REGIONAL SEAS

UNITED NATIONS ENVIRONMENT PROGRAMME

Coastal and marine environmental problems of Somalia

UNEP Regional Seas Reports and Studies No. 84

Prepared in co-operation with






ESCWA FAO UNESCO IMO IAEA IUCN

UNEP 1987

Na.87-6096

PREFACE

In 1984 the Government of the Democratic Republic of Somalia approached the Executive Director of UNEP with a request for assistance in assessing the coastal and marine environmental problems of the country and in drawing up a national action plan for the protection, management and development of its marine and coastal environment.

In response to this request and in close co-operation with the relevant national authorities a multidisciplinary mission was organized by UNEP in collaboration with ESCWA, FAO, UNESCO, IMO, IAEA and IUCN. The terms of reference of the mission specifically included consideration of problems related to:

- contingency planning for marine pollution emergencies, including incidents within ports and port generated pollution;

- development of national capabilities for the monitoring and control of marine pollution through training of staff and acquisition of equipment; and

- development of national legislation for the protection and management of marine and coastal environments.

The eight members of the mission visited Somalia from 11 to 25 June 1986 and based on the mission's findings this document has been prepared.

The draft of the document has been presented during the Seminar on Coastal and Marine Environmental Problems of Somalia (Mogadishu, 7 - 8 September 1987), attended by high level national experts, and administrators and policy-makers, as well as high officials and experts of UNEP. The Seminar, chaired by Hon. Musse Noor Amin, Permanent Secretary of the Ministry of Marine Transport and Ports of Somalia, reviewed the document and endorsed it with minor amendments reflected in this publication.

The document consists of a summary report on the coastal and marine environmental problems of Somalia, of an action plan proposed for the protection, management and development of the marine and coastal environment of Somalia and of seven sectoral reports on which the summary report is based. In preparing the proposal for the national action plan, Somalia's participation in the UNEP sponsored Action Plans for the Protection and Development of the Marine and Coastal Environment of the Red Sea and Gulf of Aden and for the Protection, Management and Development of the Marine and Coastal Environment of the Eastern African Region was specifically kept in mind.

The contribution of Messrs S.K. El-Wakeel (mission leader), S.W. Fowler (marine pollution), A. Hamza (marine pollution from landbased sources), S.L. Ross (oil and chemical spills), T. Stromme (marine living resources), D. Elder (protected areas and reserves), P. Burbridge (coastal area development and management) and J.C. Sainlos (environmental legislation) as members of the mission towards the preparation of this document is gratefully acknowledged. The assistance of the national authorities and counterparts of Somalia as well as of the UNDP offfice in Mogadishu were essential for the successful completion of the mission's task.

CONTENTS

A. COASTAL AND MARINE ENVIRONMENTAL PROBLEMS OF SOMALIA

1. MAJOR PROBLEMS AND ISSUES CONCERNING THE SUSTAINABLE USE OF MARINE AND COASTAL RESOURCES

1.1 Marine Pollution

Pollution of the marine environment is limited and does not currently pose a serious threat to the economy of Somalia. Deballasting and tank cleaning operations by tankers represent the only significant forms of oil pollution. The location of major tanker routes well offshore results in oil residues found in inshore areas being highly weathered. Due to seasonal variations in ocean currents it is most likely that the concentration of oil residues along the coast will be highest during the northeast monsoon season. A survey of the southern coast conducted during the mission indicated that oil residues in the form of tar balls compare favourably with other areas within the region.

This form of oil pollution represents an international problem whose solution lies in the enforcement of international regulations relating to the prevention of the pollution by ships in particular tanker deballasting and cleaning operations. The ratification and implementation of the Marpol Convention (1974/1978) by Somalia and neighbouring countries and concerted regional action would be of direct assistance in reducing oil related marine pollution.

Offshore oil exploration and production is not taking place at present and future exploration for oil will most likely be located well inland in the northern regions of the country. Oil related development in the continental shelf area of Somalia will not therefore be likely to pose a hazard to the marine environment.

The frequency of tanker movements within the region does, however, pose a threat in form of a major offshore oil spill in the event of a tanker accident. The risk of a major oil spill resulting from a tanker accident in the routes well offshore is low, however there is a relatively greater risk of a spill resulting from a collision or grounding from tankers delivering oil to Somali ports. Although the risk of a major oil spill might be low, the consequences could be very serious. Several of the coastal and marine ecosystems which support economically significant activities such as fisheries are very vulnerable to oil pollution. Oil related damage to mangrove, coral reefs or seagrass beds could have a serious and long lasting impact on fish stocks.

1.2 Land Based Sources of Pollution

Land based sources of pollution do not represent a major threat to the marine environment at this time. However, several forms of land-based pollution pose a threat to human health and detract from the quality of the marine environment close to major coastal settlements. The main sources of potentially serious pollution are discussed in the following paragraphs.

Industrial Sources

Industrial development is limited and the majority of Somalia's installed manufacturing plants is located within the urban centres in the southern coastal zone. Manufacturing employs some 15,000 people, however, capital formation is relatively low and most plants are operating at chronically low rates of their installed capacity. Production is often limited due to shortages of raw materials, spare parts and fuel. However, the direct discharge of industrial and municipal wastes into the sea forms a significant threat to coastal and marine environments adjacent to the main urban centres including Mogadishu, Kismayo, and Brava.

Industrial wastes discharged along the shore or directly into the sea were estimated by the mission based upon the following categories:

(a) Liquid effluents in kg/day are BOD 1306, COD 2628, SS 1343, Grease 578, Phenol 0.06 and Ammonia 9.5;

(b) Solid wastes 5950 kg/day; and

(c) Air emissions of: particulates 120,500 kg a day
SO_2 270 kg a day
NO_2 300 kg a day

While these loads may be relatively small in terms of the total marine and coastal environment, they do represent significant amounts in respect to the highly concentrated location of industry in the southern coastal zone about the settlements of Mogadishu, Kismayo and Brava.

Only the tanning factories deliver significant input of toxic materials to the marine environment. Calculations for two tanneries at Brava and Kismayo indicate that as much as 18 to 30 kg of chromium may be dumped into the sea per day. However, measurements of the levels of such heavy metals and other toxic materials in industrial effluents and in the coastal environment do not exist. It is therefore impossible to accurately assess the extent and influence of such industrial pollution in the marine environment.

Municipal Sources

Domestic sewage is an important source of pollution in coastal waters adjacent to major population centres. Urban solid waste dumps also form a potential source of local coastal pollution. The leaching of materials from dumps adjacent to the sea during periods of heavy rain poses a serious potential hazard. In the absence of arrangements to monitor sewage and drainage effluents at their source or in the sea, it is impossible to construct reliable estimates of pathogenic organisms or toxic leachates entering coastal waters near urban centres.

Agricultural Sources

Agricultural wastes may also represent a significant form of marine pollution in the southern coastal waters. Most of the arable land lies in the Scebelle and Juba river basins. The Juba is the only river which regularly flows to the sea throughout the 3,300 km of Somalia's coastline. The Scebelle occasionally flows to the sea by joining the Juba system near the coast. Therefore, any agricultural chemicals used within the drainage systems of those two rivers may enter the coastal and marine environment adjacent to the mouth of the Juba.

Despite the widespread use of pesticides, including DDT and other persistent agricultural chemicals, there is no policy to prevent or control the use of hazardous agricultural materials and there is no programme to monitor and assess their effect upon coastal waters or the riverine systems feeding them. The only data available on such chemicals concerns pesticide residues in selected fish collected in the Mogadishu area in 1985. This data was collected as a result of the grounding of the M.V. Ariadne and the release of pesticides into the harbour. Although the concentrations of materials such as Lindane and DDT in the fish do not suggest local contamination, the results can in no way be used to assess the presence of agricultural chemicals in coastal or marine environments associated with the major agricultural regions to the South.

Other forms of marine pollution result from agricultural practices. Two specific examples are increased siltation in coastal waters due to erosion of coastal soils and sand dunes resulting from overgrazing, and the deposition of animal wastes from livestock exporting sites at harbours, or from coastal abattoirs.

Mining and Quarrying

Siltation can also result from beach sand mining and from quarrying for limestone adjacent to the coast. Such disturbance to coastal landforms also poses the threat of erosion and further destabilization of coastal sand dunes. The impact of increased silt loads upon coral reef systems can be very severe and can significantly reduce their ability to support fish stocks.

1.3 Living Marine Resources

The arid to semi-arid nature of the Somali climate results in limited and highly variable flows of nutrients from land-based sources to the marine environment. This contributes to the generally low levels of primary productivity of the continental shelf on the north coast and southern east coast.

The monsoonal regime also has a direct bearing on primary production. The southwest monsoon generates upwelling of cold, nutrient rich waters which spread into the waters along the northeast coast, primarily between Ras Mabber and Ras Hafun from May to August. This upwelling can be highly variable and can create extreme variations in the marine environment and its ability to support living marine resources. Nevertheless this region belongs to the richest in the world in terms of primary production.

While it is reasonable to assume that the highest densities of both demersal and pelagic fish stocks will be found in the upwelling enriched waters of northeast Somalia, the limited survey data available for demersal fish stocks throughout the continental shelf area presents a serious difficulty in the estimation of sustainable levels of exploitation.

Coral reef fish species form the basis for a major part of the fisheries production in southern Somalia. However, there are no definitive surveys of either the coral ecosystems or the stocks of fin fish and shellfish they support.

At this time fishing activities appear to be within the limits of what the resources can sustain. However, there is a danger that longer term development plans may lead to severe over-exploitation of demersal fish stocks and, perhaps, reef lobsters. Many of the current and proposed fishery projects are highly dependent upon inshore fish stocks, however the majority of the available data relates to offshore stocks. There is a lack of reliable information on the abundance of demersal stocks in inshore areas and the information which is available indicates that the level of the demersal resources might be lower than expected. Projects may therefore be planned based upon inadequate information.

Information concerning other living marine resources is extremely limited. the coastal environments of Somalia contain habitats for three endangered marine species, the Green Turtle, Hawksbill Turtle and Dugong. Although none of these species appear to be directly hunted, turtles are caught as a byproduct of fishing activity. Due to the large numbers caught, there is reason to suggest that marine turtles may be being overexploited.

Apart from concerns over demersal fish stocks, turtles and lobsters, there are currently no major problems associated with the marine environment or the sustained production of marine resources.

1.4 The Impact of Land-Based Activities on Coastal Land and Water Resources

The management of land based activities has a significant influence on the marine environment. In comparison to the future development of marine fisheries and oil related activities, the expansion of urban centres and the development of agriculture and industry will most likely form the most significant influences on the quality of marine and coastal resource systems and their ability to sustain development.

When land based activities are examined in terms of their impact upon coastal land and water resources, it is clear that there are major problems which, if unresolved, will undermine the ability of coastal and marine resources to meet the development needs of the Somali people. A series of problems exist which will have to be overcome in order to allow coastal land and water resources to fulfill their potential for sustainable development. These include:

(a) environmental damage and hazards to human health resulting from the discharge of untreated industrial and domestic wastes;

(b) insufficient standards of design in projects located within fragile coastal environments - an example being inadequate drainage arrangements for roads built in sand dune areas which have led to massive erosion, increased silt loads entering the sea and destabilization of dunes;

(c) inadequate environmental assessments which do not provide information on appropriate locations and mixes of development - the new abattoir constructed adjacent to the municipal dump and in close proximity to the Lido beach in Mogadishu is a prime example;

(d) lack of emphasis given to multiple-use opportunities provided by most coastal and marine resource systems, this is linked to (e);

(e) lack of coordination between agencies. Agencies normally plan for the development of land and water resources based upon single purpose, exclusive use - for example, mining and quarrying close to the active wave zone precludes other uses and is leading to severe erosion, destruction of beaches and sand dune destabilization. This seriously threatens the development of agriculture, tourism, land and sea transport and urban development;

(f) the need to improve technical and administrative skills of people responsible for managing coastal land and water systems;

(g) poorly developed environmental legislation which is inadequate for the promotion of improved environmental assessment, resource allocation and management and the protection of fragile environments; and

(h) the need to enhance public awareness of the significance of marine and coastal resources in supporting national economic and social development objectives.

The resolution of these problems requires a broader perspective on resource management than can be provided by primarily focussing upon the marine environment.

1.5 The Significance of Improved Coastal Land and Water Resource Management