

SOMALIA ANNEX IV. AREAS OF CONCERN

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2. BIOPHYSICAL ENVIRONMENT

2.1 Description of the coast and distinctive features

The Somali Government does not have the capacity to control foreign incursions into the exclusive economic zone (EEZ) of the Somali waters, which leaves the door open for foreign vessels to exploit these resources. At the same time, the complete lack of any regulations is also another concern. These problems of unsustainable exploitation are expected to persist in the future due to a lack of or inadequate capacity for effective management and surveillance, including failures in addressing illegal fishing and conducting stock assessments, coupled with inadequate knowledge and information.

2.2 General description of the climate

Unpredictable rainfall patterns resulting in severe droughts and floods

2.3 Marine and coastal geology and geomorphology

Coastal erosion

Most of the Somali coastline has been seriously affected by coastal erosion, especially in the eastern regions, also in southern parts. Coastal erosion is a major environmental concern along the East African coast and leads to shifting coastal features such as dunes, beaches and shoreline.

Oil Exploitation

Somalia has been sparsely explored and several areas with world-class potential remain to be tested. Just prior to the onset of the civil war in December of 1990, several concessions were held by major international petroleum companies and at least three key wells were scheduled to be drilled. In addition giant oil companies became interested on different sedimentary basins of Somalia.

2.4 Freshwater resources and drainage, including rivers, estuaries, deltas and coastal lakes

Salinisation is a serious environmental problem related to irrigation in the river. It has a high saline content even during high flows (Markakis 1998).

In both river basins, Somalia is the downstream riparian, which is the least favorable position to be in hydro political terms, as the upstream basin country, Ethiopia, can theoretically divert and pollute the water in the rivers.

People are starting to live in traditional flood plane areas as population pressure increases; this increases the potential for loss of life and property in the event of a flood (FAO – SWALIM 2009).

The major flood channels used to be maintained by the government but have fallen into disrepair since the civil war. This has increased the effects of floods in the lower and Middle Shabeelle

areas especially (FAO – SWALIM 2009).

River embankments are being used for agriculture which causes flooding in periods when the rivers are still below historical flooding levels stages (FAO – SWALIM 2009).

2.5 Physical Oceanography

2.5.1 Currents (Coastal hydrodynamics and offshore current systems)

2.5.2 Tidal regime and waves

The country lacks a disaster management plan for coping with extreme storm surges and tsunamis.

With urban migration increasing (see section 3.1), the number of people along the coast in major cities is increasing. This puts a high number of people at risk from storm surge and tsunamis.

2.5.3 Sea level change

Reduction in coastal fisheries production
Swamping of coral reefs
Salt water intrusion and flooding
Displacement of coastal populations
Loss of coastal infrastructure

2.5.4 Ocean temperature

Coral bleaching

2.5.5 Salinity patterns

2.5.6 Ocean-atmosphere interaction

Global warming may cause extreme events to occur due to the dynamics of these couplings.
Ocean acidification may happen due to climate change and its effects on the ocean currents.

2.6 Chemical and Biological Oceanography

2.6.1 Nutrients

Increased nutrients leading to ocean acidification due to high levels of coastal pollution
Siltation of estuaries and mangroves is leading to reduction in the nutrients available for marine species.

2.6.2 Persistent organic / inorganic pollutants

Destruction of turtle nesting beaches through pollution and plastic waste
Increasing levels of fertilizers used along river courses resulting in eutrophication of lower reaches and excess nutrients being released into the oceans
Pollutants may destroy sensitive ecosystems such as coral reefs, mangroves and seagrass beds.

2.6.3 Primary production

1) Harmful Algal Blooms (HAB):

In January, 2002, a HAB along the East African coast from Mogadishu in Somalia to Lamu in northern Kenya, associated with the strong, upwelling of the Somali current and an unusual strong NE wind (force 5-6) that may have blown it onshore. This bloom lasted for 10 days, with extensive fish mortalities during the first three days, and numerous fish and other marine animals, such as turtles being washed up on the beaches or found floating on the ocean surface. However, consumption of and trade in fish from beaches were banned, as well as, trade in shellfish for the duration of the red tides, although Somali people do not eat shellfishes. However, there were no human fatalities but some cases of eye irritations and headaches. The economy, however, was seriously affected as local fishing communities are almost entirely dependent on fisheries. According to laboratory analysis in Nairobi, Kenya and in South Africa, both identified *Gymnodinium* as a major component of the bloom, and satellite imagery for the period confirmed an increase level of chlorophyll in the area. Nevertheless, the exact reasons for the bloom remain unclear (Hansen *et al.* 2001).

2.7 Coastal zone and continental shelf

2.7.1 Description and extent of coastal and marine habitats

Bleaching

The northern coast east of Berbera highlighted extensive coral bleaching, with some reefs suffering almost total mortality (Schleyer and Baldwin 1999). The Red Sea coral reefs off the coasts of Djibouti, Eritrea and Somalia, however, are reportedly in good, often pristine condition with 30-50 per cent live coral cover and the richest diversity of coral and other reef species in the entire Indian Ocean (Pilcher and Alsuhaibany 2000). Southern Somalia also has numerous small islands north of the Kenyan border. Coral bleaching has had a significant impact on many of the LME's coral reefs, especially during the 1998 El Niño.

Acidification

Increasing amounts of carbon dioxide from human activities that is entering the oceans via the atmosphere since about 1750 is increasing the acidity and caused a pH decrease of 0.1 units. Increasing atmospheric CO² concentrations are causing further acidification and the average ocean surface pH is about 8.1. Projections suggest a further acidification over this century, leading to a reduction in average global surface ocean pH of between 0.14 and 0.35 units (IPCC 2001).

Coral mining

Limestone (coral reef) mining exists mainly on southern towns such as Marka and Barawe. The community in these two towns mine limestone on the shore for the use for house building. Lime making is also, used for whitewashing and house decoration. This activity of mining for limestone renders coastal inundation, sedimentation and erosion.

Sand mining

It is very popular in all coastal towns and fishing villages in Somalia. It is mixed with cement, coastal soil and gravel to make bricks. This destabilizes the coastal sand dunes, which already caused severe coastal erosion.

Urban expansion

So many war displaced settlers built new houses, hospitals, telecommunication systems, schools and all other facilities essential for their lives along the coastal areas. The expansion of the cities increases garbage dumping on the sea shore. Due to lack of environmental governance, almost all the coastal cities and towns use the beaches as rubbish dumping site. Because of that, a lot of rubbish accumulated on the beaches as a sediment. All sorts of runoffs such as animal and human wastes, fertilizers and other degrading elements inflict damage to water quality and health of ecosystems in general.

Nutrient loading

Human activities related to food and energy production have greatly increased the amount of nutrient pollution entering the Somali current Large Marine Ecosystem which causes eutrophication of coastal waters and degradation of fisheries habitats. When phytoplankton blooms die and sink decomposition of the biomass consumes and may deplete dissolved oxygen in the bottom water resulting in hypoxic or “dead zones.”

2.7.2 Productivity of the coastal zone (corals, mangroves, seagrass beds)

- Mining, pollution and the exploitation of reef fishes and other organisms for food and ornamental trade, tourism and siltation causes degradation of coral reefs
- Overfishing and destructive fishing practices
- Coral bleaching
- Sedimentation
- The systematic removal of mangroves for fuel and construction purposes
- Conversion of mangroves for agricultural, industrial and residential uses and salt and lime production, as well as over-harvesting of mangrove wood for building, charcoal, firewood and trade purposes
- Destruction of mangrove forests is also leading to heavy offshore siltation and reduction in nutrients for offshore species with concomitant reduction in fish catches
- Drag nets and pollution threaten seagrass beds
- Reduced freshwater outputs due to mining, damming and irrigation
- Sea level rise could cause flooding of estuaries, seagrass beds and mangroves
- Increasing coastal populations and inadequate monitoring

2.9 Macrofauna (state of biological knowledge)

2.9.2 Fish and fish resources

The problem of Illegal, Unregulated and Unreported (IUU) fishing is particularly acute in Somalia, largely as a result of civil wars and the lack of a functioning government for the last decade (Gelchu and Pauly 2007).

Foreign fishing fleets often fish close inshore and interfere with artisanal fleets causing conflicts (FAO 2005).

Overharvesting: there is ineffective governance in this sector due to the lack of a central

government.

Destructive fishing practices also pose a threat to coastal fisheries and coral reefs. In areas around coral reefs, unsustainable exploitation is related to increasing fishing effort and the use of destructive gear (McClanahan 1996, Obura *et al.* 2000). The use of dynamite, pull seine nets, poisons and selective fishing on certain species and juveniles are widespread in the region (UNEP/GEF 2002).

Offshore trawling grounds, especially those targeting prawns, are showing signs of overexploitation with excessive by catch and discards. A significant fraction of shrimp by catch is composed of juvenile fish and on average, only 32% of the bycatch is retained, with a discard rate of up to 1.8 tones per trawler per day (KMFRI 2003).

Purse seines yield a high by catch of cetaceans and shark gill nets also catch non-target species such as turtles, dugong, dolphins and whales (Van der Elst and Salm 1998, Pilcher and Alsuhaibany 2000). The by catch of shark gill nets in Somalia also includes sawfish (*Pristis microdonan*), which are of global concern as they have been overexploited worldwide (IUCN 1997).

Exotics: see section 2.9.6

Pollution: see section 2.6.2

2.9.4 Reptiles

Opportunistic harvesting of green turtles

Incidental gill net capture

Degradation of nesting beaches through pollution and other human activities

2.9.5 Birds

Seabirds are often caught as bycatch in fisheries

Habitats of endangered species are being destroyed

2.10 Long term predicted atmospheric changes

- lack of knowledge
- poor models
- data availability
- coefficient of variation

3. HUMAN ENVIRONMENT

3.1 Coastal and island populations – current status and trends

Increasing pressures on towns leads to poor health, degradation of surrounding resources.

Infrastructure cannot cope with the rates of urban expansion

3.2 Sites of religious or cultural significance

Destruction of museums and looting during the war
Looting, selling of artifacts and illegal diggings to fund war parties

3.3 Human health

Lack of human resource capacity is a major problem in existing hospitals.
Access to hospitals, schools and other health services is limited as a result mortalities rates are high and life expectancy is low.
Literacy levels are still low due to low education levels.
Gender disparities still exist in the education system.
There is limited access to clean water for drinking and cooking.
Prevalence of HIV/AIDS, cholera and diarrhea is high.
Food security is low due to erratic climate conditions and political instability.

3.4 Infrastructure

The new wireless technologies are based on costly satellite networks
Some areas are still lacking electricity, meaning that internet cannot be used here.
The remaining political instability in the region hampers development and maintenance.

4. COASTAL LIVELIHOODS

Small-Scale Fisheries

Weaknesses:

- No effective government and fisheries management institutional structures
- No management capability;
- No implementation of fisheries policy;
- No enforcement capabilities;
- No structures to enable small scale fishers to inform policy development;
- Isolation of individual fishing communities;
- No historical fisheries data;
- Very limited and localized current fisheries data collection;
- Very limited marketing capabilities - very poor roads very little infrastructure and few airports;
- Very limited stock status information;
- Fishing gear very old, unsafe, or not functional;
- Problematical supply and servicing of all fishing gear and equipment;
- No boat repair materials, tools or facilities;
- Limited understanding of resource use, processing and marketing issues by fishers and traders;
- Great poverty that makes sustainable use issues irrelevant;
- Piracy activities;
- Land based security issues – NGOs and foreign aid unwilling to commit staff and resources;

- Very large range of makes and models of fishing gear but particularly inboard and outboard engines;
- Limited sheltered vessel launch sites and no vessel launch/retrieval facilities. Few safe anchorages;
- Most artisanal fishing vessels underpowered;
- No scientific information available - Destruction of archives and libraries museums and universities – no documents exist, no baseline information, no research no guidelines;
- Very limited communication facilities and access to all types of information.

Threats:

- Industrial and domestic pollution of marine environment in major centres oil, chemicals, waste products and effluents, sewage, ballast waters, fuels
- Pollution at all fishing villages – offal and waste dumped into the sea
- Probable over-exploitation of most fisheries sectors inshore and offshore: sharks and demersal sectors particularly vulnerable
- Competition with foreign industrial fisheries
- Illegal unregulated unreported (IUU) fishing by many hundreds of foreign vessels
- Exploitation of and damage to inshore resources by IUU fishing sector
- No monitoring, control and surveillance of fishing fleets
- Widespread use of gillnets (drift and bottom set) in most fisheries sectors
- Lack of functional government and institutional structures – difficult to develop and implement fisheries policy and ratify conventions
- Possible dumping of toxic wastes in shallow coastal waters.
- Beach sand mining at Berbera, salt mining at Haafun, limestone mining at Mogadishu
- Catchment degradation and poor agricultural practices in the Juba area lead to enrichment and siltation and consequent coastal impacts.
- Piracy
- Internal security

Tourism

Weaknesses

- Very limited tourism institutional capacity
- Limited follow through of tourism policy
- No effective government and institutional structures conducive to tourism development.
- Culture of violence and conflict
- Tourism product lacks (positive) unique selling points.
- Very limited tourism marketing capabilities.
- International aid sector currently unwilling to commit resources and personnel to developing tourism infrastructure.
- Limited coastal tourism activities.
- Limited communication infrastructure

Threats

- Culture of poverty associated with sub-culture of crime.
- Limited participatory inputs from tourism operators in policy development.
- Remaining isolated for extensive period from international tourism markets.
- Financial sustainability of accommodation sector, ultimately bottoming out due to erratic and low tourist volumes.
- Extensive period of being perceived by the international market as a negative destination.
- Reputation of a destination used for dumping of toxic wastes in coastal environment.
- Over-exploitation of marine resources typically used for tourist cuisine crayfish, etc.
- Destination associated with piracy.
- No provision of guaranteed security for any foreigner.
- Destination known for illegal weapons market.

4.4 Agriculture and Forestry

Weaknesses

- Long history of conflict and continuing instability country-wide combine with climatic uncertainty and variability, including propensity to recurrent drought, to limit scope for families to develop and sustain their livelihoods

Threats

- Continuing conflict and insecurity in central and southern Somalia, including from Al-Qaeda presence in the country, suggest that any project or foreign-intervention successes will be very limited until things settle down
- Illegal offshore fishing and piracy in Somali coastal waters are also a problem for stability and good governance of the marine environment

4.5 Energy

Weaknesses

- Insecurity and recurrent armed conflicts
- Failed State and rampant rivalries among governance bodies, at every level
- Country's economy mostly informal, unable to contribute to State building
- Piracy as principle coastal industry
- Lack of basic infrastructures in most of the Country

Threats

- Development of oil operations (drilling, exploitation, transport, processing, storage etc) in an insecure environment increases accidents and oil spill risks.
- Involvement of private companies from emerging countries are not always respectful of environmental and social regulations.

4.6 Ports and Coastal Transport

Weaknesses

- Absence of government, law and order.
- Pirate activities in Somali and adjacent waters.
- Low levels of economic activity.
- Arid climatic conditions

Threats

- Continued marginalisation due to violence and corruption

4.7 Coastal Mining

Weaknesses

- Devastated infrastructure as a result of prolonged civil war
- Piracy as principle coastal industry
- No environment authority
- No coastal management zone

Threats

- Ongoing civil war

6. PLANNING AND MANAGEMENT

6.3 Areas under special management

There is a lack of adequate legislation and means of enforcement to prevent the over utilization of its natural resources.

Most important conservation sites are suffering from over grazing and overexploitation.

There is a lack of MPAs to conserve the countries valuable shallow and deep water marine ecosystems.

Levels of poaching are high.