



INTRODUCTION

THE EASTERN AFRICAN ACTION PLAN

Governments of the Eastern African Region (Somalia, Kenya, Tanzania, Mozambique, Comoros, Madagascar, Mauritius, Seychelles and France (Reunion)) have recognized the importance of their marine and coastal areas and at the same time, the environmental threats that they face. In their endeavour to address the problem, the Governments came together under the framework of UNEP's Regional Seas Programme. After a detailed preparatory process, the Conference of Plenipotentiaries on the Protection, Management and Development of the Marine and Coastal Environment of the Eastern African Region took place in Nairobi, in June 1985, and adopted the following instruments -

- **Action Plan** for the Protection, Management and Development of the Marine and Coastal Environment of the Eastern African Region;
- **Convention** for the Protection, Management and Development of the Marine and Coastal Environment of the Eastern African Region;
- **Protocol** concerning Protected Areas and Wild Fauna and Flora in the Eastern African Region;
- **Protocols** concerning Cooperation in Combating Marine Pollution in Cases of Emergency; and,
- Four Conference **Resolutions** dealing with programme implementation and with institutional and financial arrangements.

The agencies involved in the implementation of the Action Plan include UN, UNDP, ECA, FAO, UNESCO, IOC, WHO, WMO, IMO, UNIDO, IAEA, IUCN, EU, and UNEP.

The above decisions form the basis for a programme of activities comprising:

- Protection and management of marine and coastal areas (EAF/5)
- Assessment and control of pollution in the coastal and marine environment (EAF/6)
- Contingency planning for marine pollution emergencies (EAF/7)
- Addressing problems of coastal erosion and siltation (EAF/10)
- Environmental impact assessment (EAF/11)
- Eastern African Coastal and Marine Environment Resources Database and Atlas (EAF/14)

In its role as Secretariat, UNEP has spearheaded numerous activities within the general framework of the Action Plan and comprising initiatives under all the above Projects. From 1997, this role was transferred to the newly established Eastern African Regional Coordinating Unit (EAF/RCU) of UNEP's Regional Seas Programme located in the Seychelles.

More than 25% of the population of the Eastern African Region today lives along its coastal areas or not far inland. Most seek employment around the coast as well as the right of unrestricted access to and from the foreshore, the freedom of navigation on any waters, the right to anchor and seek shelter, the right to fish and gather shellfish and other living resources for their livelihood or sustenance and the right to seek their leisure and recreation. In addition, coastal areas provide the landfall or take off point for imports and exports respectively, they are often the focus for industrial development and, increasingly, they are promoted as venues for tourism developments which have become the chief foreign currency earner in many of these countries. These multiple demands on coastal resources require the best management strategies and tools to ensure sustainability. The *Eastern Africa Atlas of Coastal Resources* is such a management tool.

THE EASTERN AFRICAN COASTAL AND MARINE ENVIRONMENT RESOURCES DATABASE AND ATLAS PROJECT (EAF/14)

The dilemma that faces Eastern African nations today is that while they are depending more and more on the coastal zone for their livelihood and wellbeing, the natural habitats and ecosystems which sustain these resources are being destroyed or stressed through pollution, various developments and other impacts.

It is the task of administrators and managers to seek a wise balance between the many conflicting demands being made on the coastal environment, ensuring that its limits of tolerance and its capacity for sustainability are not exceeded. In order to do this successfully they need a comprehensive information base giving them a holistic view of the resources, the demands, and the various direct and indirect physical interrelationships.

One instrument that can help collate, analyse, synthesise and apply large amounts of information in a simple, visual representation, is the electronic database organized on a geographic spatial basis. It is its possibility to juxtapose resource data, demands, potential impacts and the various factors influencing them, on to a single, graphic representation, that makes an electronic database such a versatile and sound tool for decisions on resource use.

The day will come when the majority of institutions in Eastern Africa will have access to both the hardware and the software, as well as the expertise needed to make full interactive use of the potential offered by an electronic database. The EAF/14 project prepares the way for this eventuality by establishing a regional Geographic Information System database (GIS). The Kenyan Coastal Resources Database, located at the Kenya Marine and Fisheries Research Institute, Mombasa, is updated regularly and it is possible to interrogate it whenever necessary to provide the most up-to-date basis for decisions, especially in emergencies (e.g. spillages).

While this capability is likely to meet the current needs of a number of administrative institutions and some academic and research agencies in the region, its electronic format will keep it beyond the reach of a large number of potential users. Therefore, the first, major substantive output of the database is a series of maps accompanied by appropriate text and produced firstly in country sets for use as working documents. *Kenya* is the first volume in a series of such publications that will eventually make up the *Eastern Africa Atlas of Coastal Resources*. This publication is expected to become a major reference work for scholars and administrators alike.

Administrators, decision-makers and managers are identified as the prime users of the database, the maps, and the Atlas. However, the production of the maps and the Atlas in particular recognizes the needs of those numerous other potential users, and the Atlas has been designed accordingly. In addition to being an excellent tool for professional managers of coastal resources, the Atlas works in other ways to enhance the protection and wise use of coastal resources. It is expected to expose weaknesses in the available information base thus helping to focus the research effort by experts; to inform and educate members of the public, making them more sensitive to the multiple issues that need to be resolved, rarely without some cost; and, to provide an excellent record, and a subsequent measure, for policies, objectives and goals adopted for coastal zone management.

The beneficiaries of the GIS database, the individual country atlases and the comprehensive *Eastern Africa Atlas of Coastal Resources* are the people of Eastern Africa who in the face of development must make hard decisions affecting the coastal environment and resources. For planning purposes, the resource maps developed under the EAF/14 project cover a corridor of about 100km of the coastal and marine environment. It is envisaged that these coastal resource maps will meet the demands of the local policy makers, administrators, planners, developers, environmental resource managers, marine ecologists and the general public for synthesized and harmonized information on the coastal and marine environment. Better planning and more soundly-based decisions are made possible by these comprehensive coastal resource maps and related GIS database. UNEP is confident that the increased accessibility to information is an important step towards the wise use and sustainable development of the coastal environment.

Eventually, the *Eastern Africa Atlas of Coastal Resources* will serve as the information base for the Eastern African Action Plan and the *Kenya* volume is the first step in this direction.

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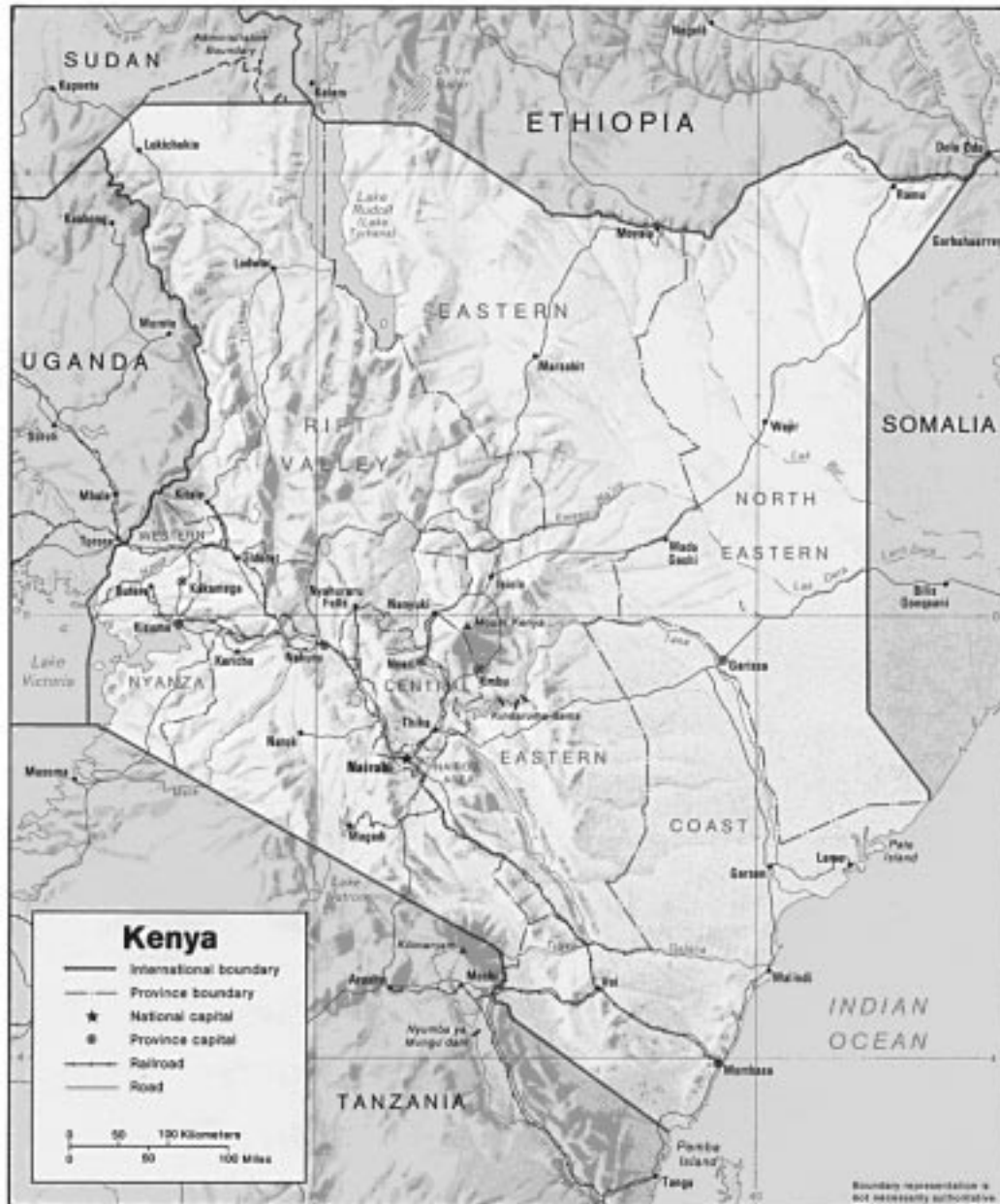


Figure 2 : Kenya

THE KENYA COAST - AN INTRODUCTION

Kenya, with a land area of approximately 580,000km², lies astride the equator and exhibits considerable climatic and physical variation as a result of altitude and the strong continental influence inland and marine influence at the coast. Climatic regions range from the cool highlands to the arid savannah in the interior to the low lying and humid coastal plains.

The Kenya coastline is about 600 kilometres in length and forms part of the western border of the Indian Ocean. Its most distinctive feature is the almost continuous fringing coral reef usually running parallel to the coast. Other features include the Lamu Archipelago with its extensive mangrove forests; the Tana River, Kenya's longest, which discharges through a complex wetland system into Ungwana Bay; the Sabaki River which incorporates the Athi and Galana rivers and discharges just north of Malindi; Mombasa Island at the entrance to the most extensive embayment on the coast, with Mombasa Harbour on one side and Kilindini Harbour on the other, the former leading to Port Tudor and the latter to Port Reitz; and, the southern complex of Gazi Bay, Chale Island, Funzi Bay and Funzi Island, Wasini Island and a number of smaller coral islands.

Close to one million people inhabit the Kenya coastal areas at an overall density of 100-200 persons/km². Of these, about 400,000 live in Mombasa which is Kenya's major seaport and second largest urban area. The coast provides these people with food, shelter and employment.

On land, the coastal corridor is important for its agricultural crops such as cassava, maize, cowpeas, rice, mango, banana, pineapple, cashew and coconut as well as sisal and cotton. In the intertidal and sub-tidal areas, the coast provides finfish, shellfish, marine algae and timber (from mangroves). The coast is also the gateway for the greater part of Kenyan imports and exports, a magnet for tourists and, potentially, the key to further prosperity if petroleum deposits are discovered offshore as expected.

Underlying these resources and uses which are of direct human interest, are the inherent ecological values which rank any stretch of Kenya coast among the most productive and valuable of natural ecosystems. The rich biological diversity reflects the varied habitats which, starting from the oceanic side, include deep waters comparatively close inshore, coral reefs, seagrass meadows, sandy beaches, rocky shores, mangrove swamps, estuarine mudflats, lowland coastal forests, and coastal hill forests which eventually give way to the savannah plains further inland.

The coastal and marine environments of Kenya are very rich in resources. Yet they are the least studied of the Kenyan natural environments and there are a number of significant gaps in the data and information base. However, and in spite of these gaps, the body of knowledge is still substantial and the *Eastern African Coastal Resources Database and Atlas Project* is a first attempt at compiling a comprehensive overview of existing knowledge about the Kenyan coastal environment and its uses. Having developed the electronic framework for data management, the first substantive product is this *Atlas* which, together with the GIS, will provide the basic tools for the complex task of managing Kenyan coastal resources and environments.

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Figure 3 : Ngalawa under sail