plan. These action plans show the objectives, actions, who will do what and when, other inputs required, and indicators which will show that the activity has been completed as planned.

For example, one village has an objective of stabilising beach erosion. They have decided that planting vegetation along the fore dune will help achieve this end. Therefore, they will plant over 1 000 seedlings of five different species. They received advice on which species should be planted where from forestry officers. They also received assistance in obtaining the seedlings. Teams have been organised to plant each species out. Now the seedlings need to be protected from goats. The villagers expect that these plantings will in a few years slow the rate of soil and beach erosion, which can be seen on the beach. They have planted the variety of species because some are faster growing and are needed to bind the soil together, while the slower growing species establish their root systems. The slower growing species also have some economic value to them.

Committees within the village are responsible for overseeing implementation, and deciding on what action to take if things are not happening as planned. Extension workers give assistance. District technical teams make monthly follow-up visits and check progress of action plans, giving advice and assistance as needed. The pro-

gramme's regional team receives a report on progress every two weeks and also gives advice if needed. When planning actions, it is important that indicators are identified to measure progress. Are the actions achieving what people expected? Such a system depends on having clear, well understood achievable measurable objectives. To this end, a lot of time was spent both with villagers and with Government players in developing objectives which satisfy this requirement.

Monitoring of the village participatory process needs to be done by the villagers themselves, as well as the programme team. There are regular (two monthly) feedback meetings with the programme team and representatives of the village committees. Together they analyse the elements of the participatory process that has taken place – looking at what is strong, what is weak, what works, what doesn't work, and how to improve it. In this way, villagers are learning from each other and setting their own indicators for good participation. The elements of process which they look at include level of participation in decision-making, organisation for implementation, supervision – use of "rewards" or "fines", communication and awareness among the community, monitoring and evaluation of their progress, conflict resolution – how they deal with those negatively affected by their action plans, gender impact, and cooperation with Government and outside agencies.

APPROACHES

The programme is taking a number of approaches to achieve results in this first phase. Some of the most important, which will be discussed in this section, are use of appropriate and participatory techniques, providing training for both Government and villagers, and ongoing monitoring and evaluation.

All technology used is appropriate for the level of education, funds, services and technical support that is generally available. An example is given in Box 1.

Participatory resource appraisals were used to identify the priority environmental issues and to establish a socio-economic baseline. They were also used as the springboard for getting government and villagers to share their ideas about the causes of the problems and necessary actions. Particularly useful tools were semi-structured interviewing, focus group discussions, resource mapping and ranking. Within pilot villages, a lot of time was spent facilitating villagers (including different interest groups within the village) to analyse the consequences, causes and possible solutions to their priority problems. The solutions they then planned were such that they felt they could implement with minimum external assistance. The result is a high level of commitment in coastal villages to their planned solutions.

New resource developments, such as mariculture, are based on small-scale, extensive culture techniques, using materials and species which are locally available (Katz & Lugazo, 1996). Small projects to test the species and techniques will be done with demonstration sites at a few villages. A training course in technical and management skills will be run for extension workers and selected village leaders. These village leaders will in turn train oth-

ers within their villages who are interested in doing mariculture projects. Exchange visits will be made for people from other villages who might wish to develop similar projects. This approach is based upon techniques which have been successfully employed in the region to develop seaweed farming.

The above techniques were chosen to suit the existing level of education and skills of government personnel. All training is completed in Tanga, using locally available trainers and the programme's technical advisors. Techniques are rapid, allowing wide coverage of the Tanga area in the short time available to establish baselines.

In our own experience, participatory techniques made it possible to complete a socio-economic baseline study, including training, within six months. Coral reef surveys were completed within nine months, including training. The techniques have also been extremely useful in establishing better working relationships between government officers and villagers. It has established the sense of ownership of the process from the beginning. Consultations have been open-ended and not restricted by survey personnel's preconceptions. Methodologies have been refined and simplified as used.

There were some problems based on poor staff motivation, such as encountered with the coral survey team. As the central Government is currently looking at reducing overall numbers of staff, this has led the programme team to look into training villagers who wish to learn the techniques.

With hindsight and some additional technical advice from people with a wider range of experience, we could have quickened the process for the socio-economic baseline. Surveyors spent two weeks in each village. This could have been reduced to at least half that time. Analysis techniques could also be simplified (see Wiley, 1994).

Providing Training

Two basic principles underlie the approach we have taken:

1. In order to achieve sustainable resource use, strengthening capacity to manage coastal resources has to take place at different levels, at village level as well as Government level, from regional staff to village extension staff. Villagers should be able to analyse and solve their problems themselves. Government should be able to assist and support them.
2. An integrated, cross-sectoral approach is necessary. At Government level this means that not only natural resources departments are addressed with training, but also other departments and even other sectors like magistrates and police. In villages not only specific groups like fishermen are addressed, but all villagers.

Our starting point at community level was to facilitate villagers in the three pilot villages to analyse and solve their priority issues. Extension workers are the main avenue for delivering Government services to villagers. Our approach to training extension workers is given in Box 2. Government officers play a supporting, advising and coordinating role. Regional and district government staff have been trained in basic coastal ecology and collaborative management, problem analysis, how to write and use work plans, supervision and monitoring and how to work as cross-sectoral teams. Government structures are organised in a very

sectoral way. A lot of effort has therefore been made to have training courses and seminars for representatives of different sectors and to stimulate dialogue between them and with villagers.

The approach has successfully resulted in villagers willing to take the responsibility for the use and management of their resources and of valuing their own knowledge and experience. They have been facilitated by extension workers in this process. Villagers identified realistic solutions and are planning, implementing and monitoring activities themselves (see Box 3).

Although in the long run the approach seems to be successful, initially the approach gave some problems.

Villagers are used to extension workers telling them what to do or not to do, and projects coming to do things for them. Some villagers thought the process we adopted was too slow and they were reluctant to take responsibility. District staff agreed that this approach will have more sustainable results, but they regret that it takes longer to see "results". Apparently the approach needs changes of attitudes with extension workers and their supervisors, as well as villagers.

Despite long discussions and analysing causes of problems, some Government staff still believe that villagers are ignorant and have to be educated and made aware. In fact, villagers are generally very aware of critical environmental issues and their causes.

In one pilot village, women were not attending village meetings. One reason for that might be that there was no female extension worker in that village. After several meetings with women and later also with men, the women decided that they would attend the meetings and men promised that they would listen to the women.

Four extension workers in one village is not a realistic option, though it was a good way of starting. We were trying a new approach and extension workers were thus able to support each other while they were learning. But their role will be changing. Once village committees are able to handle things themselves, extension workers will get an advisory role again in their own speciality, giving and seeking advice and support for specific issues requested by villagers. Some will move to other villages and repeat the establishment process there. How to apply the approach in other villages and how to create a pool of extension workers flexible and competent enough to change between facilitating and advisory roles are still questions to be answered.

Monitoring and Evaluation

The programme must evaluate how effective the activities have been in meeting its overall objectives. A number of tools are being used, including a logical framework that sets out objectives, results, indicators and assumptions; external evaluation; periodic measuring of the socio-economic baseline that was established within the first year of the programme; monitoring of health of coral reefs, mangroves, forests, seagrass beds, and other important habitats. As most of the activities are experimental, the monitoring system must allow comparisons of what works and what doesn't work, and how things might be modified to improve them. The system which we are using and developing is one which emanates from villagers' action plans. It is appropriate for the resources available and it encourages cooperation, collaboration and shared learning.

Our approach to monitoring and evaluation is that, like planning and implementation, it must belong to the different stakeholders. Therefore, we are using a number of different monitoring systems to involve the key players:

- Progress of village action plans – focuses on villagers and district officers (Box 3).
- Village participatory processes – focuses on villagers.
- Activities of Government extension workers – focuses on district officers.

These all tie back to the programme's overall objectives, that is, do these actions actually help to resolve the priority resource management issues? Do they improve the health of the major habitats or restore degraded ones? This requires that indicators or warning flags of environmental impact are agreed which are also easy and appropriate for village measurement. Simple environmental guidelines are being developed for use by district government technical people and by villagers to guide management decisions by the stakeholders.

Monitoring of Government extension workers is based on their monthly work plans, which they prepare as a team. They meet together regularly to review their progress and modify the plan if it is not working well. Each month they prepare a report detailing their progress and problems with the work plan and discuss it with the district coordinator. The district technical team makes monthly follow-up visits to the pilot village. The extension workers attend a meeting of the technical team once a month during which their work is reviewed also.

The monitoring system we are using is also a new approach for the Tanga coastal stakeholders. It requires perseverance initially as people are not used to making clear objectives and action plans. There is still some tendency for the action plan to be a paper exercise and not a working tool. It is important not to give up too quickly but to give encouragement and support until people see practical value for themselves in developing clear action plans with indicators.

Monitoring the impacts of actions on the coastal resources themselves is not easy to see in the short term. We are still looking to find appropriate indicators, especially "warning flags". We also carried out a logical framework exercise to make the indicators more clear for each objective and activity of the programme. We realise that it is important to spend more time on the development of indicators with the coastal villagers. It would have been very helpful to show them good examples of how people in similar situations are monitoring their environmental problems, but there are very few good examples around.

ACTIVITIES

Regional workshops and village meetings have been used extensively to decide upon necessary actions and to decide which need to be done first. Annual and quarterly work plans are developed by the programme team and approved by district and regional steering committees. Village work plans are developed by village environment committees with assistance and facilitation from extension workers. These plans are reviewed by district technical teams and programme team, and technical advice provided when needed.

Some of the techniques used so far could be transferred to other localities where the same objectives want to be achieved. These techniques are discussed in the next section (Transferable Approaches). The time that has passed so far is too short to adequately assess whether or not the approaches will have any lasting effects on the health of the coastal resources and their users. We plan to further test them during the next phase of demonstration.

The project cycle model we are using does not institutionalise strategies and approaches until after a reasonable period of piloting and demonstration. This recognises that the new approaches being tried are risky and experimental if they are to have a chance at succeeding. Definite ongoing financial arrangements are not being considered at this stage. However, the programme is minimising future financial demands by its approaches of community-based activities, training villagers as trainers and using appropriate and accessible technology.

Activities have focused on working with pilot villages. However successful this approach is proving to be, it cannot deal with all aspects of the issues. For example, assistance is needed at the national level to deal with the following:

- Large-scale commercial users, especially exporters such as prawn trawlers. As well as physical interference with some fishermen's nets, the trawlers may be having devastating effects on fish stocks due to high volumes of by-catch and habitat disturbance. It is likely that different processes and approaches than those developed to date will have to be used to effectively deal with these matters.
- So far, Government's record for enforcement of regulations is poor. For example, four arrests for dynamite fishing were made last year. None of these have yet been dealt with by the courts. Villagers ask why they should make efforts to deal with the environment issues if Government assistance is inadequate.
- Villagers are talking about zoning and closing off reefs. There are some legal uncertainties about how these closures could work. It remains to be seen how well one village can negotiate with outside users about these matters.
- The approaches we are using are different from the general Government approaches. Ways have to be found to institutionalise programme activities and approaches in existing Government programmes and structures.
- A big problem is that many Government people are unsatisfied with their jobs and demotivated because of low salaries and lack of resources. Ways of revenue-raising and sharing need to be developed, so that resources can be put back into the management systems.

TRANSFERABLE APPROACHES

Some of the more promising approaches that could be applied in other places are:

- Start any new programme with a listening phase. This should be based on participatory appraisals that involve all stakeholders from the beginning in identifying and prioritising

ing the issues. Particularly useful participatory appraisal tools included semi-structured interviewing, focus group discussions, participatory mapping and ranking.

- Provide training in participatory problem analysis, planning and monitoring to both Government workers and villagers. This approach has resulted in a high level of commitment in coastal villages to their planned solutions. However, this "tool" was not immediately successful in that it was a new approach for both extension workers and villagers, who previously had been used to "Government bringing the answers".
- Strengthening capacity only at Government level or village level will not give satisfactory results. It is necessary to strengthen capacity at all levels and to promote communication between different sectors, different levels and different stakeholders.
- The approach of training extension workers and selected villagers as trainers appears to be an effective way to improve certain skills and techniques of a larger number of villagers. Involving different sectors of government in training courses and seminars has begun to bear fruit. For example, the District Registrar has taken the initiative to discuss with district magistrates and public prosecutors why prosecution cases are generally prolonged and unsuccessful.
- Regular workshops and feedback meetings with stakeholders. Keeping all players informed and part of the process has been a most critical element in ensuring "popular support". Simple monitoring techniques play an important part in feedback, as the information is accessible to all. Everyone can keep track of all aspects of their actions.
- Use appropriate levels of techniques that can be taught to villagers. These can be field tested by checking with more intensive techniques. Make use of traditional knowledge.
- Monitoring systems need to be developed with the people who have to use them; so that they are appropriate for the resources available to them and their systems of operation. They must be sufficiently simple so that they actually get used in making management decisions. Simple guidelines, indicators and "flags" make the monitoring system more accessible to all the stakeholders.

SUMMARY

This paper describes a new initiative in coastal management, in north-eastern Tanzania. The region is within the equatorial part of the Western Indian Ocean. The priority environmental issues being faced include declining fish catches, use of destructive fishing techniques, mangrove cutting and coastal erosion. There is a widespread perception among the users of the coastal resources that management of these issues is inadequate. This programme initiative uses flexible, community-based approaches to identifying the problems and taking achievable actions. The programme provides training in a wide range of skills and appropriate technical methods for government officials, extension workers and villagers. A process is evolving that includes participatory appraisals, village environment committees, facilitation by government extension workers, technical advice and supervision by district technical teams and region-wide workshops with key players. Village initiatives taken so far include new by-laws, gear inspection, mangrove and tree planting, reef zoning

and closures. A number of village mariculture projects are being piloted. Processes used to date appear to be fairly successful with villagers. However, they are limited in dealing with some important management and enforcement issues.

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Integrated Coastal Area Management in Tanzania – The Kunduchi Initiative

J. DAFFA

BACKGROUND

The National Environment Management Council (NEMC), the focal point on all environmental issues in Tanzania, has, in collaboration with the Institute of Marine Sciences (IMS) and the University of Dar es Salaam together with the stakeholders of the coastal and marine environment of northern Dar es Salaam, prepared a programme known as the Kunduchi Integrated Coastal Area Management Programme (KICAMP). Financial support was provided by the Swedish International Development Agency (Sida).

Work on the programme was initiated in early 1994 with a request from Sida for a study on the possibility of integrating different requests for assistance from the Government of Tanzania in the area of marine and coastal environment. The investigation resulted in a proposal to plan an integrated initiative for Swedish assistance in the area of marine and coastal resource management. The planning or preparatory phase of this programme started in April 1995 with the establishment of a secretariat at NEMC.

A task force was established to prepare the proposal. It also oversaw the process and the management of the planning phase. The task force comprised members from key institutions and organisations with interest in the coastal and marine environment and included two Swedish consultants for technical support.

ACTIVITIES AND RESULTS OF THE PREPARATORY PHASE

The preparatory phase encompassed a wide range of activities. These activities have been guided by three major principals. First, participation of the stakeholders in identifying problems and formulating actions, second, that Tanzania should be in the "driving seat" and thus have ownership of the proposed programme; and third, that the proposed programme should include at least one tangible project that could be implemented at its outset. Such a demonstration or core project should be visible and have immediate impact on the stakeholders, so as to build confidence and serve as a means of coordinating the various components in the programme.

Further, the vision of the programme was to have an impact on coastal area management at national level. The programme would enhance capacity building of the management of marine resources, and facilitate the testing of various approaches and methods on the ground in an area which is heavily affected by marine resource depletion and coastal resource mismanagement.

The selected area is the northern coast of Dar es Salaam, from Mbezi River in the south to Mpiji River in the north, centred around Kunduchi. The effects of mis-management are

evident, in beach erosion, degradation of mangroves and coral reefs, dynamite fishing, uncontrolled mining, haphazard buildings, pollution and general depletion of the resource.

The implementation of the preparatory phase started in July, 1995, with three participatory awareness workshops held in the proposed project area. The workshops were organised by the KICAMP task force, with the view of providing a consultative mechanism for the identification of the problems of resource use and conservation in the area as well as suggestions for their possible solutions. The workshops brought together participants from villages and local administration, representatives from private and public commercial activities (industries, hotels, salt works, etc.) and regional and central government authorities. Members of four newly formed working groups participated in all three workshops along with task force members and facilitators. In total, the workshops had some 300 participants. The deliberations were very lively and recorded in a written report and on video.

The problems raised at the workshops formed the base for the mandate of the working groups. The working groups presented their findings in January 1996 to the Logical Framework Analysis (LFA) workshop. At the LFA workshop, some 25 participants representing villagers, private business, local, regional and central government authorities, NGOs and members of the working groups discussed the programme and constructed LFA-matrixes, one for each of the four identified major problem areas of awareness, i. e. knowledge and skills, resource use conflicts, and institutional, legal and policy framework.

In summary, the preparatory phase yielded the following results:

- Participation of stakeholders – from villagers to representatives of ministries.
- Open and transparent discussions of the problems facing the proposed project area.
- Establishment of political support and awareness that a marine programme is being prepared.
- Coordination with other ongoing activities related to the proposed programme.
- Background studies on the institutional and policy framework, resource conflicts, research, economic structure and trends in the proposed project area. The background material includes an inventory of research and studies conducted in the project area and in Tanzania, related to marine and coastal resource management.
- Awareness campaigns.
- Participatory LFA workshop that established the framework of the proposed programme, including problems, objectives, outputs and activities.

PROGRAMME PURPOSE AND NEEDS ANALYSIS

In the pilot phase, the focus is on the four problem areas which were identified in the LFA workshop as contributing to the mis-management of the resources in the area. The proposed programme will serve the following purposes:

- Tackle three examples of misuse of resources: dynamite fishing and restoration of coral reefs, mangrove depletion and uncontrolled mining.
- Demonstrate methods on rehabilitation of coral reefs, mangroves, non-destructive fishing methods, and extraction of sand and limestone with limited environmental impact.

- Raise the knowledge about the marine and coastal resources of the area.
- Make the public, village and business communities, tourists, and district and central government institutions aware of the need of proper use of the resource.
- Stop destructive methods of resource extraction, and replace by those which allow recovery and sustained use.
- Encourage non-damaging activities which generate income, such as establishing an aquarium for tourists as an alternative to collecting shells and corals for sale.
- Initiate a model of institutional coordination and inter-linkages in the country in the case of ICAM.
- Demonstrate whether the integrated coastal area management concept is feasible in practice or is only an ideal. If it is shown to be feasible an ICAM plan for the proposed study area will be initiated.

Since the programme is quite complex, it will also provide practical experiences for policy and legislation review, which will guide future activities in the coastal areas of Tanzania.

STRUCTURE

The programme is structured to address the complex relationships between issues and to enhance integration of the four components. This is to underline that resource mis-management must be addressed from a multitude of sources. To further secure collaboration between the four components, three tangible demonstration projects have been included, which require inputs and activities from all sub-programmes, i. e. stop dynamite fishing, restore mangroves and control mining.

The implementation of the programme will follow the principles of cooperative management in addressing dynamite fishing, mangrove and coral reef restoration and mining. It will provide an opportunity for participation in field actions of the coastal communities, research and management institutions, and businesses – especially relating to tourism and quarrying.

The Kunduchi Biological Station will be developed into a Research and Information Centre where all the involved institutions and organisations will cooperate in practical work concerning the four sub-programmes. The centre will provide a base for the whole programme and the office for the small project management staff. It will also be the focal point, where all activities are planned. The centre will facilitate a close cooperation between relevant organisations and institutions, and at the same time constitute a test on the ability to carry out multi-disciplinary projects. As a temporary measurement during the refurbishment of the Kunduchi Station, NEMC will host the programme.

In all programme activities there will be need for information, training and education. In the core projects there will be emphasis on activities and inputs from two of the sub-pro-

grammes, i. e. "Awareness" and "Knowledge and skills", for example through demonstration projects on rehabilitation of coral reefs and mangroves and monitoring activities of the status of the marine resources. General recognition of the marine resources problems and the necessary actions is a prerequisite for preparation of proposals for physical plans and the policy and legislation work. In the second stage of the programme, the experiences gained from the above sub-programmes will be used in the other two components "Resource use conflict" and "Institutional, legal and policy framework".

CONCLUSION

In summary, the proposed programme has the following structure:

- *Four closely related sub-programmes: awareness, knowledge and skills, resource use conflicts, and institutional, legal and policy framework.*
- *Three core tangible projects around which all activities in the four sub-programmes are focused: dynamite fishing and restoration of coral reefs, restoration of mangrove and control of mining.*

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Integrated Coastal Management Initiatives at Chwaka Bay – Paje

ASHA ALI KHATIB

DESCRIPTION OF THE PROGRAMME

Impetus

The rapid expansion of the economy of Chwaka Bay and the south-east coast, from near total reliance on fishing, mangrove/coastal thicket harvesting and marginal agriculture, to include new economic activities such as tourism development, seaweed farming and the expansion of small-scale business presents new opportunities as well as threats to the people and resources. Both traditional and new activities depend on the region's coastal resource base.

A major impetus in selection of the project site was that eminent local people recognised that changes were occurring and envisaged problems unless actions defined in full consultation with local people were taken.

Zanzibar has made a policy commitment to attempt to use an Integrated Coastal Management (ICM) approach to work toward a new but sustainable balance of uses of the coast as development proceeds.

Goals and Objectives

1. Maintain the coastal resource base on which the economy depends.
 - Foster the sustainable use and conservation of critical coastal ecosystems and habitats such as mangroves, coral reefs, seagrass beds, beaches, coastal thickets, water resources, palm fringe and cultural areas.
2. Sustain and enhance village economies.
 - Halt the decline of fish populations and maintain catches at sustainable levels, in order to maintain fishing as a viable livelihood for village residents.
 - Formally establish seaweed farming as a protected use of coastal waters, to insure its viability and sustain its contribution to village economies.
 - Achieve sustainable harvest of Chwaka mangrove forest for the villages that maintain a high dependency on the forest.
 - Encourage non-consumptive uses of the resource base.
3. Encourage environmentally and culturally sensitive tourism development within the site which benefits both the local residents and the nation.
 - Maintain the tourism industry within the limits of the area's environmental carrying capacity.
 - Mitigate environmental and cultural impacts from tourism.
 - Ensure that local residents benefit from tourism development.

4. Foster harmonious relationships between and among traditional and non-traditional activities.
 - Enhance local participation in planning and management activities.
 - Create and support institutional mechanisms that will fully incorporate local goals and concerns into decision making.
 - Increase awareness within villages of coastal issues and their consequences.
 - Encourage dialogue between resource users to resolve conflicts.
5. Acquire and use the best possible information for management decisions.
 - Support management-relevant research and studies of the area.

Major Events Completed

- Review of existing materials and rapid field appraisals of the site's coastal management issues.
- Preparation of a profile of the site and its coastal management issues.
- Review of the profile and discussion of management objectives and strategies at a series of stakeholders meetings with village leaders and members, and government agency directors and technical staff.
- Review of the goals, objectives and actions at a national workshop.

Boundaries of the Area

The demonstration site is located on the south-east side of Unguja Island, about 20 km from Zanzibar town. It encompasses the coastal area of Chwaka Bay and the Michamvi Peninsula as far south as Paje. There are eight small villages in the area.

Institutional Structure

The programme has been developed by an interagency planning team, lead by the Department of Environment and consisting of individuals from the sub-Commissions of Fisheries and Forestry, Commission for Lands and the Environment and the Institute of Marine Sciences. The planning team began work in September 1994 and has been reviewing information and holding consultations with village residents, hoteliers and local and national agencies. This was done to clearly identify pertinent issues, reach consensus on management objectives, and begin to develop strategies to address the coastal management issues in the Chwaka Bay – Paje area.

The programme was supported by and received technical assistance from the United Nations Environment Programme, East African Regional Seas Programme, Priority Action Programme / Regional Activity Centre (PAP/RAC), Food and Agricultural Organisation of the United Nations (FAO), Regional Economic Development Support Office for East and Southern Africa, Centre for the Environment /Bureau for Global Programme, US Agency for International Development and University of Rhode Island Coastal Resources Center.

MAJOR COASTAL MANAGEMENT ISSUES

Artisanal Fisheries

Reef fish populations and catches appear to be declining. The once important sea cucumber fishery has almost disappeared due to a stock collapse. The relatively newer pelagic fisheries, though significantly less important, appear to be holding steady. The status of other fisheries, such as shellfish and crabs are simply not known. The current decline in reef fish population is thought to result from over-fishing and the use of illegal gear. There is a growing concern that this problem will get worse as increasing demand for fisheries products and access to more efficient gear will put even more pressure on the resource; and that as tourism development proceeds, habitat and water quality degradation will further contribute to fisheries declines.

Seaweed Farming

Experimental seaweed farming was first introduced to Zanzibar in 1983 and commercial production began in the Chwaka Bay/south-east coast area in 1989. There are currently about 170 ha of seaweed plots, and in most villages. Although the total value of the harvest is small, it provides regular cash income to farmers, chiefly women, and has a relatively large impact on household economies. It is Government policy to encourage seaweed farming, however, neither seaweed areas nor individual plots are designated. The future expansion of the industry depends both on price and the availability of secure, suitable sites.

Use of Mangroves and Coastal Thickets

Chwaka mangrove forest, the largest on Unguja Island, provides the primary source of income for two of the six Chwaka Bay villages. For the remaining four villages, the mangrove forest provides an important source of supplementary income. While Chwaka mangrove forest has remained constant in size, the quality of the mangrove trees, and hence the relative value of the harvested products, is declining. The adopted management strategy for mangroves is ineffective in halting a decline in mangrove tree quantity and quality. Factors contributing to this include poor enforcement by the Government, lack of community participation, a low carrying capacity of the resource and a lack of site-specific knowledge on mangrove regeneration.

Coastal thickets are increasingly being cut. While the only allowable use of coastal thickets is for agriculture, in practice, significant areas of coastal thickets are being cut for fuel wood for lime burning, for building material and to mark land that has been bought for development.

Mitigating Environmental and Socio-Economic Impacts from Tourism

Tourism, which has existed intermittently in the region at a low level since the 1950s, is now rapidly expanding, bringing unprecedented change to the Chwaka Bay – Paje area. Changes today are small compared to what will occur in the next two to five years when the large resort hotels currently under construction begin to operate. There are three types of tourism development in the area – resort hotels, guest houses and villas.

The development is currently causing environmental degradation within the area, including garbage, shoreline erosion, sand mining, recreation associated impacts, ground water shortage, sewage disposal and increased beach activities. There is growing concern that as resort developments become operational, the relatively small scale degradation now apparent will get significantly worse. Tourism is also causing social and economic changes that

have resulted in cultural conflicts, shifts in the economic base of the area, and changes in land ownership patterns. Current management practices are not effective in controlling the pace or location of either large or small-scale development, current measures do not adequately mitigate the environmental and social impacts of the developments.

Use Conflicts

Conflicts among uses exist in a number of locations in the Chwaka Bay – Paje area. These are largely conflicts over the use of space and resources. Conflicts occur in fishing grounds, beach areas and inter-tidal areas. The number and intensity of such conflicts can be expected to increase dramatically in the future as the tourism industry expands. While district officials attempt to resolve conflicts on a case by case basis, no management process exists for collectively addressing existing conflicts or avoiding new ones.

Institutional Framework

A Coastal Resource Management Committee (CRMC) for Chwaka Bay – Paje was established, including representatives from local and national government, village stakeholders and private interest (Box 1). The CRMC will guide all coastal management activities within the area in cooperation with local governments, national agencies and private sector stockholders. The CRMC, with the assistance of the secretariat and appointed sub-committees will be responsible for completing the planning and action strategies outlined for the area. Participation on the CRMC and any appointed sub-committees will be without remuneration.

Box 1

PROPOSED MEMBERS FOR THE COASTAL RESOURCES MANAGEMENT COMMITTEE

Regional Administrative Officer
Regional Planning Officer
District Officers, Central and Southern District
Department of Environment (Director or designee)
Institute of Marine Sciences (Director or designee)
Sub-Commission for Forestry (Director or designee)
Sub-Commission for Fisheries (Director or designee)
Integrated Planning Unit of Commission on Lands and Environment (Director or designee)
Representative of the hotel industry in the Chwaka Bay-Paje Area
Shehas and one village elder from Chwaka, Uroa, Michamvi, Bwejuu, Ukongoroni, Charawe, Paje, Marumbi
Local representative from the fishing industry
Local representative from the seaweed farmer industry
Local representative from the mangrove cutters
Other public or private sector members as deemed appropriate by the CRMC

Overview of Linkages among the Issues

The Chwaka Bay – Paje area contains critical coastal habitats, including mangroves, sea-grass beds, coral reefs, beaches, coastal thickets, palm fringe, water resources and cultural areas. These habitats are closely linked and thus require management as one ecological system. Current habitat management is done by sector. No agency has responsibility for habitat management as such nor does any agency have responsibility for coastal systems as a unit. The Commission for Natural Resources is responsible for mangrove management, thicket management and coral reefs.

How Tourism is Related to Other Activities within the Area

The coming of tourism has boosted some activities, but has brought problems to other users of certain areas. Tourism has employed a number of villagers and reduced the number of people who have to cultivate the coral rag areas, but has also led to conflict with seaweed farmers who cultivate in front of hotels.

THE PLANNING PROCESS

Issues Identification

Identification of the issues was done through meetings, discussions and interviews with stakeholders. The first village meeting was held in Chwaka for the site's *shehas* and their councils. Two additional meetings were conducted in Chwaka and Bwejuu for local stakeholders such as fishermen, seaweed farmers, mangrove cutters and hotel employees. These three meetings enabled the participation of approximately 150 villagers. Following the village meetings were two separate meetings for the government stakeholders. The first meeting brought together Directors from key Government sectors, including tourism, forestry, fisheries, women and children, social welfare and district officers. The second meeting provided a forum for the technical staffs of these agencies to comment on the draft document which was then revised for distribution at a Zanzibar national workshop. The national workshop provided national level policy makers an opportunity to discuss the integrated coastal management (ICM) strategy for the site, outline the mechanism for implementation and discuss next steps.

Programme Preparation

Programme planning and preparation was done through inter-agency discussion, workshops and meeting with stakeholders.

Adoption, Implementation and Evaluation

The national workshop provided a forum for both policy makers and technical staff as well as local communities to adopt the ICM programme. An evaluation will be carried out after three years of implementation.

APPROACHES USED

Work at Two Tracks – From the Bottom Up and Top Down

Objectives

- To build up a good relationship with the various stakeholders in the pilot area.
- To make the community feel they own the resources and the plan/programme.

- To get pure reliable information about the site's issues.
- To develop the capacity to local communities to effectively manage their uses of the area, assuming the full responsibilities and reaping the benefits from such management.
- To incorporate policy interest into the plan.

Lessons learned

- Individuals give more information alone than in group discussions.
- Using this approach, villagers give their contribution more than with a top-down approach.
- *Local individuals have knowledge of their environment.*

Problems

- Some villagers did not know how to read and write, but their contribution was nevertheless significant.
- Some are afraid when seeing somebody writing down what they explained on questionnaire sheets., but avoiding this may lead to wrong information being recorded.
- Time consuming.
- Villagers don't believe that there will be implementation of projects after the initial background research is completed.
- In *sheha* meetings, some conflicts were not recognised by some villagers, e.g., conflict between seaweed farmers and boats.

Box 2 provides some suggestions on coping with problem behaviour during meetings.

Box 2

COPING WITH PROBLEM BEHAVIOUR DURING MEETINGS

<i>Problem</i>	<i>Suggestion</i>
Individual dominating discussion	Give the chance to other participants to talk
No participation	Ask the participants to give their opinion
Distracting side discussion	Ask them to explain their talk before all
Not relevant topics are discussed	Try to guide speaker to the point by asking a question
Women don't participate	Hold separate meetings

Build Consensus on Issues, Goals and Objectives

Objectives

An integrated management approach needs to be implemented by many individuals, to:

- Get support and commitment process.
- Seek their cooperation as full partners.
- Get input from stakeholders on the issues, goals and objectives and to build a constituency that will endorse it.

Lessons learned

We were able to attain cooperation at all levels from village community to policy makers.

Problems

- Time consuming.
- Difficult to reach consensus during discussion with groups of stakeholders with different interests (e.g. hoteliers and villagers).

Build Programmes Around Issues – Have a Strategic Focus**Objectives**

- Identify issues based on individual sectors.
- Develop strategies based on issues deliberated.

Lesson learned

This strategy is problem-oriented. The chosen course of action will eventually improve the situation in individual sector and community.

Similar problems were encountered as with the previous approach.

IMPLEMENTATION ACTIVITIES TO DATE

The Coastal Resource Management Committee (CRMC) for Chwaka Bay – Paje has been established. The committee is anticipated to convene soon after the acquisition of funding, which is the main obstacle to the programme.

TRANSFERABLE EXPERIENCE

There is not a great difference in the nature of the coastal areas around Unguja Island, what mainly differ are the kind of activities carried out. Aspects of the process and approaches used in this pilot area will be transferred to other areas after analysing the achievements of three years of implementation of this programme.

Environmental Programmes of the Indian Ocean Commission Countries

NICOLAS VERNIER

INTRODUCTION

The aim of the Indian Ocean Commission (COI) Regional Environment Project (REP) is to contribute to the promotion of a regional policy for sustainable management of natural resources. This objective will be achieved by bringing support to national environmental programmes of the five member countries of the COI (Seychelles, Mauritius, Comoros, Madagascar and Réunion). The project focuses on protection and management of the coastal zone including the conservation/protection of endemic species and threatened floral associations. Financed by the European Union (11 million ECU) and COI Member States (2 million ECU), the project is five years long. It is divided in three phases: phase one is an environmental audit (ecology and socio-economic study of natural resources); on the basis of the audit, phase two involves the production of national Integrated Coastal Zone Management plans and a regional ICZM plan; and phase three aims at direct interventions (pilot operations) to initiate implementation of the plans. The project will be reviewed twice, at the end of phase one and also at the end of the project. The main characteristics of the project are summarised in Box 1.

Box 1

MAIN CHARACTERISTICS OF THE COI REGIONAL ENVIRONMENT PROGRAMME

Project Duration: Five years (1995–2000)

Main Objective: Promote a regional policy for sustainable management of natural resources

Operational Objective: Integrated Coastal Zone Management, including protection of endemic plants

Beneficiaries: Countries of the *Commission de l'Océan Indien* (COI) - Seychelles, Mauritius, Comoros, Madagascar and Réunion

Budget: 13 000 000 ECU

- European Development Fund: 11 000 000 ECU
- IOC Countries: 2 000 000 ECU

Staffing

- one Regional Coordination team in Mauritius (5 people)
- five National Coordination teams (3–4 people)
- national experts (more than one hundred respective country)
- international expertise (GREEN, 160 man/month)

Products

- environmental audit of the coastal zone
- Integrated Coastal Zone Management (ICZM) plan
- pilot operations
- environmental information system
- training programme for strengthening technical capacities in ICZM
- environmental awareness programme

Phase 1: Environmental Audit (1995–1997)

Stock taking of information regarding the coastal zone ecology and socio-economy (inventory of natural resource, status and exploitation mode, pollution and degradation factors/sources, management measures, review of legislation and institutional framework, etc.) in order to identify main environmental/socio-economic issues, their causes and propose solutions (phase 2). In the first step, this phase is undertaken by national experts (pre-audit). In the second step, national teams will bridge information gaps with the support of short term international expertise (GREEN).

Phase 2: Integrated Coastal Zone Management plan (1997)

Based on the results of the audit, a national Integrated Coastal Zone Management plan (ICZMP) will be proposed, as well as a regional ICZM plan. This plan will be addressed to public institutions, providing them with policies, strategies (action plans) and monitoring tools to implement ICZM. Legal, institutional and financial requirements for implementation of the plan will be spelled out. After national endorsement through workshops, parts of the plan will be implemented in pilot operations (phase 3).

Phase 3: Implementation of the ICZM plan through pilot operations (1998–2000)

The ICZM plan will start to be implemented through pilot operations. Pilot operations are used to test methodologies and provide lessons that will be fed back into the plan.

PRODUCTS OF THE PROJECTS

The COI-REP intends to deliver two type of outputs:

1. Products finalised during the project duration (short-term products):
 - environmental audit of the coastal zone
 - Integrated Coastal Zone Management (ICZM) plan
 - pilot operations
2. Products initiated during the project that will insure its sustainability (long-term products):
 - environmental information system
 - training programme for strengthening technical capacities in ICZM
 - environmental awareness programme

Environmental and Socio-Economic Audit of the Coastal Zone

The objective is to undertake an environmental and socio-economic assessment of the coastal zone. Coastal natural resources, their exploitation patterns and the existing management measures are inventoried and analysed. Through this audit, problems and their causes are identified, analysed (past and prospective) and prioritised. Solutions will then be proposed in a ICZM plan. A wide spectrum of 19 themes is covered during this audit, including an inventory of natural resources and their use, inventory of pollution and degradation factors or sources, review of the institutional framework and review of environmental laws.

This audit will be conducted during the first phase of the project. It will be split in two sub-phases: a pre-audit (1995–1996) and an audit (1996–1997).

Pre-audit (1995–1996)

The pre-audit involves a stock taking of information, e.g., inventory and analysis of publications, studies, key people, projects and institutions dealing with coastal zone management or issues. The pre-audit is undertaken with national expertise. During this assessment, key information will be synthesised, gaps and constraints identified and prioritised (information gaps, financial shortages, lack of technical capacity, etc.). Finally, recommendations on actions and technical support needed to bridge the information gaps will be made for the audit. Activities undertaken include:

- Collection and analysis of ecological and socio-economic data through bibliographical review, population surveys, field monitoring (bio-physical-chemical data).
- Inventory and interview of institutions, social groups, knowledgeable ("resource") people.
- Animation of thematic groups.

Audit (1996–1997)

The objective of the audit is to complete the assessment of the coastal zone done during the pre-audit, with complementary studies undertaken with the support of international experts.

Output of the Audit

National diagnostic reports will highlight priority issues, constraints and opportunities. They will set the stage for national and regional integrated coastal zone management plans, an environmental information system and pilot operations. Data collected during the audit will be fed into a database, precursor of the environmental information system that will be developed throughout the project. Results of the audit will be validated nationally and regionally through series of workshops.

INTEGRATED COASTAL ZONE MANAGEMENT PLAN

On the basis of the audit, an Integrated Coastal Zone Management plan will be drafted. This plan will be addressed to public institutions, providing them with guidelines, action plans and monitoring tools to implement ICZM. Legal, institutional and financial needs for implementation of the plan will be highlighted. After national endorsement during national workshops, the plan will start to be implemented through pilot operations (phase 3).

PILOT OPERATIONS

Pilot operations are designed to test methodologies relating to key constructive concepts like integrated management, land planning, or prevention of pollution and degradation, and provide lessons for transfer to other similar contexts. There are two types of pilot operations: small scale national operations and large-scale regional operations.

Small-Scale National Operations

Many of these operations will be initiated during the first phase of the project and will be continued throughout the subsequent phases. Objectives of these "early" pilot operations include: test ICZM concepts on small scale pilot sites, solve urgent coastal zone conflicts, promote ICZM awareness. Lessons learned from these early operations will be used for preparing the ICZM plan.

A second set of pilot operations will be implemented during the last phase of the project. These "late" operations will start implementing some of the recommendations proposed in the ICZM plan.

The main criteria for selection of pilot operations are:

- low cost
- national or local consensus
- high visibility actions
- high priority actions
- actions in agreement with the project objectives
- transferability

An example of a pilot operation in the Seychelles is shown in Box 2. Pilot operations being prepared in other COI countries include:

- Beaches restoration and enhancement.
- Centre for monitoring aquaculture development (environmental impact, socio-economic impact, etc.).
- Development of a marine park.
- Development of methods for sea cucumbers exploitation.
- Action plan for mangrove protection.
- Setting up an environmental information and monitoring centre.

Box 2

PROTECTION AND ECO-TOURISM DEVELOPMENT OF GRAND ANSE (SEYCHELLES)

The objectives of the pilot operation is to test the development and implementation of an integrated coastal zone management plan on a small scale. The proposed site is Grand Anse – Rivière Dauban on Mahé. The site is unique, as it harbours three important ecosystems: a sand dune covered with vegetation lining the beach, a mangrove with six mangrove species and a forest unique for its high density of "Vacoas Parasol" (classified as a vulnerable endemic).

The pilot operation is designed to achieve the following, over a period of 18 months:

- Legally protect the site of Grand Anse Mahé (as a special reserve).
- Protect and restore damaged areas (e.g. building of wooden foot bridges on piles to cross the beach dune, control invasive exotic plants, etc.).
- Develop an environmental educational tour or eco-tourism tour through the mangrove and the Vacoas forest (canoeing and pedestrian circuit).
- Involve the pupils of the Grand Anse school in the development of the project as an environmental education initiative.

The eco-tourism tour should generate enough revenues to cover the recurrent cost of the site management.

To achieve these objectives, the steps proposed are as follows:

- A proposition to the relevant authority to convert the site into a special reserve.
- To conduct an environmental and socio-economic audit of the site, which will serve as a pre-feasibility study.
- To prepare a management plan of the site in collaboration with the different partners (riverside residents, public administrators, hotel managers, Grand Anse school, NGOs etc.) and carrying out the installation and investments.

Large-Scale Operations of Regional Dimension

Regional pilot operations will be prepared during the first two phases of the project and implemented in the last phase. These operations will address coastal zone issues shared regionally (fisheries stock management, ship based pollution, toxic contamination of seafood and reef monitoring etc.) (Box 3).

Box 3

REGIONAL OPERATION ON CORAL REEF MONITORING

An early regional pilot operation will be initiated in 1996. The objective of this operation is to facilitate the development and the implementation of a coral reef monitoring programme in the COI countries.

Building on existing monitoring techniques, a group of 12 experts from the five COI countries will agree on a common methodology. During field trips to each COI countries, the group will jointly adapt the methodology to the national capacities.

Data collected at the national level will be fed into national, regional and global databases.

Training Programme

The objectives include the strengthening of institutions and individual technical capacities through an assessment of the existing technical and general training capacities at a national, regional and international level; search for innovative means of training (NGOs, consulting firms, companies, etc.); and the development of a training plan consistent with the needs identified during the audit phase.

Information, Communication and Public Awareness

In order to raise environmental awareness in all segments of the society (public and private sector, general public, schools, associations, etc.) the project will define for each type of audience the best information media and the relevant types of messages to be transmitted. The project will then implement an information programme and will monitor its impact. This specific task will be developed by an environmental education task force working in collaboration with coastal zone and endemic plants thematic groups.

Environmental Information System

The objective is to develop an environmental information system for recording, monitoring and analysing key environmental indicators. This system will be built taking into account existing national systems and will provide environmental information to various socio-economic actors, national planners and decision makers. National environmental information systems of the COI countries will be linked via a network.

HUMAN AND FINANCIAL RESOURCES FOR PROJECT IMPLEMENTATION

Regional and National Coordination

The implementation of the project is undertaken at the regional level by a regional unit composed of a coordinator, a technical advisor and an administrative officer. At the national level the project is managed by national coordinating units composed of a national coordinator and a technical advisor. The national coordinating units implement the different phases of the project with the support of thematic groups (coastal zone, endemic plants, information, training) composed of national experts and resource people; national institutions; and European short-term expertise, named GREEN.

Steering Committee

Twice a year a regional steering committee meets to review the technical and administrative progress of the project. This committee is composed of representatives from the Indian Ocean Commission secretariat, member states, national and regional coordination units and from the European Union.

National Institutions

National institutions such as Departments of Environment are closely contributing to implementation of the project in each country. Some countries have their own national project steering committee while others take the advice of a national ICZM steering committee.

Budget

The budget allocated for five years is ECU 13 million. The budget is distributed as follows:

Investments/supplies	38.2 %
Investment/support mission	16.2
Recurring cost	5.5
Technical cooperation	20.7
Training and seminars	10.0
Assessment and audits	1.8
Miscellaneous and contingency	7.7

ANALYTICAL FRAMEWORK

Two approaches are considered here: ensure meaningful participation throughout the process and, related to this, work at two tracks – from bottom up and top down; and incremental adaptive approach to program design and implementation.

Ensuring Meaningful Participation throughout the Process

Context

Throughout the three project phases, e.g. audit (issue identification), proposal (ICZM plan) and implementation, the COI project adopts a participatory approach. During the pre-audit phase, a participatory approach is ensured at three levels:

- Use of national/local "resource persons", e.g. people who are knowledgeable about coastal zone issues, who are hired as consultants on short term contracts. These people are grouped in thematic teams, such as pollution, land use, marine resources exploitation, and so on supervised by the national coordinating units. The methodology for doing the environmental audit is standardised so as to ensure homogeneity between thematic teams in a country and regionally.
- Establish national steering committees, whose composition, nature and role varies among the five COI countries. The committee reviews and validates the main project outputs (audit report, ICZM plan, pilot project selection), and may review outputs of thematic groups and advise on project management. This committee is usually composed of representatives from different ICZM concerned ministries, private sector and NGOs.
- Direct consultation of the population through survey. A first consultation was organised in the countries through a socio-economic survey. This survey aimed at defining the perception of the coastal zone issues of five socio-economic groups: permanent coastal zone users (tourism professional, fishermen, maritime transport, coastal riparian etc.); opinion leaders (political, religious, doctors, journalists etc.); economic leaders (industry, managers, bankers); resource persons (NGOs, teachers, etc.); professional-technical-scientist (consultants, professors, public servants). Four questions were asked: what does the environment mean to you? what do you perceive as being the main coastal zone issues? what do you perceive as being their causes? and what are the solutions you would propose?

The methods of surveying varied with each country:

- Mauritius has had a national seminar to launch the project, to which main actors of the coastal zone were invited. The seminar included presentation of the project, sectoral presentations on coastal zone issues by local experts, and consultation (the above survey was distributed).
- In Seychelles, because the number of actors is much smaller and because the country has already had two national seminars on ICZM, it was decided not to have a national launch seminar but to undertake the project presentation and conduct the survey through personal interviews. Overall, a hundred and forty people were interviewed.

In addition to these three means of participation, each national team has proceeded with local and national consultations on sectoral issues. For instance, Mauritius organised a seminar on marine ecotoxicology and ciguatera risk management.

LESSONS LEARNED - ADVANTAGES AND DRAWBACKS OF THE GLOBAL APPROACH

This approach has the benefit of:

- Ensuring participation of all levels of the society.
- Ensuring local and national ownership of the project, thus building project sustainability.
- Ensuring that national and local specificity/issues are identified.
- Building national capacity through the thematic groups (training exercise).
- Reconciling the scientific and institutional perception ("true perception") of the coastal zone given by the thematic groups, with the general public's perception from the survey of the five socio-economic groups.

This approach has the disadvantage of:

- Being time consuming and complex to manage.
- Making linkages difficult between results and overall synthesis if the approach has been built piece by piece as the project develops.
- Providing very heterogeneous quality of outputs (work of the thematic groups).

The Arusha Resolution

RECOGNISING, that coastal areas contain a number of critical terrestrial and aquatic habitats, as well as diverse and valuable resources; and that coastal ecosystems are intimately linked with social, economic and cultural development processes:

WHEREAS, many major cities of the Eastern African region are located in coastal areas; and these areas include significant populations and are focal points of human activity; and the economies of the region are extremely dependent on the continuing productivity of activities, such as fishing, forestry, agriculture and mining, which are based on natural resources; and important food and cash crops are grown in coastal areas; and fish and other aquatic resources provide food, materials, employment and income for many coastal people; and the region's coastal areas also provide many other economic opportunities, especially tourism and shipping;

WHEREAS, experience in other regions of the world shows that the nature or intensity of coastal activities can give rise to natural resource and environmental management concerns and lead to serious deleterious impacts on the productivity of coastal ecosystems, adversely affecting the food security, health, nutrition and economic welfare of coastal populations;

WHEREAS, coastal management problems in the Eastern African region are serious, and there are some localised areas where there are acute problems such as oil pollution;

WHEREAS, experiences in Integrated Coastal Zone Management (ICZM) in other regions have shown that prevention is better than cure, as well as the importance of balanced use of coastal resources;

WHEREAS, economic and social development of coastal areas and protecting the resource base and the environment must be mutually supportive if development is to be sustainable; and the purpose of integrated management is to allow multi-sectoral development to progress with the fewest unintended setbacks and the least possible imposition of long-run social costs;

WHEREAS, coastal planning efforts cannot be divorced from terrestrial management and must be integrated with national economic and physical planning;

WHEREAS, poor planning and management in coastal areas can increase the loss associated with natural processes such as coastal erosion and catastrophic events such as major storms, floods and oil spills;

WHEREAS, there is a lack of capacity in the region to deal effectively with complex coastal management issues;

WHEREAS, political leaders can contribute to meeting this commitment in the region;

and government decision-makers and the private sector, including NGOs, can play a crucial role through their support of management plan development and implementation, and their encouragement of coastal communities to act cohesively to enhance prospects for sustainable development of coastal areas; and community participation is essential and should actively involve all stakeholders, particularly women and resource poor groups;

WHEREAS, international organisations and donor agencies can likewise contribute meaningfully to the course of development of coastal areas by ensuring that all sectoral projects funded are congruent with multi-sectoral development plans;

WHEREAS, it is important to increase public awareness regarding the importance of coastal resources, the dependence of continued prospects for economic development in coastal areas and the proper management of coastal resources;

WHEREAS, coastal resources will continue to be essential for the economic welfare of future generations in the Eastern African region; and there is a growing awareness on the part of governments of the region regarding the need for sustainable development of coastal areas;

WHEREAS, in recognition of the need for effective coastal management strategies, the countries of the Eastern African region have affirmed their concurrence with the mandate in UNCED's Agenda 21 for new approaches to development and management of coastal areas that are more integrative, precautionary and anticipatory;

THEREFORE, we the Heads of Delegations participating in the policy Conference on Integrated Coastal Zone Management in Eastern Africa Including the Island States hereby resolve and recommend that the countries of the Eastern African region give emphasis to the sustainable development and integrated management of coastal areas for the primary benefit of coastal communities by:

- Establishing policies that promote and enhance integrated planning and management of coastal areas by integrating the coastal zone into national economic and physical planning.
- Developing and implementing ICZM programs which address environmental concerns, particularly resource over-exploitation, environmental degradation and loss of biodiversity, and emphasise action at the local level.
- Promoting effective sectoral implementation of ICZM programs through creating mechanisms and means for cooperation of and coordination among sectoral agencies, and among regional, national and local agencies.
- Clarifying the jurisdictional mandates of agencies and governmental units (geographical, sectoral and trans-sectoral) governing the use of coastal resources and assessing and clarifying all legislation (formal and customary) relating to access to coastal resources in particular property rights, occupancy patterns, and user rights in coastal areas.
- Promoting further links between marine and social sciences and the decision-making process.

- Strengthening management capabilities of relevant agencies, particularly at the local level, for effective management of the overall environment, especially coastal areas.
- Implementing and rigorously enforcing effective legislative instruments and supporting incentives to reduce resource use conflicts as well as to prevent and control environmental degradation in coastal areas.
- Investing in public education and awareness programs to create a broader and stronger constituency for proper management of coastal areas.
- Promoting approaches and strategies, such as alternative livelihood programs and economic diversification, to reduce pressure on coastal resources.
- Promoting the involvement of all stakeholders in the development and implementation of ICZM programs, particularly the involvement of local communities, including women and resource poor groups.
- Providing appropriate incentives and guidelines for the private sector to develop environmentally friendly economic activities.
- Promoting bilateral and multilateral training relationships between countries of the Eastern African region, and between these countries and other countries with more highly developed coastal zone management capability.
- Supporting the building of local capacity, *inter alia*, through establishment of centres of excellence for ICZM training in the region, such as Mbegani Fisheries Training Centre.
- Encouraging the preparation and implementation of contingency plans for handling oil pollution disasters.
- Establishing and strengthening other appropriate institutions, such as the proposed Marine and Coastal Biodiversity Centre in the Seychelles.
- Giving consideration to the special problems faced by small island states.

We also recommend that scientists should adopt a multi-disciplinary research approach involving ecological, economic and other social sciences to holistically address management problems in coastal areas; and provide information, including documentation on indigenous knowledge relevant to coastal development and management, particularly in providing a diagnostic profile of the coastal areas; resource valuation and environmental accounting; identification and analysis of resource use conflicts and their resolutions; policy and management options as well as investment opportunities.

We recognise the importance of the Nairobi Convention on the Protection, Management and Development of the Coastal and Marine Environment in the Eastern African Region and related protocols for the regional follow-up of this resolution; and encourage Governments, which have not done so, to decide upon their ratification or accession in the shortest possible time, as well as other conventions relevant to coastal zone management, in particular the International Convention on Pollution of the Sea from Ships.

We agree that a meeting at a ministerial level be held within three years as a follow-up to this policy conference, and invite the Government of the Republic of the Seychelles to consider hosting such a meeting, provided financial resources from external sources are available.

We recognise the role of UNEP in coordinating the Eastern African Action Plan, within the framework of the Nairobi Convention, and the role of other international organisations in the promotion of ICZM; further, considering the importance of this Policy Conference and the need for follow-up, invite the Government of the United Republic of Tanzania to serve as coordinator for this purpose.

SIGNED 23 April, 1993, on behalf of the Governments of:

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Republic of Mauritius

Hon. Mr. Cuttarce, Minister of Housing, Lands, Town & Country Planning

Democratic Republic of Mozambique

Hon. Mr. Kachimila, Minister of Mineral Resources

Republic of the Seychelles

Hon. Ms. Danielle de St. Jorre, Minister of Environment, Economic Planning and External Relations

United Republic of Tanzania

Hon. Mr. Juma Omar, Minister of Tourism, Natural Resources and Environment

In the beginning of May, Hon. Mr. Sambu, Minister of Natural Resources signed the Resolution on behalf of the Government of the **Republic of Kenya**.

The Seychelles Conference Statement

WHEREAS, the Governments of the Republic of Kenya, Republic of Madagascar, Republic of Mauritius, Republic of Mozambique, Republic of Seychelles, and the United Republic of Tanzania were signatories to the Resolution of the Policy Conference on Integrated Coastal Zone Management in Eastern Africa including the Island States, held in Arusha in 1993 (the *ARUSHA RESOLUTION*);

WHEREAS, the *ARUSHA RESOLUTION* and *NAIROBI CONVENTION* commits the countries of the Eastern African region, including island states to give emphasis to the sustainable development and integrated management of coastal areas for the primary benefit of the coastal communities;

WHEREAS, there is now a significantly higher public awareness of the declining state of resources and the deteriorating environmental conditions of the coastal and marine areas, and also increased political will and commitments to address the environmental problems since the ARUSHA Policy Conference through the implementation of ICZM projects and programs throughout the region;

WHEREAS, there are increased national and international investment in preventing and mitigating coastal pollution, promoting sustainable use of marine and coastal resources, protecting marine biodiversity, and support for research and capacity building in marine science and coastal management;

WHEREAS, donor agencies and international communities are taking positive steps to work together in addressing common environmental and resource management issues in the East African region;

WHEREAS, the scientists in the region have made significant contributions in providing useful scientific assessment and evaluation of the coastal and marine environment in the region, and are undertaking interdisciplinary research in addressing management problems;

WHEREAS, the technical meetings of regional ICZM experts held in Tanga, Tanzania, in August 1996, and again in the Seychelles in October, 1996 have evaluated the progress and effectiveness of ICZM efforts in the region with special reference to institutional and legal arrangements, compliance to regulations and enforcement measures, capacity building, financing, public awareness, stakeholder participation, research, monitoring and information exchange;

WHEREAS, in recognition of the analysis made by the technical experts as contained in the documents "*The Journey from Arusha to Seychelles*" and "*Proceedings of the Experts and Practitioners Workshop on Integrated Coastal Area Management for Eastern Africa and Island States*" particularly the recommendations to improve the efficiency and effectiveness of ICZM program development and implementation; interagency coordination, collaboration and coordination amongst donors and international agencies;

WHEREAS, despite the significant progress made by the concerned national governments, the environmental management problems and the issues of sustainable natural resources use in the coastal and marine areas are far from being satisfactorily addressed;

WHEREAS, the Integrated Coastal Zone Management approach is effective in addressing coastal and marine environment management problems, the planning and implementation process requires considerable time and resources, and the cyclic process of ICZM development requires maturation time to have measurable impacts;

WHEREAS, in recognition of the fact that the coastal and marine areas contribute to the livelihoods and welfare of 60–75% of the population, and that the coastal and marine resources are the mainstay of economic development in the region including coastal tourism, fisheries and other maritime trades;

THEREFORE, we the heads of delegations participating in the Second Ministerial Conference on Integrated Coastal Zone Management for the Eastern Africa including the Island States hereby resolve and recommend that the countries of the region further support the efforts and initiatives being made in the implementation of Agenda 21 particularly in the integrated approach for the management of the coastal and marine areas, and that it be agreed to:

A. Policies and Institutions

- Undertake to fulfil the provisions of the Nairobi Convention and the Arusha Resolution now that they have come into force; particularly the establishment of the Regional Coordinating Unit initially with the interim unit in 1997 at St. Anne Marine Park, Seychelles, and the updating and implementation of the East African Action Plan.
- Ensure that the planning of land and sea resource use harmonises development with the conservation of natural habitats, biodiversity, and socio-economic aspects.
- Establish multi-sectoral coordinating mechanisms for ICZM activities and streamline procedures at all levels to facilitate participatory and collaborative decision making, planning, and implementation, including at international levels.

B. Legislation

- Harmonise ICZM-related legislation vertically and horizontally across sectors, such as between physical planning, tourism, fishing, maritime activities, and environmental protection, and others.
- Harmonise ICZM related legislation in conformity with existing international and regional conventions and agreements such as the Nairobi Convention, UNCLOS, and others.
- Call upon states that have not ratified the Nairobi Convention, to do so.

C. Compliance and Enforcement

- Strengthen preventative and enforcement mechanisms, and capacity, in order to address problems such as dynamite fishing and other destructive practices related to the use of coastal and marine resources.

- Ensure the implementation of EIA procedures within coastal resource use activities.
- In order to gain the cooperation of local communities in conservation of coastal and marine resources, steps should be taken to include stakeholders in participatory management and incentive-based approaches rather than relying solely on command and control enforcement measures.

D. Financing

- Encourage the allocation of adequate budgets for ICZM planning and implementation at all levels of government.
- Call upon donors to support, review, revise and harmonise programs of support for ICZM in a partnership manner which builds on progress to date, identifies gaps, and allocates resources as effectively as possible.
- Promote the participation of the private sector, NGO's and CBO's to contribute to development in an ecologically and socially responsible manner.

E. Capacity Building and Public Awareness

- Develop and implement a strategy for capacity building and identify institutional needs for ICZM that ensures establishment of a critical mass of personnel and appropriate incentives to retain them.
- Promote awareness, education and continuing training at all levels, incorporating indigenous knowledge and using local expertise.
- Optimise use of existing expertise and training facilities in the region including intra-regional sharing of experience, and establish centres of excellence for the various aspects of ICZM.

F. Stakeholder Participation

- Continue to provide strong political support and commitment to ICZM.
- Ensure the long term sustainable use of the coastal zone through the participation and empowerment of coastal communities taking into consideration the requirements of public interest, and maintaining a balance between local, regional and national interests.
- Encourage participation by the private sector, NGO's, and CBO's.

G. Research, Monitoring and Information Exchange

- Establish mechanisms to monitor and evaluate progress towards sustainable development with the aim of balancing short term needs against long-term costs and benefits.
- Develop a strategy that will improve the knowledge of coastal ecosystem function in the region and establish mechanisms for applying scientific knowledge to optimise the use of, and sustainably manage, coastal resources.
- Further develop mechanisms, protocols and codes of conduct for gathering, processing, exchanging and sharing information, including vertical and horizontal integration, and communication between and within institutions, and between scientists and coastal policy makers.

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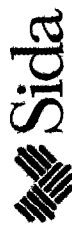


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Government of Seychelles
Ministry of Foreign Affairs, Planning and Environment

IN COOPERATION WITH



Sida

Department for Research Cooperation, SAREC

THE WORLD BANK

Environment Department