

# PHYSICAL ALTERATION AND DESTRUCTION OF HABITAT (PADH) IN TANZANIA

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By

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## EXECUTIVE SUMMARY

UNEP/GPA in collaboration with the Secretariat of the Nairobi Convention convened to discuss the factors causing Physical Alteration and Destruction of Habitats (PADH). Following this meeting, three priority areas of concern were identified namely: Coastal tourism; Mangrove Destruction; Mining/Sediment movements, Ports and Land reclamation and Damming of rivers. The meeting also agreed to develop project proposals that will demonstrate how to address those PADH problems.

The present report first examined land-based social and economical activities as well as environmental impacts of PADH and incorporated legislation and institutional arrangements governing the areas of concern. Emphasis was put on the three priority issues identified during the UNEP/GPA meeting. Assessment of the social, economic, and environmental impact of the three priority areas in relation to physical alteration and destruction of the habitats revealed that unsustainable coastal tourism and uncontrolled destruction of mangroves as well as unplanned mining and damming of rivers could lead to serious environmental degradation.

Coastal tourism was shown to have both positive and negative socio-economical importance. Eco-tourism, it appears, is the best alternative forwarding in order to minimise conflicts as well as economical and environmental impacts. Economically, the potential of coastal tourism is great, but it has gone unrealised due to various constraints. For example, accommodation and other infrastructure are inadequate, especially outside Dar es Salaam City. Accessibility to many prime tourist areas is also limited.

Destruction of mangroves was identified in several coastal areas of the country. For example, in Rufiji and Ruvu deltas, mangroves are cleared for rice farms; in Dar es Salaam, Zanzibar, Lindi and Mtwara, they are cleared for charcoal and salt production; and in Bagamoyo, a large area of mangroves was cleared for construction of hotels; while in Mafia Island, clearance of mangroves was for a prawn farm. However, the overall analysis of mangrove forests coverage in Tanzania shows that the forest stand is still good, probably due to the effectiveness of the Mangrove Management Plan in place (Semesi 1991).

The PADH issues related to mining/sediment movements, ports and land reclamation and damming of the rivers were similarly found to have social, economic and environmental impacts to the people and the coastal resources. In general, these are issues related to income generation at both the national and local levels. For example, the improvement of the Port of Dar es Salaam through dredging increases the general efficiency of the port, while mining generates income and damming of rivers provide hydro-electrical power. With respect to PADH, these activities contribute in altering the physical characteristics of the habitats by means of increased turbidity; blockage and diversion of rivers; destruction of coral reefs and mangrove forests; siltation and sedimentation; smothering of bottom organisms; beach erosion, and so on.

Review of national legislations and institutional arrangement related to the three priority areas revealed that laws and regulations governing management of the coast and surrounding environments have been guided by sectoral policies, which are fragmented and thereby attributing to gaps and overlaps. In most cases, it is not clear who is responsible for managing resources and economic activities that are cross-cutting; leading to conflicting use of coastal resources. It should be noted that not all policies and legislations were purely of sectoral nature. For example, the National Land Policy, 1995, calls for EIA before coastal development and it advocates for integrated coastal management. For further achievement of multi-sectoral approach, the nation came up with a new strategy on National Integrated Coastal Environment Management, which was approved by the Cabinet in 2002. The Strategy, having an integrated approach, will overcome the fragmentation inherent in single-sector management, the necessary prerequisite to combat PADH.

The same trend was also observed with respect to institutional arrangement. Here too, the priority PADH areas are treated in a sectoral way. The National Environment Management Council (NEMC) is the principal advisory body of the government on all matters related to the environment, while the implementation of the integrated coastal management (ICM) policy is done at the local government level. Therefore, there is need for proper coordination of the activities, which is being achieved through a number of locally based ICM initiatives, programmes and projects.

Overall, Tanzania is committed to sustainable coastal governance and has been in the forefront in advocating for Integrated Coastal Management. For example, Tanzania has endorsed or ratified a number of international and regional conventions that recognize the need for an integrated approach for managing the coastal areas. Currently, in addition to the new Strategy on Integrated Coastal Environment Management, there are nine Programmes/Projects in different coastal areas of the country and two marine parks and one Marine Conservation area, all working towards achieving sustainable utilisation of marine resources, through integrated coastal and marine areas management. The National Integrated Coastal Management Strategy provides a framework for linking government sectors at many levels, and for creating partnerships among them and resource users in order to achieve sustainable coastal development.

# 1. INTRODUCTION

The Global Programmes Action of the United Nations Environment Programme (UNEP/GPA) Coordination Office in The Hague, The Netherlands, coordinates the tasks and activities of UNEP as secretariat of the Global Programme of Action for the Protection of the Marine Environment from land-based Activities. This GPA was adopted by 108 Governments, including Tanzania, and the European Commission in Washington D.C. in 1995.

In 2002, the GPA Co-ordination Office initiated a Programme in the Eastern African Region with special emphasis on one out of the nine focal areas of GPA: Physical Alteration and Destruction of Habitat (PADH). This initiative is a follow-up and response to the outcome of the First Intergovernmental Review meeting of the GPA held in 2001 in Montreal, Canada.

The overall PADH Project aims at supporting the efforts of stakeholders in protecting coastal and marine habitats against physical alteration and destruction. It will focus on sediment mobilisation effects by the four economic sectors that potentially pose a threat to such habitats. Those sectors include: tourism, ports and harbours; aquaculture; and mining (sand and aggregate extraction).

In July 2002, UNEP/GPA in collaboration with the Secretariat of the Nairobi Convention held the “Regional Meeting for Physical Alteration and Destruction of Habitats (PADH)”, in Nairobi, Kenya. The meeting received presentation on PADH in the Eastern African region and priority PADH issues of concern in the region were identified. The areas of concern that were pointed out included: tourism, mariculture/aquaculture, ports, mining, salt works, agriculture, urbanisation and land reclamation. These were grouped into three main priority areas namely:

- ❖ Coastal tourism – which include issues related to land use planning such as urbanisation, siting of hotels and eco-architecture and location of tourist facilities
- ❖ Mangrove destruction, due to salt works, aquaculture, agriculture and mangrove harvesting
- ❖ Mining/sediment movements, ports and land reclamation and damming of rivers.

As a follow up, the meeting urged the GPA Office in collaboration with regional institutions to organise a regional workshop in early 2003 to address the three priority areas mentioned above in order to develop project proposals that will demonstrate how to address the problems of PADH that are associated with the identified thematic areas. The proposed activities under the PADH component of the GPA will be cross-referenced with regional and national levels initiatives/activities that contribute to the objectives of the PADH project.

The objectives of this report were to:

- Review and examine national legislation relevant to the three main priority areas to be addressed
- Describe national institutional arrangements and analyse their adequacy for an integrated approach to coastal management, particularly taking into account the issue of PADH affecting marine and coastal resources;
- Assess the socio-economic importance of the three main priorities on the well-being of the people in the country;
- Assess environmental impacts of the three main priority PADH activities;
- Prepare the relevant conclusions and make recommendations for the necessary amendments of national legislation and adjustments of national institutional arrangements for achieving an integrated coastal management approach, particularly taking into account the issue of physical alteration and destruction of habitats affecting coastal and marine resources; and
- Prepare a set of findings, observations, conclusions and recommendations addressing the country dimension of the issues dealt with.

The study was mainly conducted through literature and document review. The main documents consulted were reports by: Tanzania Coastal Management Partnership (TCMP), UNEP, SEACAM, WWF/EAME and other various related reports and literature from a variety of sources.

This report covers the coastal areas of Tanzania, including coastal forests and mangroves, and other coastal ecosystems; beaches; river basins and deltas affecting marine and coastal environments. Throughout the report, reference is made to the three priority areas of consideration namely: Coastal Tourism; Mangrove Destruction; Mining/Sediment movements, Ports and Damming of rivers. The report is structured into six sections. The background of the PADH Project is given in section One – the introduction, while the general description of Tanzania with its major coastal ecosystems is given under section Two. The third section deals with the socio-economic importance of the three main priority areas on the well being of the people, whereas the environmental impacts of the priority issues are discussed in section Four. Section Five reviews the existing legislations and Institutional arrangement in place, which deals with the three priority areas of concern, including presentation of one case study on necessary conditions for conducting a successful Environmental Impact Assessment. Finally, section Six gives the general conclusions and recommendations, with emphasis on the necessary amendments of national legislation and institutional arrangement for achieving integrated coastal management approach.

## **2. GENERAL DESCRIPTION OF TANZANIA AND ITS MAJOR COASTAL ECOSYSTEMS**

Tanzania has a coastline of over 800km, which stretch from latitude 4<sup>0</sup>49'S at the border with Kenya to latitude 10<sup>0</sup>28'S at the border with Mozambique. The country has a narrow continental shelf, except at the Zanzibar and Mafia Channels, where the shelf extends for up to 80km. The coast has two large Islands, Zanzibar and Mafia, whereby Zanzibar is composed of two sister islands (Unguja and Pemba). There are many smaller islands, islets and reefs along the coast as well.

The country has superb wildlife resources, which are considered among the finest in the world. These include the Serengeti Plain, Ngorongoro Crater, Lake Manyara and Africa's highest mountain, Kilimanjaro all in the North. Located in the South of the country are Mikumi, Udzungwa and Ruaha National parks as well as Selous Game Reserve (Francis et al. 2001). Tanzania's coastal areas are blessed with historical attractions (buildings, ruins and monuments), particularly in Zanzibar, Kilwa and Bagamoyo in addition to cultural attractions mainly related to people's values, customs and traditions. Other costal attractions are the Jozani rain Forest in Zanzibar and the Amboni caves in Tanga.

There are five administrative regions situated along the mainland coast: Tanga, Coast, Dar es Salaam, Lindi and Mtwara. These regions are further subdivided into several districts. The five coastal regions cover about 15 percent of the country's total land area and are the home of approximately 25 percent of the country's population. The coastal and marine environments are currently subjected to a wide range of natural and anthropogenic disturbances at different intensities and with various combinations. The increasing anthropogenic disturbances are attributed to the growing coastal population, which is expected to double in as little as 12 years, as well as the unsustainable use of coastal resources.

The coastal and marine environment include, among others, major estuaries, mangrove forests, coral reefs, sandy beaches, cliffs, seagrass beds and muddy tidal flats. Sandy-muddy flats or rocky reef platforms are found in the intertidal zone, while the sub-littoral zone consists of extensive seagrass beds and coral reefs. Extensive mangrove coverage is present in the country, with the Rufiji Delta area having the largest stand. The main rivers include Pangani, Wami, Ruvu, Rufiji, Matandu, Mbemkuru, Lukuledi and Ruvuma which all flow into the Indian Ocean. The rivers influence the coastal environment through creation of productive brackish water environments in estuaries, maintenance of deltas, tidal flats and shorelines, and the nourishment of mangroves and seagrass beds. The distribution of some coastal habitats along the coast of Tanzania is illustrated in Figure 1.

Mangrove forests of Tanzania play a significant role to the communities living around them. Ecologically mangroves not only act as nurseries for commercially important fishery species, but they also provide habitats for a range of organisms, including threatened and endangered species. Some fisheries are dependent on mangrove

ecosystems, notably prawn and crab fisheries. Mangroves provide firewood, building materials, and timber for boat making and charcoal. In some areas, salt production is processed through boiling seawater using mangrove firewood. Because of their massive root systems the trees serve as traps for sediments hence they protect coastal erosion. The dead mangrove trees provide nutrients and are a rich source of food for other animals and plants in the mangrove ecosystem. Moreover, mangrove forests serve as great tourist attractions and have important scientific and medicinal value.

In Tanzania, seagrass beds are widely distributed from high intertidal to shallow subtidal areas, and they are highly productive. Seagrasses have a high rate of diversity and they support a variety of marine fauna (Francis et al. 2001). The seagrass meadows or beds are found in sheltered areas of the coast around Kilwa, Rufiji, Ruvu and Moa; they also occur on the west coast of the islands of Pemba, Unguja and Mafia. Seagrasses provide breeding, nursery and feeding areas for many invertebrates and vertebrates species (finfish and shellfish); and serve as shelter and refuge for resident and transient adult animals, such as shrimps. Seagrasses are also an important source of food for herbivorous invertebrates, fish, dugongs and turtles. Ecologically, seagrass beds filter the sediments, thereby reducing sedimentation over coral reefs and thus providing protection to the shorelines.

Coral reefs are common along much of the Tanzania coast. There are barrier reefs, fringing reefs and patchy reefs. The fringing reefs predominate, but they are restricted to a narrow strip along the coast. The Islands on the Tanzania coast (Unguja, Pemba, Mafia and other smaller islands) are mostly surrounded by fringing reefs. The coral reefs are highly productive ecosystems and they also protect the coastline and the communities it supports, from oceanic weather conditions. Coral areas are also very important for fish breeding and shelter. In Tanzania, coral reefs support an intensive and mainly artisanal fishery that employs over 50,000 full time fishermen. Seaweed farming in Unguja Island, and to some extent in Pemba, is primarily done in the lagoons that exist behind much of the fringing reefs, i.e., dependent on the protection afforded by the reef.

A shoreline is located where the land meets the sea. The Tanzanian shoreline is also rich in flora and fauna. Most of the organisms that live on the seashores are specially adapted to survive well in this unstable environment. The shoreline has both ecological and economical importance. For example, sandy beaches are important as nesting habitats for sea turtles. Furthermore, they offer recreational areas for tourists and the local people most of whom are attracted to stay at a hotel situated in the vicinity of the beautiful sandy beaches.



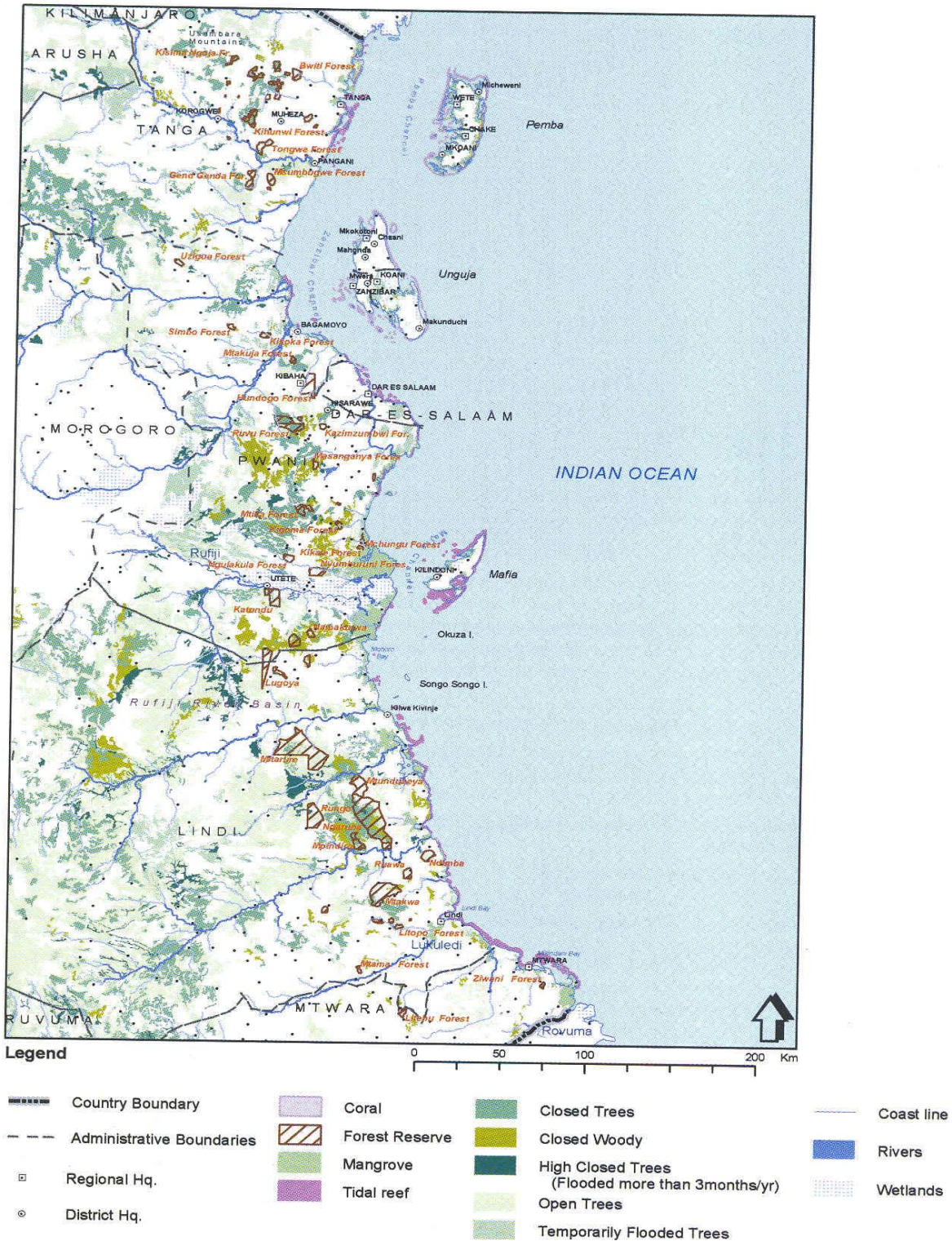


Figure 1: Map of coastal Tanzania showing distribution of coastal habitats (coral and mangroves) and selected terrestrial cover types (Source: UNEP/DGIC/URT/UDSM, 2001)

### 3. SOCIO-ECONOMIC IMPORTANCE OF PADH ISSUES ON THE WELL-BEING OF COASTAL COMMUNITIES

#### 3.1 Coastal Tourism

Tourism is the sum of the phenomena and relationships arising from the travel and stay of non-residents in an area as long as they do not engage in any income generating activity (TCMP 2001a). The natural and cultural assets of Tanzania are the dominant aspects that attract tourist to this country. Tanzania has 12 national parks, 31 game reserves, 38 game controlled areas, one conservation area and two marine parks (TCMP 2003b).

In order to assess the potential for coastal tourism development, it is important to identify and understand the potential impacts that such development will have on the human and natural resources (habitats) of the coastal area. The development of coastal tourism can have a number of impacts on the coastal region, which can be economical, social, environmental and/ or in cultural heritage. On the other hand, the tourism sector can also be impacted by non-tourism-related activities, which could be positive (e.g., job creation), or negative, such as coastal degradation due to unplanned development of coastal hotels.



Tourists cycling on sand at Paje Beach, located on the east coast, Zanzibar. Notice how the hotel is constructed so close to the beach

### **Socio-economic Impacts**

Tourism plays a vital role in the country's economic development .It is one of the major sources of foreign exchange. The industry also offers many employment opportunities both directly and indirectly through its multiplier effect. Tanzania is ranked 9<sup>th</sup> in Africa in terms of International visitors arrivals, (TCMP 2001a). This rank is very remarkable given that tourism is a relatively new sector in the country. In the early 60s, tourist's arrival was very low (about 12,218 in 1961). This figure increased significantly in the following decade, reaching to 200,000 in 1972. Table 1 shows the number of tourists arriving in Tanzania between 1990 and 2002. Between 1972 and 1991, there was a fluctuation in the arrivals, leading to unsteady growth in tourism revenues. Between 1995 and 1999, tourist arrivals and the corresponding tourism receipts increased exponentially (TCMP 2001a). During that period, the number of arrivals increased from 295,312 to 627,325 (Table 1), while tourism contribution to the economy increased from about US\$ 259 million to US\$ 733 million over this five-year period. The tourism contribution to Tanzania's Gross Domestic Product (GDP) in 1999 was estimated to be 13%. There was a decrease in the arrivals in the year 2000, yet the sector's contribution to the economy rose slightly, resulting in a 16% of the GDP and nearly 25% of total export earnings. Tourism directly supported an estimated 156,000 jobs in 2000. With an average growth rate of 20%, Tanzania hopes to reach the target of one million tourists by the year 2010.

Table 1: International Tourism trends in Tanzania, 1990-2002

Year	Number of Tourists	Annual Change (%)	Foreign Currency Earnings (million US\$)	Rate of Annual Change (%)
1990	153,000	10.96	65.00	8.33
1991	186,800	22.09	94.73	45.74
1992	201,744	8.00	120.04	26.72
1993	230,166	14.09	146.84	22.22
1994	261,595	13.65	192.10	30.82
1995	295,312	12.89	259.44	35.05
1996	326,188	10.46	322.47	24.26
1997	359,096	10.09	392.39	21.72
1998	482,331	34.35	570.00	45.00
1999	627,325	30.00	733.28	29.00
2000	501,669	20.03	739.06	0.79
2001	525,000	4.65	725.00	-1.90

Source: Ministry of Natural Resources and Tourism, Tourism Division

At the local level, tourism stimulates the construction and operation of hotels and other accommodation facilities, which in turn can provide direct employment opportunities. Furthermore, the presence of tourists can lead to the emergence of numerous types of supporting services and businesses. These services included restaurants, tour agencies, transportation, water sports and recreation, and so forth, many of which can be developed and managed by the local people. These linkages to other supporting

services can serve as a multiplier effect in the local economy. Through taxation and other revenue bearing activities, coastal tourist activities are able to provide revenue to local government authorities.

Considering the other side of the coin, there are some potential adverse impacts of coastal tourism on the local economy. More often than not, the increase in tourism activities has a potential of causing an increase in local prices for certain items, such as land and foodstuffs. For example, tourist demand for local agricultural products and seafood could cause prices to increase so much that local people are unable to meet their basic needs.

The social impacts of coastal tourism are quite difficult to measure but are often fairly negative (TCMP 2001a). However, there could be some positive attributes such as the promotion of inter-cultural understanding between the host and the visitor, which could also include learning from one another. The general trend, however is that the western values and ideas creep into the host populations, potentially eroding the local values. To the young locals, tourists are often perceived as wealthy. Therefore the local youth try to emulate their lifestyles blindly. They do not realizing that most tourists work hard most of year before they can save enough money to afford a holiday in Africa.

Tourism facilities can also exacerbate existing coastal resource problems. A good example is the shortage of water in places like Zanzibar town. Tourist hotels often consume large amounts of fresh water for use in maintaining the lawns, filling swimming pools, cleaning rooms and washing linens, as well as for general use by the guests in shower rooms etc. If freshwater resources are limited, tourism activities can come into conflict with other users, such as farmers and households. Another social impact is that tourists are seen as a source of easy money. As a consequence some of the hosts try to take advantage of them in order to make quick money. On the cultural aspects, more often than not, tourists are not aware of local values and customs, which can lead to conflicts between hosts and visitors.

Eco-tourism is defined as the responsible travel to natural areas that contributes to the conservation of the natural resources therein and the sustainable sustenance of the local people. This is the way forward in order to minimize such social conflicts, as well as economical and environmental impacts.

Economically, the potential of coastal tourism is great, but it has gone unrealised due to some constraints. For example, there is inadequacy in the accommodation sector, especially outside Dar es Salaam City and also limited accessibility to many prime tourist areas. Thus, investment is required in attractions development and management, hotels and infrastructure in order for areas of the coast to become frequent tourist destinations.

### 3.2 Mangroves Destruction`

In Tanzania, there are eight mangrove species of importance; these species and their uses are listed below:

<b>Species</b>	<b>Uses</b>
<i>Avicennia marina</i>	Inferior firewood, smoking and production of lime, building dugout canoes and beehives and the leaves are used as fodder.
<i>Lumnitzera racemosa</i>	Good firewood.
<i>Xylocarpus granatum</i>	Good firewood, used for fish smoking, boat building and making furniture, the seeds and fruits have medicinal use.
<i>Bruguiera gymnorhiza</i>	Good firewood, used for fish smoking, fishing stakes and poles
<i>Ceriops tagal</i>	Good firewood, poles, fishing stakes and fence posts.
<i>Rhizophora mucronata</i>	Good firewood, poles, fence posts, fish traps and fishing stakes
<i>Sonneratia alaba</i>	inferior firewood; commonly used for boat building and its nematophores are used as fish net floats
<i>Heritiera littoralis</i>	Good firewood, timber for boat building, furniture and dhow masts.

The major mangrove forest coverage in different coastal districts and the islands are summarised below in Table 2 as discussed by Linden and Lundin (1996). The figures show that Rufiji and Kilwa districts, and to some extent Pemba, have the largest coverage of mangrove forests.

Table 2: Showing extent of the main mangrove forest coverage in Tanzania

<b>Administrative Block (District)</b>	<b>Forest area (ha)</b>
Tanga and Muheza	9,403
Pangani	1,756
Bagamoyo	5,636
Dar es Salaam region	2,168
Kisarawe	3,858
Mafia	3,473
Rufiji	53,255
Kilwa	22,429
Lindi	4,547
Mtwara	8,942
Unguja	4,700
Pemba	12,000

(Source: Linden & Lundin 1996)

### ***Socio-economic Importance***

The majority of the coastal dwellers are very poor. Economically, their income depends on smallholder farming, seaweed farming, live stock husbandry, artisanal fishing, subsistence forestry, lime and salt production and small-scale trade handcrafts (TCMP 2003b). Mangrove forests in Tanzania occupy about 225,000 ha; of these, the Rufiji Delta, located some 150 km south of Dar es Salaam, contains the largest continuous block of mangrove forest in East Africa, with approximately 53,000 hectares. The Rufiji delta also supports the most important fishery in Tanzania's coastline, accounting for about 80% of all shrimp catches in the country. Mangrove resources are valuable, both ecologically and economically, playing roles in a variety of processes both on the coastal and offshore ecosystems. They are also highly productive in terms of fisheries.

In Rufiji and Ruvu deltas, mangroves are cleared for rice farms, which are usually abandoned after about 5 years due to changes in soil chemistry. (Semesi et al. 1999, Kulindwa et al., 2001), while in Dar es Salaam, Zanzibar, Bagamoyo, Lindi, Mtwara and Tanga they are cleared for charcoal or salt production (Banyikwa and Semesi 1986; Shunula 1998). In the past, mangroves in Bagamoyo were cleared to give space for building of hotels, while in Mafia they were cleared to establish a prawn farm. Large areas of mangroves in Mtwara, Mbweni, Kunduchi, Lindi, and Tanga were converted into salt pans. Construction of evaporation ponds for solar salt production has resulted in the clearance of mangrove areas, especially in Bagamoyo and Kilwa Districts. Solar salt accounts for over 75% of the total salt produced in Tanzania.

Several studies conducted in various parts of the country have shown that, due to long dependency of coastal communities on mangroves, almost all the mangrove stands in the country have been affected in one way or another, and there is increasing degradation (Banyikwa and Semesi 1986, Nasser 1994, Shunula 1998, Semesi et al. 1999, Akwilapo 2001), which leads to physical alteration and destruction of habitats. However, some parts of Rufiji and Ruvuma Delta still have excellent mangrove ecosystem, mostly because of low local populations, which use the mangroves in a sustainable way and also because these places are not easily accessible by users from highly populated towns.

A study conducted in Dar es Salaam, which included interviews with local people, indicated that the main reasons for cutting mangroves in Mbweni and Kunduchi are for use as firewood, construction poles, charcoal-making and clear-cutting for building sites and commercial projects (Wagner, et. al. 2001). The study further observed that in Mbweni, a large area was clear-cut for the construction a hotel and another area for solar salt pans, both of which never materialised.

From the above examples, it could be concluded that physical alteration or destruction (clear cutting) of mangrove ecosystems in different parts of the country mainly results from income-generating (economical) activities of the coastal communities. In some parts, efforts are being made to initiate programmes that could help to reduce the impacts. For example, in Dar es Salaam, the Kinondoni Coastal Area Management Programme (KICAMP) in collaboration with the villagers strive to provide awareness for

mangrove management. As a consequence, these destructive activities have been somewhat reduced since 2002, although there are still occasional incidences of people clear cutting certain patches of the mangrove forests for construction and other purposes.

### 3.3 Mining/Sediment, Ports and Land Reclamation and Damming of Rivers

#### **Mining**

Mining in Tanzania accounts for less than 2% of the national GDP, but the actual potential for expansion is considered to be enormous (EA-Atlas of CR 2001). Small-scale mining is growing. However, factors like inadequate management, poor physical infrastructure, poor exploration, processing and technologies have limited large-scale mining. Table 3 gives sites of current and potential mining. In the country, more than 27,000 people are involved in small-scale mining for sand, limestone and aggregates in the coastal areas (SEACAM 2003). This activity is mainly done in Dar es Salaam, Tanga and Mtwara. Previously, sand was being mined in large quantities in Zanzibar, a practice that resulted to coastal erosion. However, this has now stopped although local communities are doing small-scale sand mining on beaches. The mined sand is used for building purposes. Further, small-scale production of lime from living coral (although illegal), as a basic building material, is still being carried out (Richmond 1997). There are 197 salt works in Tanzania, out of which 193 are located in the coastal area. At the coast, small-scale mining offers an opportunity for income generation. In some coastal areas, corals and coral rocks are mined and used as sources of calcium carbonate, which is baked for the production of lime for whitewash paint or for building purposes. In other places, especially on Zanzibar islands, coral rock and coral colonies are used as building blocks.

Table 3: Sites of current and potential mineral exploitation and quarrying in coastal areas of Tanzania (modified from Muhando et al. 2001)

<b>Deposit</b>	<b>Location</b>
Rock salt	Lindi
Limestone	Wazo Hill
Kaolin	Pugu Hills
Gravel	all coast
Sand	all coast
Limestone	all coast
Rutile	all coast
Solar/pan salt	Dar es Salaam /Bagamoyo /Tanga/Lindi/Mtwara
Calcite	Miono, Mkonge and Manderu (Coast)
Clay	Kisarawe
Dolomite	Mboga (Coast)
Amethyst	Tanga/Mtwara
Garnet	Tanga/Mtwara

Tourmaline, Kornerupine, Ruby, Chrysoberyl, Alexandrite, Sapphire, Turquoise	Tanga/Mtwara
Kyanite	Tanga/Mtwara
Gypsum	Tanga/Mtwara
Gold	Nachingwea
Feldspar	Tanga/Mtwara
Zircon	Tanga/Mtwara
Bauxite	Tanga/Mtwara
Graphite	Tanga/Mtwara
Rhodolite	Tanga/Mtwara
Marble	Tanga/Mtwara

### ***Damming of Rivers***

Damming of rivers in Tanzania is done primarily for the production of hydroelectric power. Several dams have been constructed in the rivers that empty into the Indian Ocean. The hydroelectric power plants generate about 85-90% of the electrical energy consumed in the country (Muhando et al. 2001). The largest dams are the Kidatu and Mtera on the Ruaha river and the Nyumba ya Mungu, Pangani Falls and Hale, on Pangani River. In the River Rufiji basin, there are other potentials, which include Stiegler's Gorge, Kingenenas and Shughuri, both with the total potential of producing 1950 MW.

### ***Ports***

One of the strongholds of the economy of Tanzania is port activity, which command significant amounts of bulk cargo for the country and its land-locked neighbours. The major ports in the country: Dar es Salaam, Tanga, Mtwara and Zanzibar handle about 4 million tonnes of cargo a year, with import accounting for more than 75% of the cargo (Muhando et al. 2001). In 1997, the port of Dar es Salaam accounted for 92.7% of all cargo handled by the four major ports, followed by Mtwara (3.02%), Tanga (2.94%) and Zanzibar (1.33%).

At local level also, the country's ports offer some employment opportunities. The major ports in the country are a dependable source of employment for local population, as they offer casual labour opportunities and subsidiary jobs. The Tanzania Harbours Authority had about 3163 permanent employees in 2003 (which is only a third of total employees in 2002). Nevertheless, intakes of casual labourers range from 20 to 250 people a day. The earning obtained, though small (between \$ 2-5 per day), helps to supplement people's income.

Recently, the Port of Dar es Salaam has undergone major improvement, on the entrance channel. The work caused the shifting of the fish market and the ramp to Magogoni Ferry. The Dredging work, which cost about \$ 24 million, was completed in April 1998. In the following four years, more complementary work was carried out



offshore, which included installation of navigation aids; installation of a new signal station; and development of a permanent ramp.

In general, activities related to mining/sediment movements, ports and damming of rivers generate some income at the national and local levels. For example, the improvement work of the Port of Dar es Salaam increased efficiency as big ships can now enter the port anytime, instead of waiting for high tide. With respect to physical alteration and destruction of habitats, the activities contribute to altering physical characteristics of the habitats, as discussed in Section 4.3. For example, the following alterations could occur: increased turbidity; blockage and diversion of rivers; destruction of coral reefs and mangrove forests; siltation and sedimentation; smothering of bottom organisms; beach erosion, and so on.

## **4. ENVIRONMENTAL IMPACTS**

### **4.1 Coastal Tourism**

Tourism development in Tanzania is primarily concentrated in the northern wildlife areas, mainly the national parks of Serengeti, Ngorongoro crater and Lake Manyara. It is estimated that over 80% of the tourists coming to Tanzania visit the northern wildlife areas while less than 10% visits the coastal areas. Yet, that little percentage of tourists visiting the coastal areas has had social, economical, cultural and environmental impacts. Despite the economic importance of tourism industry, its development has also contributed to the physical alteration and destruction of habitats.

One of the most important impacts is shoreline changes, which results from construction of hotels and other tourist facilities too close to the shoreline. This can easily be observed in Dar es Salaam, Zanzibar, Mafia, Tanga and Mtwara. With rising population, including increase in the number of tourist coming to the coastal areas, pollution of the environments due to increased flow of untreated sewage into the coastal zone is evident in Zanzibar, Tanga, Dar es Salaam and Mtwara. Solid wastes, such as plastics, debris due to food remains, cans and so on, have also increased significantly, especially in market places and on the beaches.

Growth of tourism has put pressure on the use of coastal environment and resources. This is due to increase in demand for seafood, shells and souvenirs. Hotel owners offer high prices for seafood, especially the big fish such as kingfish, tuna and snappers, as well as shellfish. This has in turn attracted more fishermen and fish traders in tourist areas. Consequently, over-fishing and the use of destructive fishing practices to supply tourists and local markets have resulted in destruction of habitats around urban and tourist centres of Dar es Salaam, Zanzibar and Tanga (Johnstone et al., 1998).

In summary, increased tourism development as coupled to population growth in the coastal areas of the country has created the following environmental problems (SEACAM 1999):

- Garbage is accumulating on beaches as a result of inadequate waste disposal systems;
- Ocean disposal of sewage from hotels threatens to undermine the very resources that tourists have come to enjoy;
- Certain marine resources are overexploited and or destroyed through activities such as lobster fishing, shell collection, destructive diving practices, damage to corals (boat anchor and stumping), and pilfering of archaeological material from shipwrecks;
- Population increase is leading to widespread subsistence farming, resulting in nutrient loading and increased sedimentation in the marine environment;
- Intensification of tourism is leading to increased urbanization of the coastal zone, and pressure on resources such as safe drinking water and clean bathing beaches is increasing;
- Contamination of seafood has occurred as a result of inadequate sewage treatment prior to disposal.

Coastal tourism can also have positive impacts on the environment. For example, employment and other tourism-related revenues can serve as alternative means of income generation instead of destructive, unsustainable utilization of coastal resources. Furthermore, revenues from tourism can be used to finance the conservation of specific resources, such as mangrove reserves and marine parks. Such a step leads to development of sustainable tourism industry.

Apart from its positive economical attributes, coastal tourism can also severely harm the environment if not well managed leading to alteration and destruction of habitats. At the same time, in order to flourish, coastal tourism depends on a pristine and healthy coastal environment as its primary tourist attraction. Therefore, care needs to be taken to ensure that the development of tourism does not harm the very resources on which it is based. Unless legislations and controls are enforced, alteration and destruction of the habitats will continue, as the demand for coastal environment and resources is likely to increase in response to increased tourism and population in general.

## **4.2 Mangrove Destruction**

Today, over-exploitation of coastal resources in general is on the raise; exploitation and uncontrolled use of forests and mangroves is increasing rapidly in many urban as well as rural coastal areas. Several factors leading to physical alteration or destruction of mangrove stands have been analysed in a recent National report "Phase I: Integrated

Problem Analysis” (Francis et al. 2002). Further evaluation of the impact has been compiled in the State of the Coast Survey (TCMP 2001b).

There are also natural phenomena that affect the Tanzania mangrove stand, such as sediment movements and deposition that could cause blocking of normal tidal flow; floods (change in salinity and water level); strong wave action (uprooting of mangroves); drought (creating hyper-saline environment); and diversion of water due to changes in rivers. However, the main impacts are caused by human activities. Mangroves are cleared for salt production, lime production, agriculture and aquaculture as well as for construction of roads, houses, hotels and other tourist infrastructure. Large scale clearing of mangroves prohibits natural regeneration due to lack of mature trees that could produce seeds, and alteration cause of the soil microclimate (Semesi 1987, Semesi et al. 1999).

There are other human activities that, though they do not lead to clear cutting of the mangroves stands, they damage them. These include destructive fishing practices like dragging of seine nets, which results in destruction of seedlings and intermediates to regenerate the stand (Akwilapo 2001); and modification of patterns of fresh- or seawater movements thereby affecting maintenance of the mangrove ecosystems. Improper forestry management is of similar consequence and/or agricultural practices that affect sediment patterns or cause soil erosion. Alteration and modification of mangrove stands has also been caused by pollutants and solid wastes emanating from domestic and industrial sources, especially in major towns like Dar es Salaam, Tanga and Zanzibar,.

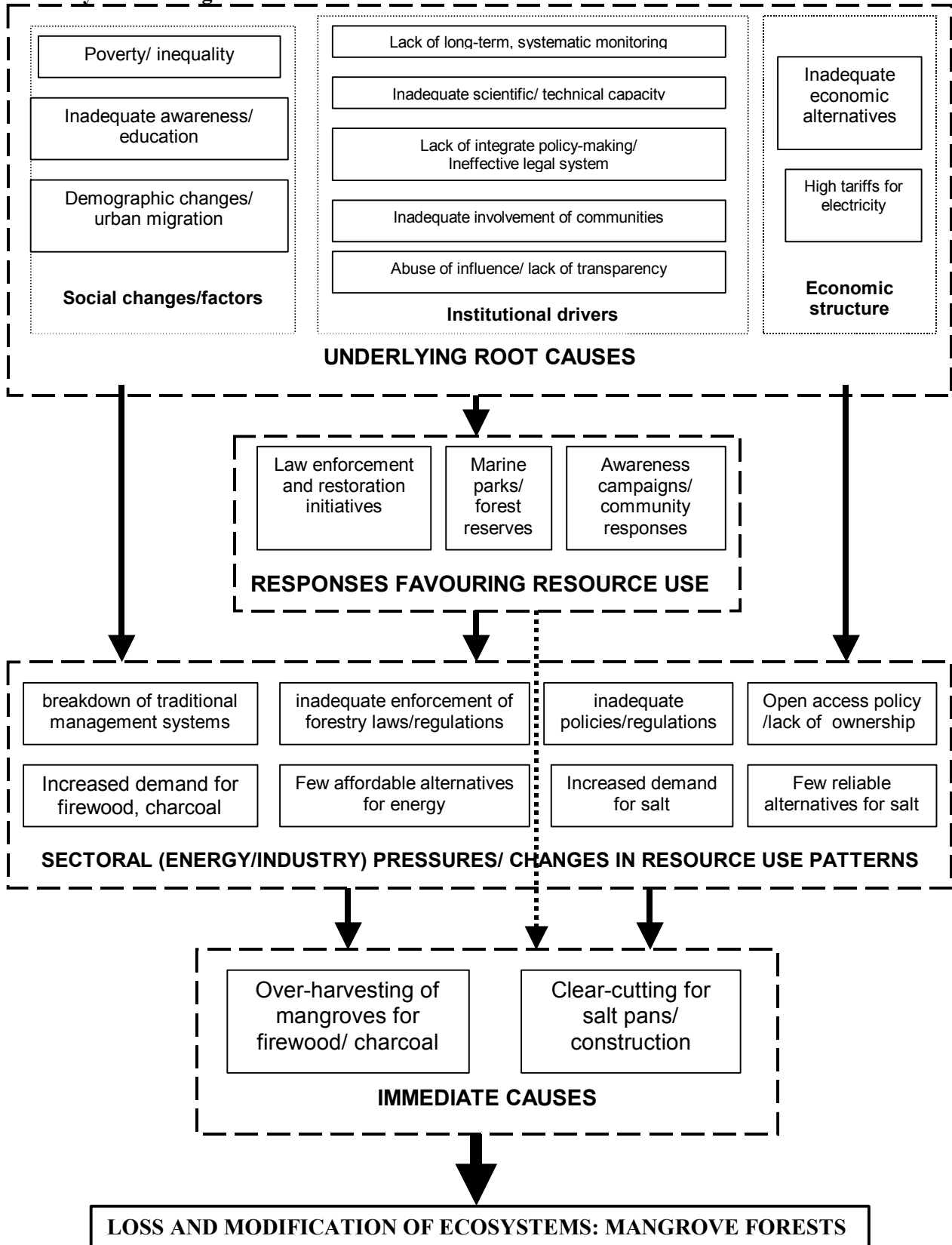
High rate of mangrove cutting is experienced close to highly populated places/towns and consequently, most degradation of the mangroves occurs there. Sites with degraded mangroves include Maruhubi in Zanzibar, Kunduchi, Mtoni and Mjimwema in Dar es Salaam and potentially, those towns close to Mtwara and Tanga mangrove forests. Small islands along the Tanzania coast, with mangrove stands that are easily accessible by boat are also degraded. One example is the Ulenge Island in Tanga region; the mangroves are being cut illegally and exported to the neighbouring Kenya.



Lime making at Mitengo Village in Mtwara. Cutting mangroves in such high amount, if not controlled, could lead to significant destruction of the forests.

The causes of physical alteration (modification) and destruction (loss) of mangrove ecosystems have been clearly analysed in the Tanzania National Report by Francis et al. (2002), as summarised in Figure 2. The analysis was done in three steps: Step 1 indicates immediate causes; step 2 gives sectoral pressures and changes in resource use patterns; while step 3 shows the underlying root causes.

**Figure CC: Causal Chain Analysis for Loss and Modification of Ecosystems: Mangroves**



A recent study carried out by Wang et al (2003) analysed changes in mangrove distribution and total area of the mangrove forests in Tanzania mainland. They observed that during the past decades, degradation of mangroves occurred in many parts of Tanzania (as illustrated in Table 4). As previously observed, the authors also found that the areas hardest hit were those near urban centers, such as Maruhubi in Zanzibar, Kunduchi and Mtoni in Dar es Salaam and forests around Tanga town. The major immediate causes of mangrove forest degradation were the over-harvesting of mangroves (46%) for firewood, charcoal making, building poles and boat-making and the clear-cutting of mangrove areas (30%) for aquaculture, agriculture, solar salt works, road construction, urbanization and hotel construction.

Table 4: Comparison of mangrove areas (in hectares) during 1990 and 2000

Coastal districts	1990 Mangroves		2000 Mangroves	
	Mangrove Vegetation	If salt crust areas added	Mangrove Vegetation	If salt crust areas added
Tanga and Muheza	9 217	9 221	9 313	9 336
Pangani	3 799	3 799	3 879	3 879
Bagamoyo	5 039	5 039	5 051	5 051
Dar es Salaam (Ilala, Kinondoni & Temeke)	2 494	2 494	2 516	2 516
Kisarawe	4 159	4 261	4 092	4 167
Rufiji	49 799	50 968	48 030	50 391
Kilwa	21 826	22 546	21 755	22 552
Lindi	4 034	4 055	4 044	4 065
Mtwara	9 226	9 409	9 458	9 860
Total	109 593	111 792	108 138	111 817

Source: Wang et al. 2003

Several studies conducted in various parts of the country have shown that, due to long dependency of coastal communities on mangroves, almost all the mangrove stands in the country have been affected in one way or another, and there is increasing degradation (Banyikwa and Semesi 1986, Shunula 1998, Semesi et al. 1999, Akwilapo 2001). Furthermore, it has been identified that areas most affected are those close to urban centres. However, the study by Wang et al. (2003) concluded “there has not been significant conversion and loss of mangrove area over the most recent 10 years along the Tanzania mainland coast”. Nevertheless, the threats still exist and there is need for sustainable utilization of the mangrove forests. For example, proper Environmental Impact Assessments (EIAs) should be conducted before the establishment of all salt works, aquaculture projects and construction of any kind takes place (SEACAM 2000). This will ensure that proper areas are selected and environmentally friendly procedures are followed.

### **4.3 Mining/Sediment movements, Ports and Land reclamation and Damming of Rivers**

Tanzania has four major harbours, namely, Dar es Salaam, Mtwara, Tanga and Zanzibar. Smaller ports include Mkoani in Pemba, Lindi, Kisiju, and Kilwa. The mainland ports are under the Tanzania Harbours Authority. The main port at Dar es Salaam has undergone a modernization programme in order to enhance its competitiveness among other ports in the region. Similarly, the Zanzibar port has expanded considerably in terms of marine transportation more so because of the liberalisation of trade in the country. Port dredging and other related activities, have substantial effects on the adjacent habitats. For example, dredging at Zanzibar and Dar es Salaam harbours increased the water turbidity, smothered bottom organisms and changed the composition of organisms as well as altering the physical characteristics of the habitats.

Mining contribute to the alteration and habitat destruction along the Tanzania coast. Whereas sand mining can enhance beach erosion, mining on land causes direct land degradation and soil erosion. Sand mining has enhanced beach erosion in Dar es Salaam, Tanga and Bagamoyo. As mining involves movement of sediments, it can cause blockage and diversion of rivers as well as filling of lakes. Further, siltation or sedimentation is likely to take place thereby affecting coastal ecosystems such as mangroves, seagrass beds and coral reefs. Mining of fossil corals for road construction leaves behind large pits. Burning of fossil coral to manufacture lime also involves the use of wood. This results in over cutting wood from coastal forests and mangroves.

Although mining of live corals for lime making only occurs in few places such as Jibondo Island in Mafia and in Mikindani Bay and some parts of Dar es Salaam it has contributed to local destruction of coral reefs in these areas. Coral mining results in direct damage to the reef structure and may lead to increased beach erosion and sedimentation due to disruption of water circulation pattern around the reefs. In other cases, mining can cause blockage and diversion of rivers, filling of lakes or siltation and sedimentation in coastal ecosystems. The removal of sand along the coast, whether by natural processes (e.g., tidal action) or by human-related activities (e.g., sand mining), causes beach erosion. For example, sand mining has enhanced beach erosion in Dar es Salaam, Tanga and Bagamoyo.

Some environmental effects are also said to have generated from dredging around the Dar es Salaam Port. For example, there has been an increase in the levels of siltation in the area due to the increase in current flow. Erosion has also been observed at Kigamboni beach, although it is not yet clear if there is any association with the current dredging in the port area of Dar es Salaam.

Interruption of sediment supply to the coastal zone could appear in different forms. Construction of protective works such as damming of rivers disrupts sediment supply, consequently this reduces the sediment supply to the coast through trapping (TCMP 2003b). In Tanzania, construction of dams were mainly for the production of electricity, irrigation schemes and fisheries development; this has been done on rivers entering the

Indian Ocean, such as R. Wami, R. Ruaha and R. Pangani. Damming of rivers, mainly for hydroelectric power generation, regulates the flow of the rivers, leading to alteration of their flow characteristics (Muhando et al. 2001). A good example is the Rufiji Delta: the dams upstream of the river are trapping silt, as a result, there is reduced sedimentation. Consequently, the eroding force of coastal wave action and currents has been found to exceed the deposition of silt in the delta, leading to shoreline erosion.

It is clear that the major environmental impact due to mining/sediment movement, ports and land reclamation and damming of rivers is coastal erosion. EA Atlas (2001) indicates that human activities that have been identified to intensify beach erosion include: manipulation of hydrological cycles mainly through dam construction; construction of coastal structures such as jetties; mining on beach sand and live corals; destruction of protective coral reef systems (mainly due to coral mining); destruction of coastal vegetation (e.g. clearing for salt works); and building on beaches. More than 50% of these alternative and destructive actions causing beach erosion are related to mining, damming of rivers and sediment movements.

## **5. NATIONAL LEGISLATIONS AND INSTITUTIONAL ARRANGEMENTS**

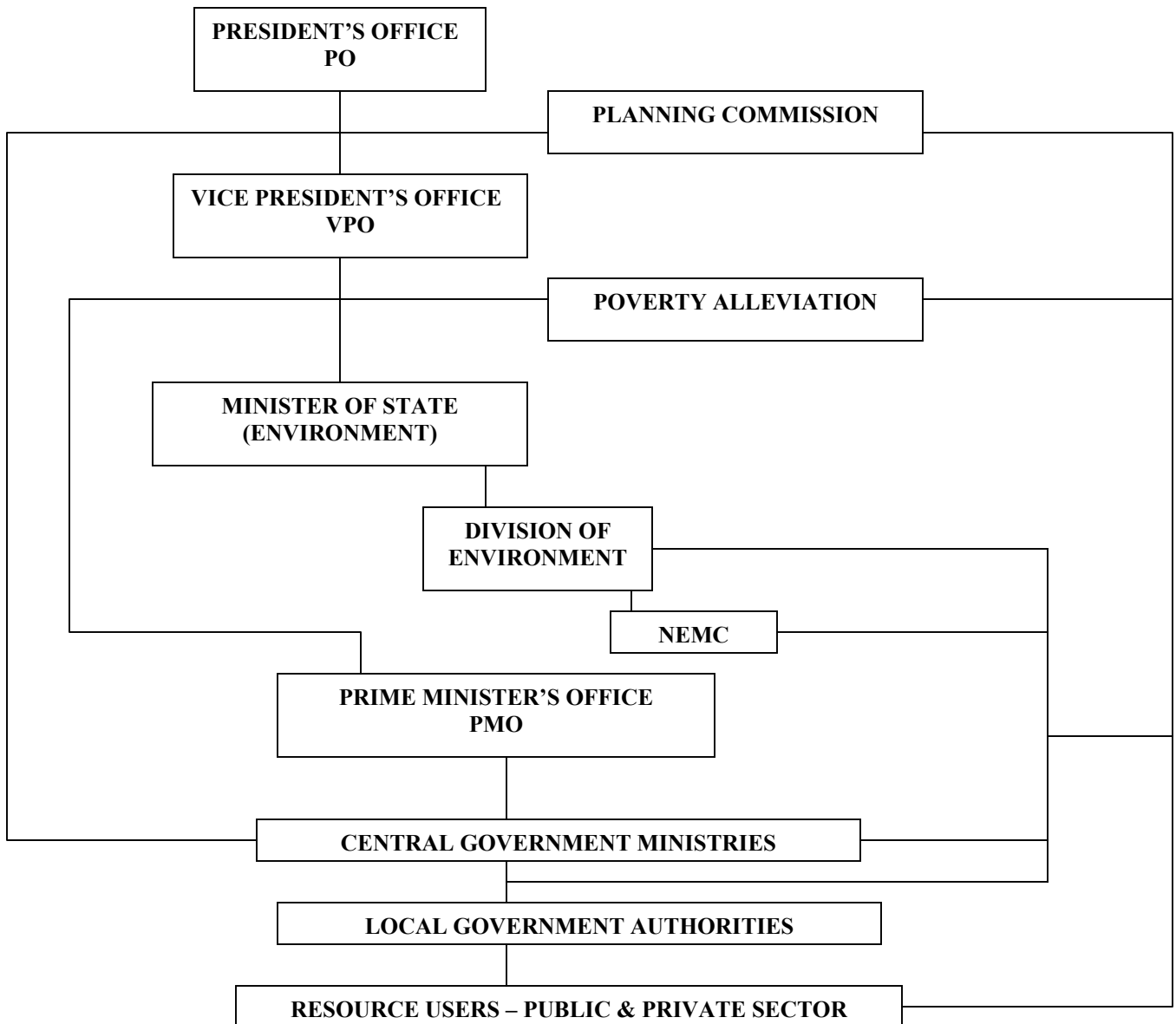
### **5.1 Review of National Legislation and Institutional Arrangements**

In Tanzania, the legal framework for managing coastal resources consists of different legislative acts, each with a different background and origin. Therefore, Tanzania has both framework legislation and sectoral legislations. The country has made significant efforts to harmonize the sectoral laws through a framework environmental legislation. Tanzania came up with a new Strategy on National Integrated Coastal Environmental Management (TCMP 2003a). The Cabinet adopted the Strategy Paper in November 2002 (United Republic of Tanzania, 2002). Similarly, Tanzania had no unified coastal resource management regime that controls all activities, which affect the coastal zone and the users, until recently when a National Integrated Coastal Environment Management Strategy was developed and adopted. There exist a number of Institutions, which administer laws that govern the development and management of marine and coastal resources. However, in most cases the implementation of these sectoral regulations leads to conflicting objectives. Looking at the management of the environment on its totality, the responsible organs are the Ministry of Tourism and Natural Resources and the Department of Environment under the Vice President's Office. These play a leading role on matters of policy on issues related to the environment in general. The related government bodies, on the issues of the environment include: the Department of Environment, the Division of Fisheries, the Division of Forestry and Beekeeping, the Division of Tourism and the Division of Wildlife.



There are other ministries also involved in the management of coastal resources, with the mandate to ensure that environmental effects and implications of policies, programmes and projects relevant to them are fully considered before decisions are made. These include the Ministry of Lands, Housing and Urban Development; the Ministry of Water, Energy and Minerals; the Ministry of Communication and Transport; the Ministry of Agriculture and Livestock; the Ministry of Workers and the Prime Minister's Office (Local Authorities). The authorities are the major executing agencies of the environmental regulations and policies. The flow chart below demonstrates the organizational structure of institutions related to the management of the environment.

**ORGANISATIONAL DIAGRAM RESPONSIBLE AGENCIES AND LINKS WITH EXISTING GOVERNMENT STRUCTURE (TCMP 1999)**





The mandate of the Central Government organs are summarised as follows: The Planning Commission is responsible for planning, controlling, implementing and monitoring national development plans by providing guidelines for resource utilization. The Minister of State Environment deals with the environmental policy, environmental protection, environmental sanitation and beach erosion. The National Environment Management Council (NEMC) is the principal advisory body of the government on all matters related to the environment. The Minister for Natural Resource and Tourism is responsible for, among others: tourism policy, development of beaches and other tourist attractions; natural resources, forest management policy as well as afforestation.

The implementation of the Integrated Coastal management (ICM) policy is done at the local government level. The local governmental authorities are organs of the government at the district, or urban and village levels, and are vital to integrated coastal management policy. This is because; they are the ones closest to the resource users. As such, most of the ICM initiatives and activities take place at the local level. District Authorities are composed of District Councils, Divisions and Wards; Township Authorities; and Village Government Organs, which include Village Assemblies and Village Councils. On the other hand, The Urban Authorities consist of Town Councils, Municipal Councils and City Councils.

On matters related to coastal management, particularly on issues of physical alteration and destruction of habitats, the District Council makes by-laws applicable throughout its area of jurisdiction, and considers and approves by-laws made by village councils within its area of jurisdiction. It also considers, regulates and coordinates development plans, project and programmes of the villages and township authorities within its area of jurisdiction.

The village assembly is the supreme authority on all matters of general policy-making. In relation to the environment, the village assembly is an important entry point in the implementation of coastal management programmes at the village level, especially those programmes geared towards poverty alleviation, coastal conservation and award schemes and awareness raising (TCMP 1999). The Village Council has all executive powers of the affairs and business of the village. However, the Council may establish special committees for efficient and effective running of its functions. For example, a committee for environmental and coastal management matters, which could be responsible in dealing with physical alteration and destruction of coastal habitats.

Relevant policies/strategies/legislations/acts/laws etc. on issues related to the three priority areas of physical alteration and destruction of habitats (i.e. coastal tourism, mangrove destruction, mining/sediment movements, ports and land reclamation and damming of the rivers) are highlighted in Table 5 below:

Table 5: Policies/Legislations/Acts guiding the utilisation of coastal natural resources in Tanzania.

<b>Policy/Legislation/Act</b>	<b>Main focus</b>
National Integrated Coastal Management Strategy	Provides for establishment of an integrated planning and management mechanism for coastal areas of high economic interest and/ or with substantial environmental vulnerability to natural hazards.
National Land Policy, 1995	Encourages optimal use of land resources. Provides specifically that sensitive areas shall be protected and not to be allocated to individuals and stipulates that all beaches shall be public and waterfront development shall be regulated. Construction of tourist hotels, residential buildings & recreational activities along the coastline/islands shall be regulated to prevent coastline erosion & ensure public access. Coastline development shall be done after EIA study has been carried out. A Coastal Zone Integrated Development and Management Programme will be prepared for conservation of both land and aquatic environments.
Integrated Tourism Master Plan	<p>Tanzania endorsed the Integrated Tourism Master Plan in 1996. This Plan, funded by the EU, provided a roadmap for future tourism development in Tanzania, focusing on the following areas: expanding the tourism product; maximizing linkages and minimizing leakage's; provision of training; and the regulatory environment surrounding tourism development. The Master Plan identified priority zones as shown below:</p> <ul style="list-style-type: none"> <li>• Further enhancement and diversification of the Northern Wildlife Area (NWA);</li> <li>• Extension of NWA through the Usambara Mountains to Tanga and Pangani;</li> <li>• Development of Southern Circuit (Selous, Mikumi, Ruaha, Udzungwa);</li> <li>• Development of beach tourism along the coast and Mafia;</li> <li>• Enhancement of Dar es Salaam area (urban water front and near-shore islands);</li> <li>• Long-term development of the link corridor.</li> </ul>
Mining Act, 1998	Regulates issuing of renewable mining licenses for minerals and gemstones, including building materials (sand, soil & stones).
Marine Parks & Reserves Act, 1994	Prohibits any construction or any activity within a marine park without first undertaking EIA as well as mining in a marine park unless permitted under general management plan or regulations
The Town and Country Planning (Public Beaches	- Schedule: All that land lying within 250 meters and forming shores beaches of Indian Ocean is a planning

<p>Planning Area) Order, 1991, GN 76 published on 25/5/92 and deemed to have into operation on 24<sup>th</sup> November 1989.</p>	<p>area. - Rule 2: A planning scheme for a planning area fronting ocean must reserve strip of land of a width of not less than 60 meters from the high water mark exclusively for conservation and for strictly water-related human activities.</p>
<p>National Tourism Policy</p>	<p>The Tourism Policy seeks to assist in effort to promote the economy and livelihood of the people, essentially poverty alleviation, through encouraging the development of sustainable and quality tourism that is culturally and socially acceptable and ecologically friendly.</p> <ul style="list-style-type: none"> <li>• Putting in place mechanism that will ensure tourist activities respect use of beaches.</li> <li>• Develop tourism plan for specific areas e.g. beaches.</li> </ul>
<p>Forest Policy</p>	<p>The Forest Policy focuses on the sustainable utilization of forests products and services, foreign exchange earnings, conservation of forest biodiversity, water catchments and soil fertility. The Forestry Policy encourages community participation as a strategy of managing the mangroves and other coastal forests. One of the strategies of the Mangrove Management Project (MMP) is to increase involvement and awareness of the local communities in mangrove ecosystems. Through this strategy, the project has supported the formulation of Village Natural Resources Committees (VNRCs), which are responsible for management on behalf of the rest of the communities in the villages. Modalities of benefit sharing from the resources are underway. The strategy ensures sustainable conservation of the mangroves, and other coastal forests.</p>
<p>Wildlife Policy</p>	<p>This policy reiterates that wildlife resources should be protected and utilized in a sustainable manner on the basis of assessment of natural heritage (flora and fauna), fragile ecosystems, sites under pressure species, with participation of and benefits to the local communities.</p>
<p>Local Government Reform Program</p>	<p>The overall objective is to improve public services delivery through decentralization by making local authorities more democratic and autonomous within framework established by the central government.</p>
<p>National Fisheries Sector Policy and Strategy Statement</p>	<p>The Fisheries Policy focuses on the promotion of sustainable exploitation, utilization, and marketing of fish resources and the effective production of the aquatic environment. The main goal is to promote conservation, development and sustainable management of the fisheries resources for the benefit of present and future generations.</p>

The above-mentioned laws, apart from being inadequate, they are not properly enforced. Furthermore, they lack close correlation with environmental planning and management and the element of integration, i.e., cross-sectoral issues. At the same time, human activities in the coastal and marine environment do not recognize sectoral boundaries. The sectoral policies are fragmented resulting into gaps and sometimes overlaps. In most cases, it is not clear who is responsible for managing resources and economic activities that are cross-cutting; leading to conflicting use of coastal resources. For example, local authorities continue to issue licences for cutting mangrove poles and for construction of salt pans despite the government ban on cutting imposed in 1987; however, the ban was lifted in 1992 and the Mangrove project now controls the cutting. Another example is that mining laws allows for the granting of mining rights in protected areas, without consultation with the Minister responsible for land matters and protected areas.

## 5.2 Coastal Tourism

The policies and legislations/regulations governing tourism are presented in the above section, on national overview. Policy issues and strategies for Tanzania, regarding tourism, were best analysed in the Coastal Tourism Working Group of the Tanzania Coastal Management Partnership (TCMP 2001a). In addition to policies already presented in Table 5, further policies and regulations related to tourism, especially considering PADH issues, are given in Table 6. The contents of the table indicate that even though most coastal activities may not be linked to tourism directly, many of them are sectoral in nature and therefore they interact with each other.

Table 6: Additional national policies related to coastal tourism

<b>Policy/Legislation/Act</b>	<b>Main focus</b>
National Environmental Policy	The Policy provide guidance on tourism development with particular attention to: <ul style="list-style-type: none"> <li>• Tourism development based on careful assessment of the carrying capacity and prior EIA application.</li> <li>• Promotion of eco-tourism and diversification of tourism activities e.g. conservation and promotion of cultural heritage sites.</li> </ul>
National Human Settlement Development Policy	The Policy recognizes that beaches and coastline are potential tourism attraction sites and for that matter there is an ever-increasing demand of these sites for tourism development. Further the policy acknowledges that proper development and

	<p>management of these areas will have socio-economic and environmental benefit. The main focus of coastal tourism are:</p> <ul style="list-style-type: none"> <li>• To regulate development along the coastline in order to preserve the environment.</li> <li>• To ensure that recreational beaches are accessible to all members of the public.</li> </ul>
Water Policy	<p>The Policy calls for sustainable development of water supply and sanitation in Tanzania. It aims at managing and developing the water resources in a co-ordinated and integrated manner so as to provide water of acceptable quality.</p>

Coastal tourism is a complex industry, which affects several sectors. As such, a number of government institutions have important roles to play. Yet, one agency or institution needs to play the lead role in developing the overall strategy of coastal tourism development. In the case of tourism, the lead agency is the Ministry of Natural Resources and Tourism (MNRT). Under MNRT, the Tourism Division becomes the lead department. Still, there are other departments within the ministry, which are mandated with managing specific resources that can be considered tourist attractions. These departments include the Fisheries Division, Forestry and Beekeeping Division, Wildlife Division and Antiquities Department. Other key departments under the MNRT include the Marine Parks and Reserves Unit and the Tanzania Tourist Board.

The responsibilities of the various sectors related in one way or another to coastal tourism are highlighted below. These sectors/departments are directly or indirectly related to tourism and their functioning can affect (or be affected by) it.

### ***Tourism Division***

The Tourism Division is the government agency primarily responsible for the formulation and enhancement of sectoral policy and regulatory functions. The roles and responsibilities given to the Tourism Division are quite vast and diverse, including policy work, monitoring and evaluation, human resources development, licensing, tourism attraction development, impact assessments, and marketing. The National Tourism Policy (September 1999) stipulates the functioning of the Division. The Division has the following responsibilities (TCMP 2001a):

- Formulation of the tourism policy and overseeing its implementation
- Sectoral planning and budgeting
- Formulating and reviewing legislation
- Monitoring and evaluation of sectoral performance
- Management of information systems
- Manpower planning and human resource development
- Researching, training and curriculum development

- Licensing and control of tourist agency businesses
- International cooperation and collaboration
- Identification of tourist attractions and diversification of tourism activities
- Undertaking impact assessments on cultural and socio-economic activities
- Setting and reviewing license fees and monitoring their issuance
- Controlling quality of tourism facilities and services by carrying out inspection, classification and grading
- Taking legal action against violators
- Appraising investment proposals
- Undertaking resource mobilization from within and external
- Developing and promoting domestic tourism

### ***Tanzania Association of Tour Operators (TATO)***

The Tanzania Association of Tour Operators (TATO), with headquarters in Arusha, has over 90 members currently. It was established in 1983 to represent the interests of its members in all aspects. TATO is governed by Management Council, which is served by 5 council sub-committees. As far as tourism is concerned, the Association focuses on Tourist Safety and Security; Public Affairs and Promotion; and Campsites. In addition, the Association also deals with areas that are indirectly related to tourism, including: Tax and Taxation; Manpower and Human Resources Development; National Parks, Conservation Areas and Reserves.

### ***Tanzania Tourist Board, MNRT***

The Tanzania Tourist Board (TTB) was established by Act of Parliament, Act No. 18 (1992) and formally began operations in June 1993. The main goal of TTB is to spearhead the marketing and promotion of Tanzania's tourism attractions both locally and abroad. Furthermore, it provides advice or other inputs into the government policy and planning processes.

### ***National Environment Management Council, Vice President's Office***

The Parliamentary Act No 19 of 1983 established the National Environment Management Council (NEMC). NEMC is the leading advisory, coordinating and regulatory agency responsible for the protection of the environment and sustainable use of natural resources. The Council is responsible for determining whether or not a proposed development requires an EIA to be conducted. In cases where an EIA is needed, NEMC is responsible for reviewing the EIA statements.

### ***Environment Division, Vice President's Office***

This Division is responsible for environmental policy formulation, environmental planning; environmental coordination and monitoring. Regarding coastal tourism, the Division is mandated with approving environmental impact statements on projects that might have impacts to coastal environment. At the moment, the Environmental Division has no legal mandate, because the environmental law is



not yet in place. Nevertheless, existing sector legislations are being applied to address relevant environmental issues.

### ***Fisheries Division***

The Fisheries Act of 1970 established the Fisheries Division. To minimize conflicts, which in the end could lead to physical alteration or destruction of habitats, the Fisheries Division is charged with strengthening collaboration on cross-sectoral issues relevant to the fisheries sector, including tourism. It is also responsible for the formulation of policies, development and management of the fisheries sector, which includes improving resource management and control; promoting efficient resource utilization and marketing; and collecting and managing information relevant to fisheries resources.

### ***Wildlife Division***

The Wildlife Division has a mandate of protecting wildlife habitats in the country. The division is responsible for managing all game reserves and supervising all game hunting; under the Wildlife Act of 1998.

### ***Tanzania Harbors Authority***

The Tanzania Harbours Authority Act of 1977 established the Tanzania Harbours Authority (THA), after the collapse of the then East African Harbours Corporation. The THA handles passenger boats and ships, including cruise ships, in addition to handling sea-borne traffic at three major ports of Dar es Salaam, Tanga, and Mtwara. With respect to tourism, the Authority has been cooperating with the Ports Management Association of Eastern and Southern Africa in strategizing on how best the region could be marketed as a worthwhile cruise destination. This cooperation yielded “Cruise Indian Ocean Association”, which promotes international cruise operation in the entire region.

### ***Marine Parks and Reserves***

Marine Parks and Reserves Unit (MPRU) was established by the Parliament Act No: 29 of 1994 and formally became operational in July 1995. This Unit has the responsibility of establishing, monitoring, conserving, controlling and managing marine and freshwater protected areas in mainland Tanzania. The MPRU has been encouraging and assisting local communities, especially those living close to the parks, to participate in coastal tourism so as to benefit from the tourism activities as well as to conserve the fragile marine ecosystem.

### ***Tanzanian National Parks Authority (TANAPA)***

This agency is responsible for managing the country's national parks. The policy of TANAPA is to promote the development of high quality tourism and discourage mass tourism. TANAPA also manages and regulates the use of areas designated as national parks to preserve the country's heritage, encompassing both natural and cultural resources.

### ***Hotel Keepers Association of Tanzania (HKAT)***

Primarily, the Hotel Keepers Association of Tanzania (HKAT) represents the interests of its members, i.e., resident hotel and restaurant owners. However, most foreign owners are reluctant to join the Association.

### ***Ministry of Communications and Transport***

This Ministry formulates policies as well as regulating issues relevant to communications and transport. It is responsible for ferry services, planning and managing communication systems along the coast, which is also related to tourism.

### ***Marine Police Unit, Ministry of Home Affairs***

The Marine Police Unit is responsible for the security and safety of the people and their properties along the coast. This unit's primary mandate is to protect the environment from destructive practices such as dynamite fishing. As such, the Unit is working with the Fisheries Division and the Navy in patrolling coastal waters. As far as tourism is concerned, the Unit is inadequate because no special training is given for maintaining peace and security in tourism areas.

In conclusion, it is clear as with policies and legislations that govern tourist-related activities, the roles/responsibilities and mandates given to the departments/ministries/units etc. function in a sectoral way, although the sector could be related directly or indirectly to tourism. What is inadequate is a clear guidance in terms on how coastal tourism should develop/take place or what conditions would need to be met before any develop related to coastal tourism could begin, so as to avoid its negative impacts. Thus, while no policy excludes the possibility of coastal tourism development, there is a lack of shared vision on how coastal tourism should be developed.

## **5.3 Mangroves Destruction**

Attempt at controlling/managing mangrove forests in the country started as early as 1898 when the Germans established an ordinance for the Rufiji Delta (Linden and Lundin 1996). Later, there were efforts by the British to try and regenerate mangroves, artificially, in the Rufiji Delta. However, these did not materialise and were thus abandoned in 1939. More attempts in mangrove management began again in the 1940's with the purpose of producing poles, bark for tannin and firewood. It was in 1945 when mangrove areas were declared as government land, under the Wood Cutting decree No. 18. The decree provided control by introducing cutting permits.

The Forest Ordinance Chapter 389, as amended by Act 1 of 1964 (and reviewed in 1995) provides for the declaration of forest reserves and protection of forests and forest produce, including restrictions and prohibitions within forest reserves.

Policy and related instruments for mangroves including legislations, plans, responsible agency and implementation strategies are summarised in the table below (TCMP 1999):

<b>Policy</b>	<b>Legislation</b>	<b>Plans</b>	<b>Responsible Institution</b>	<b>Implementation strategy</b>
<b>National Forest Policy</b> - Community-based and village creation & ownership of forests and trees; grant owner rights of indigenous species including reserved species to village institutions. - Joint management agreements between central government and local communities & equitable stakeholders' benefit sharing.	<b>Forest Ordinance, 1957</b>	<b>National Forest Action Plan</b>  <b>Management Plan for the Mangrove Ecosystem in Tanzania, 1991</b>  <b>Tanzania Forest Action Plan 1990/91 – 2007/08</b>  <b>Mangrove Management Project (MMP)</b>  <b>Kipumbwi-Sange Collaborative mangrove Management Plan</b>  <b>Tanga Coastal Zone Conservation and Development Programme (TCZCDP)</b>	<b>MNRT</b>  <b>FBD</b> <b>WD</b> - Policy formulation & implementation overseeing. - Sectoral planning, budgeting, & performance monitoring. - Legislation formulation, review, enforcement & surveillance.	Establish village forest reserves & grant village institutions appropriate user rights including rights to indigenous species.  Establish legal framework for promotion of private & community-based ownership of forests & trees.  Communities to be granted rights to retain revenue accruing from products and services derived from community-managed forests.

Identified conflicts that are likely to occur include:

- Wildlife conservation, forestry, pastoralism and agriculture conflict.
- Grant of aquaculture rights in fishing grounds of local people block their access to source of livelihood and income.
- Allocating land for aquaculture in mangrove forest areas along the coast conflict with conservation.
- Insecure land tenure is a disincentive to investment and conservation.
- Lack of tree tenure under existing forest laws contradicts National Forest Policy idea of granting village institutions user rights including rights to indigenous trees and allocation of forest to private individuals.

The Forestry and Beekeeping Division (FBD), of the Ministry of Tourism, Natural Resources and Environment is responsible for the development and management of forests, including the mangroves forests. This division, however, does not appear to manage the mangroves successfully. Traditional small-scale utilization of mangroves is being replaced by large-scale clearance for salt

production, extraction of timber and agriculture, leading to degradation. Pollution near urban centres also contributes to degradation of mangroves.

Concern for destruction of the mangroves as well as lack of information on human environmental impact prompted the formation of a Mangrove Study Team in 1982 (Linden and Lundin 1996). The findings and recommendations from this team lead to the development of a draft Management Plan in 1991. The actual implementation of the MMP started in 1994. The plan was designed to benefit coastal communities that directly rely on mangroves for their livelihood. The Objective of the Mangrove Management Project was to enhance the contribution of mangrove ecosystem to the country's economy through sustainable use of its resources. The Ministry of Tourism, Natural Resources and Environment adopted the National Management Plan for mangroves.

To reduce alteration and destruction of mangrove ecosystems, four management zones were identified in the management plan as follows:

***Zone I: Forests receiving total protection***

In this zone, the objective was to preserve natural vegetation and associated fauna. Here, only non-destructive scientific uses and protective functions are permitted. It encompasses mangroves sites important for spawning and nursery grounds for fish, prawn and other associated organisms. Included also are nesting and resting sites for resident and migratory birds and animals. For defence against natural forces such as storm surges and strong waves, it was proposed that 10-100 m strip be left along channels, around islands and on the seaward side of the land.

***Zone II: Forests ready to be brought into production***

Including are forests considered to be ecologically stable, i.e., with sufficient regeneration potential to allow controlled harvesting.

***Zone III: Forests requiring recovery***

These are already degraded forests and action is immediately needed to allow for recovery and/or rehabilitation. In this zone, closing from cutting for some time is required; and the time allowed for recovery would vary from 3 to 25 years, depending on the size, type and quality of the desired product.

***Zone IV: Areas set aside for different types of development***

This zone includes areas considered as suitable for certain defined, carefully controlled development activities at both commercial and village level. Consideration was given to, among others, fishing and beekeeping at village level; construction of salt pans and aquaculture ponds; scientific, educational and demonstration activities; as well as tourism through promotion of educational and wildlife tours.

Given the vast coverage of mangrove forests in the country (Figure 1) there was no sufficient staff or funds to implement the plan simultaneously. Thus, three sites were selected for piloting. These were the Rufiji Delta, Pangani and Bagamoyo districts. However, the implementation of the management plan has been very slow. Additional work would be needed for capacity strengthening. The implementation of the Management Plan required extensive funding from donors and investment banks.

Destructive utilisation of mangroves still continues in Tanzania. In order to protect them, there is need to improve wise management and use of mangrove habitat, and to apply enforcement of existing rules and regulations. The Forests Ordinance has been under discussion for review. It is stated that this legislation will consolidate and amend the law, which relate to the conservation and management of forest produce, as well as to amend the Mining ordinance. Given the recent developments in natural resources management legislation, in particular the National Integrated Coastal Environment Management Strategy (TCMP 2003a), the Forests Ordinance now appears obsolete. For example, the ordinance lacks provisions on basic conservation tools and principles including environmental impact assessment management plan, resources assessment, and adequate provisions on licensing, public participation, and so forth. Although this regulation has extensive provisions for the establishment, management and control of forest reserves, the forests are also subject to the other laws, especially when they fall under protected lands such as the Ngorongoro Conservation Area, game reserves or national parks and under individual, village, or community lands which could lead to conflicts. For example, whereas the Forestry Division has regulations that designate all mangrove forests as reserves, the Fisheries Division issues permits for the development of prawn farms and the Ministry of Industries and Trade issues permits for the extraction of salt in the same designated mangrove forests reserve areas. The principle approaches to mangrove conservation and sustainable use in Tanzania include harvest restrictions, conservation areas, replanting, public education, and permits for timber harvesting.

#### **5.4 Mining/Sediment, Ports and Land Reclamation and Damming of Rivers**

Because the Division of Environment and the National Environment Management Council deal with issues related to the environment in general, these Institutions are also responsible with issues related to Mining, sediment movement and ports as well. The lead agency as far as mining is concerned is the Ministry of Energy and Environment, Mineral Resources Department. Although this has no direct involvement in mineral exploration and extraction activities, it has a strong focus on attracting private mining companies. The Department is responsible for:

- Setting policy and legislation and administering law and regulations;
- Granting prospecting rights and mining claims;
- Revenue collection;

- Offering technical assistance;
- Collecting production and sales records;
- Supporting and facilitating mineral development and private sector investment;
- Providing extension services to small-scale miners and
- Conducting research on minerals.

Issues of sand mining, quarrying, coral extraction, ports and land reclamation and damming of rivers, which could lead to physical alteration and or destruction of the marine environments, are dealt with Policies, Legislations and Acts summarised in Table 7 below:

Table 7: Policies, Legislations and plans governing activities related to mining and extraction of resources in Tanzania

<b>Policy</b>	<b>Legislation</b>	<b>Plans</b>	<b>Responsible Institution</b>	<b>Implementation strategy</b>
<p><b>Mineral Policy of Tanzania 1997</b> -Developing and enabling legal, regulatory, fiscal and institutional environment for private sector investment in mining.</p> <p><b>National Investment Promotion and Protection Policy</b> -Encourages investments in "areas of national priority" which include natural resources (fishing and fish farming) and tourism (operation of tourist hotels).</p> <p><b>National Land Policy, 1995</b> - Encourages optimal use of land resources. - Provides specifically that sensitive areas to be protected and not to be allocated to individuals. - Stipulates that all beaches shall be public and waterfront development shall be regulated. - Calls for preparation of detailed land use plans for land development.</p>	<p><b>Mining Act, 1998</b> -Regulates issuing of renewable mining licenses for minerals and gemstones, including building materials (sand, soil &amp; stones). -A mining license confers on holder exclusive rights to prospect for and mine minerals and gemstones.</p> <p><b>The Mining (Salt Production and lodation) Regulations, 1999</b></p> <p><b>Marine Parks &amp; Reserves Act, 1994</b> -Prohibits any construction or any activity within a marine park without first undertaking EIA.  -Requires general management plan &amp; regulations for every marine park. -Prohibits mining in a marine park unless permitted under general management plan or regulations. -Possession of any weapon, explosive, trap or poison or making of salt or destroying, defacing or removing any object within a marine park or reserve is prohibited.</p>	<p><b>TIC Investor's Guide Book</b></p> <p><b>NEMC EIA Procedures and Guidelines</b></p>	<p><b>Ministry of Energy and Minerals</b></p> <p><b>Mineral Research Division</b> -Administers mining laws &amp; regulations. -Issues and administers all types of mineral rights and mineral trading licenses. -Collects revenue arising from mining development.</p> <p><b>Local Government Authorities</b></p> <p><b>District Councils</b> -Issue sand mining licenses.</p>	<p>Harmonizing mining laws with other statutes directly or indirectly affecting mineral sector.</p> <p>Ensuring environmental protection and land reclamation.</p> <p>Setting appropriate guidelines for mining in restricted areas such as forests, national parks, sources of water and other designated areas.</p> <p>Requiring EIA and environmental action plans for new mining projects.</p> <p>Fisheries Division cooperates with Navy and Marine Police to combat dynamite fishing.</p>

The conflicts that arise from the above sectoral-oriented Policies/Legislations/Regulations/Plans are as follows:

- Mining laws allow grant of mining rights in protected areas such as forests, national parks, sources of water and other designated areas.
- Minister responsible for minerals designates area of land for mining and application for mining licence in respect of that area (land) is made to him and not to Minister responsible for land matters and/or protected areas.
- Marine Parks & Reserves Act prohibition for any person to engage in aquaculture within a marine park or reserve except according to regulations conflicts with National Land Policy object of allocating land for large scale fish farming.
- The Marine Parks and Reserves Act also allows responsible Minister to make regulations for operation of hotels and other facilities for use of visitors to a marine park.
- The Act also allows deposit or discharge of sewage, litter, rubbish etc. within a marine park by permission of warden and consistent with GMP.
- District Councils issue sand mining licenses without adequate control and monitoring.
- Lack of legally mandated EIA procedures and guidelines contradicts the idea of sustainable development stipulated in new resource policies.

The conflicts between sectors related to mining, sediment movements and extraction of resources, highlighted above, show clearly that the policies, legislations and laws or Acts governing the PADH issues associated with Mining/Sediment movements, ports and land reclamation and damming of the rivers are sectoral in nature and fragmented. However, the strategy of implementation calls for the best way of environmental management. For example, it requires harmonisation of mining laws; setting appropriate guidelines for mining in restricted areas; and requires EIA for new mining projects. If enforcement of the laws is enhanced, then conflicts and destructive practices could be combated.

## **5.5 Case Study**

*The importance of a broader environmental management framework for Effective Environmental Impact Assessment (EIA)*

The following case study demonstrated the importance of a broader environmental management framework for effective EIA, using an example related to mangrove clearance for aquaculture. The siting of prawn/shrimp farms within mangrove areas has been argued to be environmentally and socially destructive, and has met significant resistance. The farm site was set adjacent to

the mangroves of the Ruvu River, the largest single expanse of mangrove in the Bagamoyo District. The establishment of the world's largest shrimp aquaculture by the African Fishing Company (AFC), a private company, was halted on the basis of consequences of the project to the environment.

In 1994 AFC sought assistance from NORAD for the establishment of a shrimp farm on a 600 ha site on the south side of the Ruvu River, some 5 km from the sea, near Bagamoyo. It was proposed that initially, 160 ha of ponds were to be developed, with an estimated production of around 500 Mt per year.

NORAD commissioned an initial EIA, which was undertaken by AIT, Thailand. The EIA report discussed and summarized all the major impact issues, and proposed a comprehensive set of mitigation measures, covering design, technology and management. Overall, it was recommended that the project could take place. In fact, the Government and Tanzanian Cabinet in 1997 approved the project, but environmentalists said the damage to the environment and consequently to the local people's well-being would far outweigh the profits (WRM, 2001). A group of Local Rufiji people filed an application with the High Court to challenge the projects approval.

However, along with the local people's resistance, another strong point for rejection of the project came from the EIA report itself, which cautioned the outcome in reference to other similar projects in the world. It stated: "*...However, in many other parts of the world successful farms have attracted uncontrolled smaller scale satellite developments which in places have had a serious cumulative impact on the environment and the sustainability of shrimp farming itself. It is essential that this and future developments take place within a planning and regulatory framework which will prevent uncontrolled development and ensure on-going responsible management practices. Without such a framework, this development may simply become a small part of a wider development problem.*"

Thus, It would appear that this caution, and the evident lack of any wider environmental management framework, in addition to local peoples' resistance, was taken seriously, and funding for the project was rejected. This example demonstrates that EIA in the absence of a broader environmental management framework cannot be used as a positive planning or management tool.



## 6. CONCLUSIONS AND RECOMMENDATIONS

The Nation of Tanzania is blessed with rich marine and coastal resources, attractive coastal and marine environment and high marine biodiversity. Resources in the coastal and marine environment include, among others, major estuaries, mangrove forests, coral reefs, sandy beaches, cliffs, seagrass beds muddy tidal flats and major river mouths. All these have significant ecological, social and economic importance, especially to the coastal communities. However, the use of such resources in an unsustainable manner leads to physical alteration and destruction of the coastal habitat (PADH). The areas of primary concern include coastal tourism; mangrove destruction; and mining/sediment movement, dredging in ports and damming of rivers.

Physical alteration and destruction of habitats related to the three priority areas has both socio-economic importance and environmental impacts to the country. Coastal tourism contributes to income generation both at national and local levels, however, its impacts include pollution of the environment by both liquid and solid wastes; overexploitation of the coastal resources and use of destructive practices (e.g., fisheries) to supply the increasing demand; increased pressure on the coastal resources and destruction of mangroves for construction of facilities related to tourism.

Mangroves destruction in Tanzania are caused by economic activities that require large-scale clearance of trees such as for salt production, lime production, agriculture and aquaculture as well as for construction of roads, houses, hotels and other tourist infrastructure. Furthermore, destruction occurs due to local needs for firewood, charcoal making, building poles and boat-making. These activities lead to coastal erosion and loss and modification of nursery and breeding habitats for fish and shellfish, as well as modification of the ecosystem as a whole, which could result into loss of biodiversity.

The identified PADH issues related to mining/sediment movements, dredging of ports and land reclamation and damming of rivers include, among others: increased turbidity, siltation and sedimentation; smothering of bottom organisms; destruction of coastal ecosystems, mainly mangroves, coral reefs and seagrass beds; enhanced coastal erosion; and blockage and diversion of rivers, modifying their natural flow and filling of lakes.

These PADH issues in the country are mainly exacerbated by inadequacy of multi-sectoral approach in coastal area management, on one hand, and inadequacy enforcement of the existing laws on the other, albeit sectoral in nature. The Institutional arrangement and national legislations governing tourism, fisheries, wildlife, marine parks, mining, ports, forests and other sectors related to the coast lack close correlation with environmental planning and management and the element of integration, i.e., cross-sectoral issues, resulting into gaps, overlaps and conflicts. For example, mining laws allows for the granting of mining

rights in protected areas, without consultation with the Minister responsible for land matters and protected areas. Similarly, grant of aquaculture rights in fishing grounds of local people block their access to source of livelihood and income.

With respect to coastal tourism, what is missing is a clear guidance in terms on how coastal tourism should develop/take place or what conditions would need to be met before any development related to coastal tourism could begin, so as to avoid its negative impacts. The Forests Ordinance, relevant to management of mangroves now appears obsolete as it lacks provisions on basic conservation tools and principles including environmental impact assessment management plan, resources assessment, and adequate provisions on licensing, public participation, etc. Similarly, there are several conflicts related to sectors dealing with mining, sediment movements and extraction of resources, implying clearly that the policies, legislations and laws or Acts governing the PADH issues associated with this priority area are sectoral in nature and fragmented.

However, Tanzania has realised the inadequacies in the legislation and institutional arrangements, and has taken several steps to try and alleviate the problem. For example, the country has established a number of coastal management plans, Projects and Programmes as well as marine protected areas and reserves, which take into consideration the integration nature of coastal resources management and utilization. These programmes include:

- Tanga Coastal Zone Conservation and Development Programme;
- Rural Integrated Project Support Programme;
- Mangrove Management Programme;
- Rufiji Environmental Management Project;
- Conservation of lowland Coastal Forests Project;
- The Chwaka Bay-Paje Area Project;
- Sustainable Dar es Salaam Project;
- Tanzania Coastal Management Partnership;
- Kinondoni Coastal Area Management Programme;
- Mafia Island Marine Park;
- Mnazi Bay Marine Park; and
- Menai Bay Conservation Area

Furthermore, the country is striving to move in the correct direction, i.e., through a recent development and consequent approval of the National Integrated Coastal Environment Management Strategy. The strategy states that there is great potential for the “development of major economic uses of the coastal resources to optimise benefits” (Strategy 2), for example, ecotourism and aquaculture projects that is “sustainable and environmentally friendly.” The strategy also addresses issues related to mangroves and other coastal habitats such as coral reefs. Mangrove forests are “critical habitats”, which are to be “conserved and restored”, according to Strategy 3, while at the same time “ensuring that coastal people continue to benefit from the sustainable use of the resources”. Furthermore, according to Strategy 4 “coastal areas of high

economic interest," which include mangrove forests, should be targets for Special Area Management Plans. Implementation of the Strategy will alleviate PADH issues to a great extent.

Nevertheless, there is still need to strengthen the legal and institutional arrangements for the implementation of integrated coastal zone management. Thus, the following actions are recommended:

- To strengthening enforcement, the government should make efforts to provide the necessary resources (sufficient personnel, facilities and finances); provide political support; and perform things in a transparency manner. At the same time, it should encourage and promote voluntary compliance.
- Some law on resource management are old and/ or obsolete; further, they emphasise exploitation efficiency rather than sustainable use of resources. These should completely be abandoned or replaced with new relevant laws that minimises physical alteration and destruction of environments.
- The majority of the people in the coastal local communities are not aware of the existing legislations governing protection/conservation and utilisation of coastal resources. Thus, the government should translate the national legislation dealing with coastal and marine environments to district and local levels.
- Regulations for coastal management should cover important environmental aspects, i.e., should encompass Environmental Impact Assessment; emission standards, industrial waste standards; and good practice guidelines. Some of those standards already exist, such as the guidelines for mariculture and for coastal tourism. Nevertheless, more guidelines for other PADH issues should be developed.
- Policy-makers need to adopt long-term thinking that addresses broad-based issues across sectors in an integrated manner.
- There should be good mechanisms to resolve conflicts for resource use, such as a conflict between tourism industry and fisher folks or seaweed farmers. Each of these wants to have exclusive right to the piece of the coastal area concerned. Such conflicts can be resolved or avoided by fair processes respecting coastal communities' systems of land/sea tenure and common property rights. Furthermore, public hearing should be used as a means of collecting views on plans or proposals for major coastal interventions.
- The government should intervene to alleviate pressures on coastal resources due to overexploitation and destructive practices, some of which caused by increased demand from tourism industry. Revenue collected from the industry could be used in providing alternative means of income generation or in promoting offshore fishing to reduce pressure on mangroves areas, coral reefs and seagrasses. Also, awareness campaigns could be intensified to educate the communities further on sustainable utilization of resources.

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