

# **East African Marine Ecoregion Project**

## **Socioeconomic Reconnaissance**

May 2000



## Table of Contents

ABBREVIATION .....	IV
EAST AFRICAN MARINE ECOREGION .....	1
SOCIO-ECONOMIC RECONNAISSANCE.....	1
EXECUTIVE SUMMARY .....	1
1.0 INTRODUCTION .....	4
2.0 OVERVIEW OF SOCIO-ECONOMIC ISSUES.....	4
3.0 POPULATION AND GENDER ISSUES.....	6
3.1 POPULATION GROWTH AND DISTRIBUTION.....	6
3.1.1 Somalia’s Population.....	6
3.1.2 Kenya’s Population .....	6
3.1.3 Population in Tanzania.....	8
3.1.4 Mozambique’s Population.....	9
3.2. GENDER ISSUES .....	10
4.0 INCOME.....	10
4.1 INCOME ISSUES IN KENYA.....	11
4.2 INCOME ISSUES IN TANZANIA .....	11
4.3 INCOME ISSUES IN SOMALIA .....	11
4.4 INCOME ISSUES IN MOZAMBIQUE .....	11
5.0 OCCUPATION.....	13
5.1 FISHING.....	13
5.1.1 Kenya’s Marine Fishing .....	13
5.1.2 Fishing in Tanzania .....	14
5.1.3 Fishing in Somalia.....	16
5.1.4 Fishing in Mozambique .....	16
5.2 TOURISM .....	17
5.2.1 Kenya’s Coastal Tourism .....	17
5.2.2 Tourism in Tanzania.....	18
5.2.3 Tourism in Mozambique .....	19
5.3 MINING .....	20
5.3.1 Kenya’s Coastal Mining .....	20
5.3.2 Tanzania’s Coastal Mining .....	20
5.3.3 Mozambique’s Coastal Mining.....	21
5.4 AGRICULTURE .....	21
5.4.1 Agriculture in the coast of Kenya.....	21
5.4.2 Agriculture in the coast of Tanzania .....	22
5.4.3 Mozambique’s Coastal Agriculture.....	23
5.5 TIMBER AND LOGGING.....	23
5.6 INDUSTRY AND MANUFACTURING.....	23
6.0 LAND TENURE.....	26
6.1 LAND TENURE ISSUES IN MOZAMBIQUE .....	26
6.2 LAND TENURE IN TANZANIA .....	26
6.3 LAND TENURE IN KENYA .....	27
7.0 MAIN SOCIOECONOMIC THREATS TO THE EAME .....	27
7.1 HUMAN DIMENSION (ANTHROPOGENIC).....	28
7.2 FISHING.....	28
7.3 TOURISM .....	28
7.4 AGRICULTURE .....	29
7.5 TIMBER AND LOGGING.....	29
7.6 INDUSTRY AND MINING .....	29
7.7 URBANIZATION .....	30

7.8 INFRASTRUCTURE DEVELOPMENT/IMPROVEMENT .....	30
8.0 CROSS CUTTING ISSUES .....	31
8.1 EMPLOYMENT TRENDS .....	31
8.2 SUBSIDIES .....	32
8.3 INCOME.....	32
8.4 CONSERVATION EFFORTS .....	32
8.5 EDUCATION .....	33
8.6 WATER .....	36
8.7 HEALTH .....	37
8.8 ECONOMIC INFRASTRUCTURE.....	37
9.0 POLITICAL ACCOUNTABILITY.....	39
10.0 ANALYSIS OF KEY THREATS AND TRENDS .....	39
11.0 RECOMMENDATION FOR THE ASSESSMENT PHASE .....	40
12.0 AREAS THAT NEED FURTHER INFORMATION.....	41
Table 1 Population trends in Somalia, Kenya, Tanzania and Mozambique (in millions) .....	7
Table 2 Coastal Population in Kenya .....	7
Table 3 Population trends in coastal Districts of Tanzania .....	8
Table 4 Traditional uses of sea turtles, dugongs, whales and dolphins by the coastal peoples of Kenya .	14
Table 5 Total marine fish production (in tons) for Tanzania mainland: 1985 – 1995.....	15

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## **ABBREVIATION**

CDA – Coastal Development Authority  
EAME – East African Marine Ecoregion  
ERB – Economic Research Bureau  
FAO – Food and Agriculture Organization  
HBI – Hot Briquetted Iron  
IDC – Industrial Development Corporation  
ILFEMP - Institutional and Legal Framework for Environmental Management Project  
IMS - Institute of Marine Science  
IRA - Institute of Resource Assessment  
KPA - Kenya Port Authority  
KWS - Kenya Wildlife Services  
MICOA – Ministry for Co-ordination of Environmental Affairs  
MIMP – Mafia Island Marine Park  
NEMC - National Environment Council  
SAP - Structural Adjustment Program  
SDI – Spatial Development Initiative  
TCMP- Tanzania Coastal Management Partnership  
THA - Tanzania Harbors Authority  
TPDC – Tanzania Petroleum Development Corporation  
UN – United Nations  
UNDP - United Nations Development Program  
UNEP - United Nations Environment Program

## **EAST AFRICAN MARINE ECOREGION**

### **SOCIO-ECONOMIC RECONNAISSANCE**

#### **EXECUTIVE SUMMARY.**

Biological and ecosystem degradation is continuing at an increasing rate around many developing countries whilst conservation efforts are dwindling (Bagachwa, et al, 1995). It is increasingly becoming clear that more conservation efforts are needed. WWF has identified the Global 200 sites consisting of terrestrial, freshwater and marine ecoregions. One of these global sites is the east African Marine Ecoregion (EAME). WWF has initiated a reconnaissance survey for this region in order to identify what is known about the EAME, what need to be known, and where to look for information. The reconnaissance phase looks at biological, institutional/political and socio-economic information for the EAME. This report is about the socio-economic information.

The EAME is a large area covering the coastal and marine areas of Eastern Africa from Somalia to the coast of Kenya, Tanzania (including Zanzibar and Mafia islands) down to Mozambique. Several socio-economic changes are taking place in the entire EAME region. Political systems are opening up to new democratic processes, economic systems are being adjusted to accommodate new market economies, and investments in key sectors such as tourism are raising. All these changes have profound implications on the way in which the people in the EAME region use their resources. Conservation efforts are still low although remarkable progress has been made in some areas. The majority of the people are poor and efforts to overcome poverty are often detrimental to the environment.

All the countries in the EAME (except Somalia) are implementing broad macroeconomic reforms as stipulated by the World Bank, IMF and bilateral donors. Despite these measures, economic development in the region is still facing major problems. For example in Kenya, the slowdown in economic growth that started in 1996 continued in 1997. Inflation is still very high (at 7.4% by June 1998) and external debt is over 60% of GDP (by 1997).

In Tanzania, GDP real growth declined from 6.2% in 1990 to 4% in 1998. Overall, however, the economy is more stable now than it was prior to the reform programs in 1986. Mozambique's economy is expanding fast; it grew from an average of 6.7% a year during 1987-95 to 10% a year during 1996-98, whilst inflation declined from about 50% in 1995 to less than 1% in 1998. Real GDP grew from 11.3% in 1997 to 12% in 1998 and then declined to 9.7% in 1999. It is projected to grow to 7% in 2000.

Mozambique was for quite sometime, outside the international trade circles. Many years of communism and state monopolized economy, isolated the country from the wider market economies. However, this has changed now. Microeconomic and policy reform that the government is now implementing has brought into Mozambique more involvement of international investors (although largely, the majority of the new investors are South African companies). This new thrust puts more pressure on natural resource. Relatively though, Mozambique still offers hope that if well planned, if economic development is premised along sustainable use of natural resources, economic growth may take place without too much damage to the environment. However, this presupposes putting in place appropriate policy programs that addresses, poverty, infrastructure development and capacity building. Mozambique went through one of the darkest histories of mankind in colonialism and then civil war. The civil war has indeed destroyed and aggravated the destruction of the natural resources by forcing people into smaller areas. Natural disasters such as floods and drought have also affected Mozambique negatively, both in the past and in recent times.

Mozambique is the only country in the EAME, which still puts more emphasis on health and education. Between 1996 and 1998, the primary school enrolment rate increased from 62% to 71%. Coverage for

key vaccinations increased from 58% to 77%. The share of health and education in total current government expenditure increased from 7% and 16%, respectively, in 1995 to 9% and 18% in 1998.

Broadly though, macroeconomic changes are taking place in the absence of clear and well-implemented plan for environmental conservation. Major economic projects are underway in all the countries in the EAME and the future shows more such projects will continue to be developed as these countries implement macroeconomic reform programs. However, some of the sectors are developed faster than the others. For example in Tanzania, tourism and mining sector are given top priority although agriculture still employs many people and provides food and non-food products. Although agriculture employs many people and provide food and export products, there is little direct private investment that goes into this sector. Changes in demand pattern, especially in Europe may stimulate increased demand for some products in the region. For example, increasing demand in non- synthetic packaging materials is likely to stimulate demand of sisal products. Most of the sisal farms in Tanzania are in need of improvement. Infrastructure is still poor and underdeveloped, and options are limited although there are greater potential in developing this sector. Population is increasing in all East African coastal towns and cities. The rate of increase is attributed to factors such as a rise in fertility rates (mostly in rural areas), low mortality rates (in some locations) and migration. Migration accounts for the largest population increases in many of the coastal towns and cities.

Poverty is a real problem and is growing in all the EAME countries. Income gaps between the rich few and the majority, poor people are widening. This gap is outrageous and potentially explosive. Poverty is a cause and effect of environmental degradation in the EAME countries. Most of the people in the EAME are involved in fishing, mining, tourism, agriculture, timber and logging (mangrove forests) industrial and mining activities.

The EAME face same form of threats from human activities. Some of these threats include:

Increasing human population in the coastal districts; Poverty; Inadequate Awareness/cultural perceptions on consumption and resource use. However, more data is needed to determine the extent to which inadequate awareness is a threat to biodiversity.

Others include, threats related to fishing such as destructive fishing practices (dynamiting, poisoning, beach seining and bottom trawling), which put immense pressure on the marine resources. Over fishing and depletion of resources, caused by destructive fishing gear. Demand for foreign currency and approval for large-scale development projects such as aquaculture. Such development projects are threatening coastal areas and the local populations.

Approval for large-scale tourism development projects is often done with little considering for the social, cultural and environmental implication. The number of tourist facilities is increasing in all the coastal areas of the EAME. Tourist facilities are sited close to the sea, causing degradation of the beaches and limiting public access to the beaches. Pollution from hotels and related tourist activities is another major concern. Solid and liquid waste deposal facilities are poor or not available at all. Thus contributing the degradation of the very resource that attracts tourism.

Agriculture in the EAME coastal regions exerts pressures and is causing clearing of forests due to shifting cultivation. Also, soil erosion and land degradation are common in many coastal areas. Pollution from agro-chemicals (fertilizers and pesticides) used in the irrigation in the terrestrial areas – along riverbeds and basins is another threat to the marine environment.

Over-exploitation and illegal harvesting of coastal forests and mangroves have led to the destruction of breeding and nursery grounds of fish species. Rates of utilization are higher than afforestation measures. There is as yet no alternative to timber and fuelwood.

Over half of the heavy industries and manufacturing facilities are located among the EAME coastal cities and towns. This has contributed to considerable pollution of marine resources and pressure on natural resources as population increases rapidly in these areas. Extractive activities such as sand mining, quarrying and coral mining as well as salt making, destroy coastal habitats.

Most EAME countries are urbanizing fast. The rate is higher in coastal town and cities. Uncontrolled and increasing urbanization increases pressure to natural resources

All the countries in the EAME are engaged in major rehabilitation and expansion of ports, railway lines, oil refinery and roads. These developments increase demand for natural resources and increase probability of population to the marine environment.

WWF should work with existing organizations that are working in the region to identify ways to address major threats to marine ecoregion.

## **1.0 INTRODUCTION**

Biological and ecosystem degradation is continuing at an increasing rate around many developing countries whilst conservation efforts are inadequate (Bagachwa et al, 1995). It is increasingly becoming clear that more conservation efforts are needed. WWF has identified the Global 200 sites consisting of terrestrial, freshwater and marine ecoregions. WWF will work with numerous stakeholders to initiate and implement focused ecoregional based conservation programs in the selected ecoregions. The East African Marine Ecoregion (EAME) is one of the marine ecoregions that has attracted the attention of WWF and other conservation organizations and institutions in the world. WWF has initiated a reconnaissance survey for the EAME to identify what is known about the EAME, what need to be known, and where to look for information. The reconnaissance phase looks at biological, institutional/political and socio-economic information for the EAME. This report is about the socio-economic information.

## **2.0 OVERVIEW OF SOCIO-ECONOMIC ISSUES**

The EAME is a large area covering the coastal and marine areas of Eastern Africa from Somalia to the coast of Kenya, Tanzania (including Zanzibar and Mafia islands) down to Mozambique. Several socio-economic changes are taking place in the entire EAME region. Political systems are opening up to new democratic processes, economic systems are being adjusted to accommodate new market economies, and investments in key sectors such as tourism are raising. All these changes have profound implications on the way in which the people in the EAME region use their resources. The majority of the people are poor and efforts to overcome poverty are often detrimental to the environment. Any attempt to conserve the biodiversity in the region must take into account the diverse socio-economic factors that underlay the use of the available natural resources.

The EAME has diverse socio-economic characteristics, although in general, it is fairly homogenous in terms of social composition: a large rural population, which constitutes the bulk of the poor people and a small urban population, which consists of the very few rich population and majority of urban poor. Politically, the region is fairly stable, with the exception of Somalia, where there has been no government for almost 10 years.

The economy is developing and improving at different rates in the EAME region. All the countries in the EAME (except Somalia) are implementing broad macroeconomic reforms as stipulated by the World Bank, IMF and bilateral donors. Overall, the main thrust in these reforms is to increase government revenue, reduce deficit and inflation and, increase production. More emphasis is given to the private sector (particularly foreign capital). Other measures include, civil service reforms (retrenchment and restructuring exercise), and introduction of multiparty political systems to increase democracy in the EAME region. Despite these measures, economic development in the region is still facing major problems. For example in Kenya, the slowdown in economic growth that started in 1996 continued in 1997. Kenya's GDP expanded in real terms by only 2.3% in 1997 compared with 4.6% in 1996. The slowdown in economic growth in 1997 was caused by several factors including, adverse weather conditions, drought induced irregularity in power supply, rapidly deteriorating infrastructure, i.e. roads, water supply, telephone, and sanitation which reduced production efficiency by increasing the cost per unit of output. Other factors causing the decline include depressed investment. In addition, political issues resulted in the failure to secure IMF loan. The situation has not improved so much, and the impasse that exists between Kenya and international monetary institutions and donors will continue to put more stress in the local economy. This may have implications on how local people respond to such pressures, in particular with regard to natural resources. Despite the slowdown in production, the structure of Kenya's economy largely remained the same; dominated by agriculture and manufacturing contributing about 40% of the total GDP in 1997. Inflation is still very high (at 7.4% by June 1998) and external debt is over 60% of GDP (by 1997).

In Tanzania, GDP real growth declined from 6.2% in 1990 to 4% in 1998. Overall, however, the economy is more stable now than it was prior to the reform programs in 1986. The target for 1996/97 was 6%. Real economy growth averaged 3.3% annually in the period between 1987-1998 (ERB/IRA, 1999). The national debt continued to be a heavy burden on the economy and divert much needed

resources to debt repayment. This has contributed to decline in social services. The monthly cash payments indicate that top on the list is debt servicing, which is about 40% of all the collections (ERB/IRA, 1999). External debt stood at about US\$ 8 billion by mid 1998. This was equivalent to about 105% of the 1998 GDP at 1999 prices (ibid.). Current debt relief programs aim at releasing the much-needed resources to social development programs. Tanzania will benefit from this program, although, really, a lot of financial discipline will be needed to ensure that funds obtained from debt relief programs area actually used for the purpose of improving the welfare of the people.

Mozambique's economy is expanding fast; it grew from an average of 6.7% a year during 1987-95 to 10% a year during 1996-98, whilst inflation declined from about 50% in 1995 to less than 1% in 1998. Real GDP grew from 11.3% in 1997 to 12% in 1998 and then declined to 9.7% in 1999. It is projected to grow to 7% in 2000. These developments were fostered by prudent fiscal and monetary policies and by continued implementation of structural reforms.

Mozambique was for quite sometime, outside the international trade circles. Many years of communism and state monopolized economy, isolated the country from the wider market economies. However, this has changed now. Microeconomic and policy reform that the government is now implementing has brought into Mozambique more involvement of international investors (although largely, the majority of the new investors are South African companies). This new thrust puts more pressure on natural resource. Relatively though, Mozambique still offers hope that if well planned, if economic development is premised along sustainable use of natural resources, economic growth may take place without too much damage to the environment. However, this presupposes putting in place appropriate policy programs that addresses, poverty, infrastructure development and capacity building. Mozambique went through one of the darkest histories of mankind in colonialism and then civil war. The civil war has indeed destroyed and aggravated the destruction of the natural resources by forcing people into smaller areas. Natural disasters such as floods and drought have also affected Mozambique negatively, both in the past and in recent times.

Mozambique is the only country in the EAME, which still puts more emphasis on health and education. This is perhaps due to the fact that many years of civil war left many such services in very bad condition. Improving them becomes a necessity and political strategy too. Between 1996 and 1998, the primary school enrolment rate increased from 62% to 71%. Coverage for key vaccinations increased from 58% to 77%. The share of health and education in total current government expenditure increased from 7% and 16%, respectively, in 1995 to 9% and 18% in 1998<sup>1</sup>

Broadly though, macroeconomic changes are taking place in the absence of clear and well-implemented plan for environmental conservation. Currently, emphasis is on economic growth (to increase GDP). The environment is not regarded as a resource that need to be used sustainably in order to enhance some of the gains that have been obtained. Major economic projects are underway in all the countries in the EAME and the future shows more such projects will continue to be developed as these countries implement macroeconomic reform programs. However, some of the sectors are developed faster than others. For example in Tanzania, tourism and mining sector are given top priority although agriculture still employs many people and provides food and non-food products. Although agriculture employs many people and provides food and export products, there is little direct private investment that goes into this sector. Changes in demand pattern, especially in Europe may stimulate increased demand for some products in the region.

For example, increasing demand in non- synthetic packaging materials is likely to stimulate demand of sisal products. Most of the sisal farms in Tanzania are in need of improvement. Infrastructure is still poor and underdeveloped, and options are limited although there are greater potential in developing this sector. In Tanzania, deforestation, pollution and soil erosion are increasing in areas that major economic development is taking place as a result of focusing more on economic growth and paying little attention to environmental considerations (Bagachwa et al 1995).

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<sup>1</sup> This information for Mozambique was obtained from New Africa, 1999

Somalia's economy has not regained since the collapse of the civil administration over 10 years ago. Much of the economy has been devastated by the war. However, agriculture is the most important sector, with livestock accounting for about 50% of GDP and about 65% of export earnings. Crop production generates only 10% of GDP and employs about 20% of the work force. Famine frequently occurs in Somalia due to vagaries of the weather (both drought and flooding), resulting to food insecurity. The small industrial sector based on the processing of agricultural products, accounts for less than 10% of GDP; most facilities have been closed down because of the war<sup>2</sup>.

### **3.0 POPULATION AND GENDER ISSUES**

#### **3.1 POPULATION GROWTH AND DISTRIBUTION**

The Eastern Africa coast is home to millions of people who have settled in major cities, towns and villages that are scattered in the coastal areas of Mozambique, Tanzania, Kenya, Zanzibar and Somalia. Population figures in the four countries are inconsistent, incomplete and outdated. However, based on previous censuses and estimates, the population in the four countries has been growing very fast. Table 1 shows the trends

##### **3.1.1 Somalia's Population**

The first national census for Somalia was taken in February 1975, and there has been no further census since then. The UN and other agencies have generated numerous estimates (see Table 1). On the basis of these, it is estimated that close to 2.4 million people in Somalia settled in coastal districts by the mid-1980s<sup>3</sup>, the vast majority of whom resided in Mogadishu, the capital (then). However, with the breakdown of the Siad Barre regime on January 1991, the ensuing civil wars resulted in the influx of people into Mogadishu. For example, the population of Mogadishu rose from about 500,000 people in the mid-1980s to about 2 million people in 1992. Similarly, people have migrated to other coastal towns such of Kismayu, Brava, Merka, Obbia and Bender Beira, which developed as trading centers long before the breakdown of the Barre regime in Somalia.

The Somalis are segmented into a hierarchical system of patrilineal descent groups, with each one originating from a single male ancestor.

The 1975 population census classified Somali population according to three main categories: nomads (59%) settled persons (22%) and non-agricultural occupations (19%). Most of the settled persons and non-agricultural occupants have settled near or along the coast.

##### **3.1. 2 Kenya's Population**

In Kenya, the population has been growing fast. Kenya had one of the highest growing rates in the world at 4% in 1979. Population growth declined to about 3.4% by 1989. It is estimated that population growth will decline further to 2.5% by 2001 (Republic of Kenya, 1997).

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<sup>2</sup> This information for Somalia is obtained from New Africa, 1999

<sup>3</sup> UNEP (1987): Coastal and marine environmental problems of Somalia. UNEP Regional Seas Report and Studies No. 84 Annexes. p.5.

**Table 1 Population trends in Somalia, Kenya, Tanzania and Mozambique (in millions)**

	1980 <sup>4</sup>	1990	2000 Estimates	National growth rates (%)
Somalia	3.3 <sup>5</sup>	8.6 <sup>6</sup>	9.2 <sup>7</sup>	2.85(1995-2000) <sup>8</sup>
Kenya	14.3	25.3 <sup>9</sup>	28 <sup>10</sup>	3.81 (1995-2000) <sup>11</sup>
Tanzania	23.1 <sup>12</sup>	24.4 <sup>13</sup>	33 <sup>14</sup>	3.68(1995-2000) <sup>15</sup>
Zanzibar <sup>16</sup>	642,578	735,830	867,473	3.0 (1988)
Mozambique	9.6 <sup>17</sup>	15.74 <sup>18</sup>	N.A	4.2 (1990-95) <sup>19</sup>

Source: Various see footnotes 3-14 below.

Kenya's population has increased by 35% in the last ten years to about 28 million in 1999. Population in the northeast region has increased by over 123%. Overall, there are more women than men are in Kenya. The Kenya coast supports about 9% of the national population. The Kenya Coastal population has increased from 1.34 million in 1979 to 1.83 million in 1989 (CDA, 1996). These represents about a 37% increase over ten years. It is estimated that the coastal population will increase to 2 million by 2000 (UNEP, 1998). Although accurate data is absent, the rapid population growth in the coast continues to place pressure on the coastal environment, its resources and the infrastructure that supports it. Population pressure is great in coastal urban centers such as Mombasa, where its population has doubled in the last 15 years.

**Table 2 Coastal Population in Kenya**

DISTRICT	POPULATION
Kilifi	591,903
Kwale	383,053
Lamu	56,783
Mombasa	461,753
Taita/Taveta	207,273
Tana River	128,426
Coastal Total	1,829,191
<b>National Total</b>	<b>21,443,636</b>

Source: Central Bureau of Statistics, Kenya Population Census, 1989, Vol.1 (in CDA, 1996:1)

<sup>4</sup> The Cousteau Almanac (1981): An Inventory of life on our Water Planet: Dolphin Books, New York.

<sup>5</sup> 1975 Somalia National Census

<sup>6</sup> United Nations (1997): Statistical Yearbook, Department of Economic and Social Affairs, UN New York p.36

<sup>7</sup> *ibid.* 1995 estimates.p36

<sup>8</sup> World Resources Institute (1992) World Resources 1992-93, New York, Oxford University Press. p.16

<sup>9</sup> UNEP (1998): 1992 population estimates. Eastern Africa Atlas of Coastal Resources: 1.Kenya, Nairobi.p.43

<sup>10</sup> This is Kenya's 1999 actual population

<sup>11</sup> World Resources Institute (1992) World Resources 1992-93, New York, Oxford University Press. p.16

<sup>12</sup> 1998 Tanzania population census, Bureau of Statistics, Dar es Salaam

<sup>13</sup> Estimates own computation based on 2.8% annual growth rates.

<sup>14</sup> Bureau of Statistics (1997): Tanzania: Demographic Health Survey 1996. The population figures for 2000 are estimates

<sup>15</sup> World Resources Institute (1992) World Resources 1992-93, New York, Oxford University Press. p.16

<sup>16</sup> For the purpose of this study, Zanzibar, which is part of the United Republic of Tanzania is treated separately. Figures for Zanzibar are in thousands. 1990 figures for Zanzibar refer to 1995 estimates.

<sup>17</sup> The Cousteau Almanac: An Inventory of Life on Our water Planet (1991).p.99

<sup>18</sup> 1997 population census figures. However, Mozambique's population reflects a downward trend from 16.6 million in 1994 to 15.7 million in 1997. It is not clear why it has declined to this level however, this can be attributed to factors such as counting problems.The 1994-96 figures are estimates.

<sup>19</sup> United Nations (1997): Statistical Yearbook, Department of Economic and Social Affairs,UN New York.p.36

Kenya's rural fertility is higher than in urban areas. Rural – urban migration accounts for a large proportion of the population increase in the coastal towns of Kenya. People have migrated from the interior to the coastal towns in search of employment opportunities, business and distant trade. These towns have had trading connections with other towns in the Arabian Gulf, Far East and Europe dating back to the seventh century.

### 3.1.3 Population in Tanzania

Tanzania's population has increased from 23 million in 1988 to an estimated 33 million in 2000. The coast of Tanzania is home to about 8 million people or 25% of the total population, with a coastal population growth rate ranging between 2 and 6% (Linden and Lundin, 1996 in TCMP 1999). It is estimated that, coastal population will double to about 16 million people by 2010, or about 110 people per square kilometer (TCMP.1999).

Most of the population is concentrated in the coastal urban districts such as Kinondoni, Temeke and Ilala in Dar es Salaam. Dar es Salaam alone is estimated to have about 2.5 million people. Table 3 indicates the population trends in the coastal districts of Tanzania. The coastal population is increasing rapidly especially over the last 20 years in all the districts (and indeed the regions) in the coastal areas of Tanzania. Population densities are highest along the coastal areas. However, there are population differences within and between districts in the same areas. For example, Lindi region is experiencing a relatively slow population increase. In addition, Lindi has high about 140 children dying per 10,000 childbearing mothers (i.e., infant mortality rate of 140). The Maternal Mortality rates for Lindi are also high. Lindi is facing the problem of emigration, particularly of young people who relocate to other parts of the country – especially Dar es Salaam. These youths constitute the increasing number of under- and unemployed people locally known as the “*machingas*” who are engaged in informal petty trading.<sup>20</sup>

**Table 3 Population trends in coastal Districts of Tanzania**

Coastal Districts	1988	1995 (Estimates)	2000 (Estimates)	People/km <sup>2</sup> (2000)
Tanga Urban	186,849	222,825	252,106	470
Muheza	229,140	256,811	276,659	56
Pangani	37,669	41,450	44,215	31
Bagamoyo	173,918	205,326	231,177	23.5
Mkuranga	195,709	229,478	257,110	N.A
Mafia	33,054	42,339	50,529	97.5
Rufiji	152,316	166,729	180,837	13.6
Mtwara Mikindani	75,857	103,815	121,449	745.1
Mtwara Rural	168,189	190,962	203,480	56.6
Kilwa	150,212	167,884	177,485	12
Lindi - Urban	41,581	69,857	90,546	294
Kinondoni	627,416	955,608	1,243,032	2358.6
Ilala	331,663	442,354.8	543,387	2587.5
Temeke	401,786	543,122.7	673,597	1026.8
Coastal Total	2,403,573	3,638,561.5	4,345,609	

Source: Planning Commission and Regional Commissioners Offices (1997, 1998): Socio-economic Profiles for Tanga, Coast, Lindi, Mtwara Regions, Dar es Salaam, and Planning Commission, Bureau of Statistics (1996) Dar es Salaam Regional Abstracts, 1993. Dar es Salaam.

<sup>20</sup> They are called “*machingas*” in relation to one ethnic group that is based in Mtwara and Lindi (southern regions of Tanzania). For more details about the “*machinga*” phenomena see Mekacha, R.D.K and A.J.Liviga (1999) Youth Migration and Poverty Alleviation: A Case Study of Petty Traders (Wamachinga)” REPOA Research Report No. 98.5 Dar es Salaam.

Similar situations exist in Mtwara region where some districts have population growth rates as low as 1.0% (e.g. Tandahimba District). The migration of people from Mtwara to other regions is quite high. Pangani and Tanga urban districts in Tanga region, have low population growth rates compared to other districts in Tanga region. The population in Muheza district is growing faster.

The population in the Coast region is growing slowly compared to the national trends. For example, between 1978 and 1988 (the second and third census periods), Coast regions population grew at about 2.1 % whilst the national growth rate was 2.8%. The low growth is attributed to low fertility and high mortality rates. However, the population of Bagamoyo district is expanding faster than any other districts in the region. This is attributed to immigration as a result of recent growth of tourism and related activities in Bagamoyo. A lot more people will be attracted to Bagamoyo as the Government improves the road between Dar es Salaam and Bagamoyo and expands other services, in line with the expanding tourism business.

The population in Dar es Salaam, the main commercial and central government administrative city, is growing faster than in any other region in Tanzania. Being the center of commercial activities and international organizations, Dar es Salaam is attracting many people from all the regions of Tanzania and beyond. Population densities are the highest in Kinondoni, Temeke and Ilala (the three districts that form the Dar es Salaam region). The population density of Kinondoni district has increased from 1191 people per sq. km in 1988 to about 2358.6 people per sq.km in 2000. Immigration and high fertility rates account for population increases in Dar es Salaam.

In Zanzibar, population is concentrated in Zanzibar town, Wete and Chake Chake in, Pemba, and in most coastal towns and villages. Population growth in these areas is attributed to increasing fertility, but also population is increasing as a result of expanding tourism business in Zanzibar, which has attracted hotel developers and other investors in coastal towns. Also, the decision to establish Economic Free Zones in Zanzibar has stimulated growth of population in urban areas. Migration from mainland Tanzania also contributes to the growth of the population. However, growth rates differ from one area another. The highest population growth was 4.2% in 1988, in the Central District, in the South Region. The lowest population growth was 1.4% in the South District, South Region.

### **3.1.4 Mozambique's Population**

Population figures for Mozambique are not consistent and vary according to sources. However, all the districts show a fast growing trend. For example, District Development profiles compiled by UNDP and UNHCR in 1994, indicate that the population in coastal districts increased significantly compared to 1980 census figures.<sup>21</sup> Large section of the Mozambique's population moved to the coast during the war, since these areas were relatively safe.

According to the *Instituto Nacional De Estatistica*<sup>22</sup>, which conducted census population in 1997, the coastal districts had a total population of about 4,628,090 people. Population densities are different between districts, but overall total population in the districts is not very much different. The highest population was recorded in Moma District (238,707) followed by Maganja (229,230). Angoche (228,612). The lowest was recorded in Cheringoma district (20,795).

Most populous cities and towns include Maputo, Xai Xai, Inhambane, Beira, Quelimane, Nacala, and Pemba. Most of the population was disrupted and displaced during the war and people migrated to the towns and cities. The war has created a huge urban population consisting of young people who were born in cities or fled with their parents to the cities. After the peace agreement in October 1992, most of the population began to return to their traditional home areas. However, this has not reduced high population growth in urban areas in the coast. The concentration of industries, relatively better social services and

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<sup>21</sup> For details about population and district development profiles see UNDP and UNHCR (1997) District Development profiles – various Coastal Districts.

<sup>22</sup> Instituto Nacional De Estatistica, II Recenseamento Genral Da Populaca' o Habitaca' o, 1997. Maputo, Marco 1999.

infrastructure along the coast towns and cities continues to attract many people from the interior of the country and beyond.

*In summary*, population is increasing in all East African coastal towns and cities and looking at long term trends in the past censuses, it seems that population will continue to grow faster in the EAME countries and in coastal towns and cities in particular. Population density in these areas is high and will continue to increase. The rate of increase is different from one area to another but this increase is attributed to a rise in fertility rates (mostly in rural areas), low mortality rates (in some locations) and immigration into coastal cities and towns. Immigration accounts for the largest population increases and densities in many of the coastal towns and cities. Both seasonal and permanent immigrations are common phenomenon in East African towns and cities. The ever-increasing populations in these areas continue to exert growing pressure on marine and coastal resources.

### **3.2. GENDER ISSUES**

Gender issues in the EAME countries are very much influenced by cultural and tradition, religion, policies and economic changes. Both men and women face considerable social problems, but it is women, who suffer the most in terms of barriers that are created by religion, culture (social attitudes, norms, and values) limited opportunities in accessing social services and economic opportunities. This is despite the fact that most countries in the EAME have policies, which promotes women welfare.

Women are involved in social economic activities that have implications on the EAME, both negatively and positively. For example in her trip report, Smith-Sreen noted that seaweed farming by women has lowered cutting of trees below unsustainable level<sup>23</sup>. In this Zanzibar area, a private company is promoting seaweed farming and provides a market for the women. Seaweed farming has increased women's real incomes, which has led to greater empowerment for them. Smith-Sreen further observed that some women have opted not to get married early, as is the norm in this area, because they are now getting more money from seaweed farming. Women have become less dependent on men in terms of income. In addition, it was observed that, many of the women who were earlier harvesting octopus unsustainably find that they have less time for octopus harvesting as they spend more time on seaweed farming. Indirectly, this also conserves octopus, which are in high demand in urban areas. In some villages in Zanzibar, women are involved in tree planting exercises. In Mafia, women mainly do octopus fishing. The market price for octopus is higher and attractive (Tsh. 1500 or US\$ 2), whereas, seaweed in this area sells at Tsh. 120/kg (or US\$ 0.15/kg). Transport problem was considered the main bottleneck. The market is limited within Mafia and prices are low.

### **4.0 INCOME**

The coastal areas in Eastern Africa are vital to the overall economic health of Somalia, Kenya, Tanzania and Mozambique. For example, Mombasa alone represents about 16 % of the total wage earnings of Kenya (CDA, 1996). Similarly, Maputo, Xai Xai, Inhambane, Beira, (in Mozambique); Mtwara, Dar es Salaam, Bagamoyo, Zanzibar, Tanga (in Tanzania), Malindi and Lamu (in Kenya) represent the highest proportions of wage earnings in these countries due to high concentration of vital economic activities in these centers. Activities such as industrial development, marine fishing, ports, tourism, agriculture, aquaculture, trade, commerce and social service provision are located in these centers.

Whilst income and per capita data for some of the areas is not available, using indicators such as poverty levels, we can understand the issue of income and equity. Poverty is a critical problem in the whole region and it manifests itself in the form of hunger; illiteracy; and lack of access to basic education, drinking water, minimum health facilities and housing. Generally the quality of life for is affected by poverty.

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<sup>23</sup> See Poonam Smith-Sreen, Trip Report February 18 – March 8, 2000. People & Conservation program. 2000.unpublished.

#### **4.1 INCOME ISSUES IN KENYA**

In Kenya, inequality increased in the rural areas in all provinces during the 1982-92 decade (Republic of Kenya, 1997). The distribution of income has continued to worsen. For example, in 1982, the lowest 20% of the population in rural Kenya received 4.9% of the national income while the top 20% received 56.9% (ibid.). By 1992 the distribution was 3.5% and 60% respectively. The same was the case for urban poor.

Similarly, using measurements such as absolute poverty lines per adult equivalent in rural and urban Kenya, it was indicated that in 1994 about 47% of Kenyans were classified as absolute poor in rural areas (Office of the Vice President, 1997). These were people who were classified as poor beyond any reasonable doubts, without any doubt. The prevalence of absolute poverty was highest in North Eastern (58%), followed by eastern (57%) and Coast with 55%. Central province had the lowest prevalence of absolute poverty with 32% (ibid.10). In terms of absolute hard-core poverty (i.e. low total expenditure to acquire the minimum food calorie requirement and non-food items), Coast province, in which all the Kenya coast area belong, was third with 36% of its population in this category (ibid.). Overall, the number of absolute poor persons in rural areas and urban areas rose from 11.5 million to 12.6 million in 1997. Rural areas in Kenya accounted for about 90% of the absolute poor persons. In Kenya poverty is more prevalent in rural areas.

#### **4.2 INCOME ISSUES IN TANZANIA**

Tanzania experiences a situation similar to that of Kenya. Estimates show that in 1995, the poverty line for Tanzania was Tsh. 73,877(US\$ 125) p.a. More than 50% of the population of Tanzania have incomes below the poverty line (URT, 1998a). In another study, Bagachwa et al (1995) indicate that the lowest 20% of the population had only 2.4% of the total national income while the highest 20% had 63% of the total income. Studies using different indicators of poverty arrived at similar conclusions, that poverty is worse in rural areas.<sup>24</sup> About 60% of the rural population is poor compared to 39% of the urban population (URT, 1998a). Overall, women are poorer than men are.

While the average poverty line in Tanzania was Tsh. 73,877 (US\$ 125) p.a. in 1995, coastal regions had much lower levels. In 1994, income per capita for Tanga region was Tsh. 60,021 (US\$ 102) p.a., in Lindi region it was Tsh. 38,340 (US\$ 65); Coast region had Tsh. 22,624 (US\$ 38) and Mtwara had Tsh. 59,533 (US\$ 101) p.a. (TCMP, 1999).

#### **4.3 INCOME ISSUES IN SOMALIA**

Recent income data for Somalia is lacking. However, even prior to the collapse of the state and the country, minimal economic reform and declining GDP per capita (World Bank, undated) characterized Somalia. Given the turmoil in that country, the Somali economy virtually collapsed by the 1990s. There has been no attempt to diversify income-generating activities; instead, livestock production in the north and agricultural products in the south continue to dominate income-generating activities.

Due to the breakdown of the administrative system, it is difficult to obtain accurate data on income and equity issues; however, many Somalis earn the bulk of their incomes outside the formal system. Indeed, ethnic clans that control important sectors of the economy, e.g. trade routes, ports, and businesses are likely to increase their income through levies. Also, incomes to most of the rural people is likely to be low since, the infrastructure such as transportation and marketing, which could enable the realization of higher incomes are not working effectively.

#### **4.4 INCOME ISSUES IN MOZAMBIQUE**

Between 1996-97 just over two-thirds of the Mozambican population or about 10.9 million persons, lived in absolute poverty. The mean income during the same period was 160,780MT or about US\$ 170 per

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<sup>24</sup> For some of the indicators, see Timo Voipio and Paul Hoebink; European Aid for Poverty reduction in Tanzania. Working Paper 116. Overseas Development Institute, IDS, University of Helsinki, and the Third World Centre, University of Nijmegen, December 1998.

person (Ministry of Planning and Finance, 1998). The incidence of poverty is higher in rural areas (71.2%) than in urban areas (62%). However, poverty is more severe in the central region, compared to the south and northern regions (ibid.) If Maputo City, which has low poverty rates, is excluded from the southern region, the rest of the southern region has poverty rates higher than northern region, and not significantly different from the central region (ibid.).

There is a significant difference in levels of poverty even between provinces, which are close to the marine ecosystem. For example, Sofala and Inhambane provinces have the highest rate of poverty, but only 28.2% of the poor live in Sofala, Inhambane and Tete (a province which is located away from the Mozambican coast). About 39.3% of the poor live in Nampula and Zambezia provinces, two of the coastal and densely populated provinces. The same scenario is apparent even by comparing non-income dimensions (e.g., illiterate rate, chronic malnutrition, access to water and infant mortality) of poverty. There are variations between rural and urban, but also between provinces along the coast.

*In summary*, Poverty is a real problem and it seems it will continue to grow in all the EAME countries. Inadequate data precludes any attempt to make meaningful conclusions on trends and dimensions of income in EAME countries. However, basing on the analysis of poverty, it is noted that, income gaps between the rich few and the majority, poor people is widening. The way macroeconomic reform programs are implemented in the region suggest that trends in poverty and unequal income distribution will continue as countries in the EAME continue to implement programs that seek to increase level of GDP, without adequate social program or measures that address unfavorable distribution structures. This gap is outrageous and potentially explosive. EAME countries are trying to address poverty through a number of ways, but little has been achieved because poverty continues to entrench itself, thus posing more threats to natural resources. Most of the people with low incomes are in the rural areas of Kenya, Tanzania and Mozambique. Similarly poverty is largely a rural phenomenon in all these countries.

Although poverty is most dominant and intense in rural areas, rural extraction of resources, which partly accounts for environmental problems in these areas, is used in urban areas. Most of the charcoal used in Dar es Salaam for example comes from the rural areas. That poverty is a major problem in rural areas is also true when non-income dimensions of poverty are compared. The quality of social services in the rural areas, and indeed in some urban areas along the coast in the EAME region, is low. This is important because households and individuals with higher income or consumption (in the form of calorie in take) are better able to ensure their own non-monetary well being, as well as that of their families. This means, inter-generational changes in income and poverty are very much influenced by these trends. Households with higher incomes invest in the education of their children, who later will occupy crucial positions in the society.

However, in the absence of trend data on income, it is difficult to argue what the effect of income differences could be on the natural environment. That notwithstanding, it is increasingly being accepted that the more the poor the people are, the more likely they will degrade the environment. Poverty is seen as a proximate cause of environmental degradation.<sup>25</sup> Most of the people in the East African region are poor. As they struggle to provide for themselves and their families, they are forced by circumstances (poverty, low income, poor access to resources) to make choices that affect the local resources and ecosystems. However, more data is needed in order to determine the impact of poverty or increased income on the environment in the EAME region.

The spatial characteristic of poverty in the EAME suggests that it is largely a rural phenomenon, however this does not mean that poverty is not common in coastal urban areas. Both non-income dimensions and income dimensions of poverty generally indicate that poverty is a critical problem in all the areas in the EAME region. Measures to address poverty exert pressure not only in rural areas, but

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<sup>25</sup> WWF's Macroeconomics program Office in Washington has initiated a number of studies looking at the root causes of biodiversity loss. Poverty and low income are considered as forces that drive individuals and nations to make choices that sometimes contradict their long-term interest and destroy biodiversity in the end. So far such studies have been undertaken in Mexico, Philippines, Vietnam, Brazil, Cameroon, China, Danube basin, India, Pakistan and Tanzania under the WWF program.

also in urban areas. For example, expansion of farms, increased pressure in fishing, mining and logging that takes place in rural reflects demands exerted in urban areas too.

## **5.0 OCCUPATION**

Coastal inhabitants of the EAME region are engaged in several activities. Notable among them include the following:

### **5.1 FISHING**

Fisheries contribute significantly to the economy of the EAME region. In all the countries within the EAME, both industrial and artisanal fishing is undertaken at a large scale.

#### **5.1.1 Kenya's Marine Fishing**

Marine fisheries in Kenya are based on a small number of species caught by artisanal fishermen operating between the shoreline and the reef. Only about 7.4% of all fish catches comes from the marine waters in Kenya (UNEP, 1998). Marine fish catches have remained small, but Mombasa alone accounted for 46.6% of the total catch between 1988 and 1992 (UNEP, 1998). Kwale District had the highest number of fishing canoes (558) followed by Lamu (508), Mombasa (401) and Malindi (361) in 1984. This implies that Kwale had the greatest artisanal fishing activities in the Kenyan coast (UNEP, 1998).

There are fewer coastal fishermen as opposed to fresh water fishermen, who are many. About 90% of those engaged in fisheries are artisanal fishermen and the rest are industrial fisherman, mainly working on trawlers. Artisanal marine fishermen mostly operate from small non-motorized boats such as outriggers, canoes, "*ngalawas*", dhows and planked pirogues. Only 10% of fishing craft are motorized. The most common fishing gear include artisanal gill nets (often small, less than 2.5 inches mesh size), the seines – common throughout Kenya; traps and hand lines, bottom lines and lobster pots. Inappropriate fishing nets pose the greatest threats to sea turtles and marine mammals. However, demand for specific type of fish or marine mammals in response to traditions or cultural beliefs further exacerbates the destruction of marine resources. For example, traditional uses of sea turtles, dugongs, whales and dolphins by the coastal peoples of Kenya (Table 4 below) increases the threat to these resources as demand for them increases to meet traditional uses.

Trawling is associated with commercial fishing often in deep-sea. For example, trawl fishery has been operating in Ungwana Bay since the 1980 with catches of around 237 tons of prawns per year (UNEP, 1998). Most of deep-sea vessels concentrate in areas where there are a lot of tourists. As such deep-sea fishing has become an important tourist attraction. Various International big game fishing competitions are held every year at Bahari Club, Mnarani Club, Hemingways, Shimoni Reef Fishing Lodge and Pemba Channel. Fishing in the Pemba Channel has created diplomatic problems between Kenya and Tanzania (Zanzibar). The simmering problem is about fishing rights in the Pemba Channel. Pemba claims that Kenya fishermen are illegally fishing in Pemba (Tanzania) waters, but Kenya authorities are also claiming that Pemba fishermen are fishing in Kenya's waters. This is one of the transboundary issues that will require immediate attention. The issue is now within the East African Co-operation for discussions.

About 250, 000 or 1% of the Kenya's population is dependent on fishing. Fish farming is expanding as an important activity. It employs about 2,000 farmers. Of this, the marine and coastal areas comprise of about 5%. Marine farming in Kenya is still in its infancy. Beside some traditional brackish water ponds and artisanal shrimp and oyster cultivation, coastal aquaculture has been restricted to capital intensive shrimp culture on an experimental scale. This development is taking place at the expense of the environment, because over 60 ha. of mangrove have been cleared for shrimp farming at Ngomeni.

Physical, climatic and economic factors constrain coastal and marine fishery of Kenya. These include the small area that is suitable for marine fishing – only about 8,500 km<sup>2</sup>. In addition strong Southeast monsoon winds accelerate the migration of fish during this time (March – October). Most fishermen use small fishing craft, which can not cope with the strong winds. Consequently, fishing is confined locally to shallow waters and this exacerbates over-fishing.

**Table 4 Traditional uses of sea turtles, dugongs, whales and dolphins by the coastal peoples of Kenya**

Animal	Animal product	Uses
	Meat, soap Eggs Skin of the flippers Tortoiseshell (valuable scuates)	- Food - Food - Ornamental leather - Ornamental
Dugongs	Meat Oil/fat	Food and medicinal (flu and tetanus) Fuel for lamps, medicinal for dandruff, arthritis, stomach ailments, dental abscesses, eases labor pains
	Bones	Worn as charms to care away evil spirits. Smoke Releasing after birth Cures flu Powdered Mumbs Toothache Hiccups Ease labor pains Tonsillitis Skin infections Bilharzia Charcoal production
	Tusks	Ornamental and jewelry Knife handles Nose Worn as charm around the necks of children to scare away devils or evil spirits Food
	Intestines	Food
Cetaceans (whales and dolphins)	Meat Oil Bones	- Very limited scale Most predominant use production of gelatin
	Spermaceti and Ambergris	aphrodisiac

Source: Kendall 1986; Olendo 1993 (Unpubl). A survey of nesting by the green turtle, *Caretta caretta*, in South Brevar, 4& 479 in Kenya Wildlife Service (KWA) (undated): marine Aerial Survey. Marine Mammals, Sea Turtles, Sharks and Rays. KWS Technical Series Report No. 1

### 5.1.2 Fishing in Tanzania

Tanzania's marine fishery is not much different from that in Kenya. Fishing is an important economic activity practiced by communities living along the coast. Artisanal fishing contributes more than 96% of the nation's total marine fish landings (TCMP, 1999). Marine fishing provides food, employment and income to a great number of people. There are several fishing villages along the coast. Prawn fishing is common near the estuaries and is practiced by both big commercial fishing vessels and artisanal fishermen. Most of the prawns are obtained near or around the Rufiji delta.

In recent years, overall fish catches have been declining. Table 4 shows that marine fish production rose from 30,084<sup>26</sup> tons in 1985 to 52,380 tons in 1991. Production began to decline to about 37,285 tons in 1995. These changes indicate perhaps that over-fishing is becoming a serious problem. Coast region has the highest proportion of fish production among the entire coastal regions of Tanzania (table 5).

**Table 5 Total marine fish production (in tons) for Tanzania mainland: 1985 – 1995**

Regions	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	Total
Tanga	4,547.5	4,402.1	4,864.7	7,617.9	5,440.7	5,544.4	4,187.5	4,187.5	4,855.6	5,373.5	5,373.5	56,394.9
Coast	10739.6	10745.4	11402.3	11950.2	10997.9	16499.9	12631.6	10659.2	8,609.0	9,147.9	9,147.9	122530.9
DSM	6,833.9	10656.4	6,352.1	14001.8	15256.0	14557.4	15451.6	16502.5	14867.3	16615.9	16615.9	147710.8
Lindi	11589.4	14050.9	7,325.2	5,965.2	8,042.4	9,886.0	12071.1	6,378.6	3,270.7	3,605.9	3,605.9	85791.3
Mtwara	7,963.2	5,326.9	7,325.2	7,325.2	7,407.8	8,039.0	8,039.0	4,455.2	2,623.8	2,542.7	2,542.7	63590.7
Total	30084.2	45181.7	37269.5	46860.3	47144.8	54526.7	52380.8	42183.0	34226.4	37285.9	37285.9	476018.6
Commercial	900.1	1,483.2	1,798.9	2,190.0	2,437.6	2,015.2	1,510.2	1,119.1	1,222.7	1,786.8	1,786.8	18250.6

Source: Ministry of Lands, Natural Resources and Tourism. Fisheries Division, 1985 – 1995 Annual Reports Statistics.

Commercial fishing accounts for a small proportion of the total fish production. Most of the large foreign commercial fishing fleets encroach into shallow waters to fish illegally in those areas. This has created tension between artisanal fishermen and commercial fishermen over fishing territories. Also, local small-scale fishermen complain about the destruction of artisanal fishing gear and the damage to the sea floor by industrial trawlers (TCMP, 1999). Although relationship between small-scale fishermen and large-scale commercial fishing fleets has not reached confrontational level, these have been very much strained. Small-scale fishermen blame large-scale commercial fishing vessels for the destruction of their fishing gear, encroachment into their fishing territory and being responsible for over-fishing. Lack of effective enforcement of regulation governing commercial fishing fleets contributes to poor relationship between commercial fishing firms and small-scale fishermen.

Illegal fishing in the exclusive economic zone (EEZ) is reported to be on the increase. According to the Minister of Natural Resources and Tourism, an estimated 70 foreign vessels are illegally fishing in the EEZ. What is even more threatening is that “illegal fishing in the EEZ could continue indefinitely because the Deep-Sea Fishing Act of 1998 (DSFA) was still dormant. The DSFA would have helped check illegal fishing but due to lack of seriousness and financial resources, the DSFA has not been formed.<sup>27</sup> Lack of consensus between Zanzibar and Mainland Tanzania on who will be responsible for the EEZ is also regarded as part of the problem. Illegal international fishing vessels take advantage of the absence of a law and institutional framework to manage the EEZ, to reap the marine resources of Tanzania with impunity.

Whilst the potential for fishing exists along the entire Tanzania’s coast, fishing has not been well developed in some of the regions. Fishing is still done by artisanal fishermen using rudimentary-fishing gears. There is no commercial fishing that takes place in Lindi or Mtwara.

The most common fishing gear includes gill nets, hand lines, shark nets, traps, seine nets, fixed traps, and cast nets. Most of the artisanal fishermen use traditional fishing vessels such as dug out canoes and dhows. Few use motorized boats. Few fishermen use destructive capture techniques such as dynamite

<sup>26</sup> Figures on table 4 must be used with caution. It is interesting to note that there are too many similarities in the amount of production between regions and within the same region but in different years. This suggests that probably some of the figures were repeated due to lack of actual data.

<sup>27</sup> The East African, March 13- 19, 2000.

fishing, blasting, and poison fishing. This has been a persistent problem throughout the Tanzania's entire coastal area. Campaigns to eliminate these practices are being conducted and they involve, among others, awareness raising among communities of the negative short and long-term consequences of these practices. Village communities are taking responsibility for monitoring dynamite fishing, use of poison, beach seining, and some inappropriate traditional traps. Further, the establishment of Mafia Island Marine Park (MIMP) and improving enforcement of regulation has reduced dynamite fishing in some of these areas.

Fishing constitutes the most important source of animal protein in Zanzibar. The potential fishing zones in Zanzibar lie within 50 fathoms contour around the two islands, and covers an estimated total area of 4,450km<sup>2</sup>. Commercial fishing is limited to few private individuals, state firms – Zanzibar Fishing Co-operation (ZAFICO) and co-operative societies. Some of these use motor powered boats. Fish production in Zanzibar rose from 9884.3 tons in 1993 to about 11,214 tons in 1996, but then declined to 10,062 tons in 1997 (ZAFICO, 1998).

Fish farming, particularly for shrimp farming is becoming an important economic activity in the country. There are several prawn farms along the coast of Tanzania, but the most controversial one was the proposed Rufiji Prawn Fishing project, which was to occupy about 10,000 ha of land in the Rufiji delta. The multi-million dollar project has generated considerable interest and opposition from within and outside Tanzania, particularly because of the location of the project and the resulting damage that it would have caused to the delicate local ecosystem. Although the Government has allowed the project to continue, there is an on-going case in the High Court of Tanzania where some people from Rufiji are challenging the Government's decision to allow the project to proceed. On his part, the developer has recently withdrawn his proposal to establish a prawn farm project in the Rufiji. It is not known whether the case that is currently in the High Court of Tanzania will continue or not.

Small-scale mariculture is emerging as an important occupation in the coastal areas of Tanzania and Zanzibar. In some areas, village based seaweed farming is making significant contribution to individual and village economies. There are also plans to expand seaweed farming to the coast of Tanzania mainland, and also to introduce different species, which have high market value. Seaweed farming is taking place at a low level in Bagamoyo, on the mainland.

### **5.1.3 Fishing in Somalia**

In Somalia, fishing was a sector with excellent economic potential given the Somali's over 3,000 kilometers of coastline. During the 1974 drought, over 15,000 nomads were settled in fishing co-operatives. FAO estimated that fish caught and processed rose from 16,900 tons in 1986 to 18,200 tons in 1988. However, its contribution to GDP remained marginal – only about 1% in 1990. Lack of recent information on the status of fishing makes it difficult to arrive at any meaningful observations or to make conclusions. However, in view of the breakdown of law and order in Somalia, an attitude of “free-for-all” is predominant, as there is no body in effective control. This situation may lead to over-exploitation and destructive fishing practices of fishery resources in deep-sea.

### **5.1.4 Fishing in Mozambique**

Fishing contributes significantly to the economy of Mozambique coastal communities. Industrial, semi-industrial and artisanal fisheries constitute the fishing industry of Mozambique. Industrial and semi-industrial fisheries are exclusively limited to commercial shrimp catches off the Sofala bank and Quelinane province, which has more than 50% of entire industrial and semi-industrial fleet. Whilst prawn is the preferred species, fish by-catches are also important and they are sold to local communities.

South African registered companies are operating in Mozambique coast. There are at present about 180 vessels operating in the area. About 3,500 tons of prawns are exported via Quelimane port whilst finfish only comprise about 300 tons. Industrial and semi-industrial fisheries have had difficulties in the past. One of the critical issues was what to do with by-catches. Fish by-catch was destroyed, thrown away or simply discarded. In the 1960s local people bartered fresh fruits and vegetables for by-catches. In the early 1980s,

Mozambique was faced with food shortage. The government initiated an experiment with commercial scale by-catch collection at sea. By-catch was collected by the state institutions and sold to the local communities. Later private sector was involved and the state has now withdrawn from this business (Kellener and Mussa, 1995). Loss from by-catch was stopped through this program. However, others argue that there is no by-catch loss. Everything caught is used, although, no body knows how many fishing vessels are out there. Also, in the absence of proper management system, there may be cases that some by-catch are thrown away without the knowledge of the authorities. More information is needed in order to establish the status of by-catch.

Artisanal fisheries contribute significantly to total catches. It is estimated that artisanal fisheries contributed about 40,000 tons of fish in 1984 (Hermele, 1984)). The greatest concentrations of fishermen occur along the Pebane, Gazelas, Sopinho and Chinde coast. Most of the registered fish boats are traditional “moma” canoes.

Marine aquaculture is also gaining support. A large prawn aquaculture project was recently approved for Inhassunge District on the mouth of dos Bons Sinais. The project occupies about 450 ha of land. The environmental and social implications of a project of this magnitude is obvious. The project site is within mangrove forests, which will be affected by the establishment of the project.

*In summary*, fisheries contribute significantly to the incomes of the coastal inhabitants in the EAME region and to all the countries in question. It also contributes in providing important protein to the majority of the people with access to fish. The biggest share of fish catches comes from artisanal fishermen in all the countries. Most of these use traditional and sometimes destructive fishing gears such as unauthorized sizes off fishnets, traps, dynamite and poison. Nets pose the greatest threats to sea turtles and marine mammals. Animals are caught intentionally or accidentally in the set nets, especially gill nets and shark nets, which are common in Kenya and Tanzania. Poor fishing equipment limits the efforts of the artisanal fishermen to areas close to the shoreline. This leads to over-fishing in these areas and compounds social conflicts between small-scale fishermen and large-scale commercial fishing companies. Commercial fisheries are mainly foreign dominated and concentrate most in deep-sea fishing for export. Commercial fishing encroach in the areas that are frequented by artisanal fishermen. Complaints that commercial fishing vessels destroy fishing gear set by artisanal fishermen are common in the coastal towns of EAME.

Illegal fishing is also rampant, and it is estimated that several hundreds of kilograms of fish are exported. Also, local communities especially in Tanzania’s coast are complaining about wastage of by-catch, which is often thrown away. Offshore fishing is mainly practices in lakes and rivers and this is also a major contributor to domestic protein and in some case, incomes too.

## **5.2 TOURISM**

The entire EAME coastal region is endowed with potentially rich sites for tourism development including the attractive beaches, scenic sites and underwater marine environment for deep sea diving.

### **5.2.1 Kenya’s Coastal Tourism**

In Kenya, tourism was the main economic activity prior to the slump that affected it in recent years. However, it is still important in the coast regions. Coastal tourism accounts for over 60% of the national tourism industry. Tourism and its related sub-sectors generate 9% of the total employment the country (CDA, 1996). Malindi for example, is heavily dependent on tourism with about 90% of the population is estimated to work directly or indirectly in the tourism industry (ibid.).

Coastal tourism attractions in Kenya include marine national parks and the marine reserves of Kisite-Mpunguti; Diani; Mombasa; Watamu; Malindi and Kiunga. Others are historical sites such as Fort Jesus in Mombasa with its beaches and historical towns. All facilities that support the development of tourism are located next or adjacent to the beach environment. This is most likely to affect the marine environment. In addition, haphazard development of services and infrastructure along the coast has led to the concentration of hotels and tourist facilities in few areas; notably areas close to Mombasa. Lamu district in the extreme north has also become a fast growing tourist destination in its own right. Security problems in this area, which lies close to Somalia, may deter the expansion of tourism and hence increase

the pressure to lesser security risk areas. Rapid expansion of tourism along the coast of Kenya could lead to pressure on existing infrastructure and services. It could also exacerbate beach erosion from poorly located hotels, increase pollution, reduce public access to the beaches and increase degradation of habitats, especially damage to coral reefs through trampling.

### **5.2.2 Tourism in Tanzania**

Tourism together with mining has replaced agriculture as government's top priority sectors for economic development in Tanzania. Agriculture remains the largest sector that employs largest proportion of the population. However, in terms, support and attracting direct foreign investment, this sector is lags behind tourism and mining. Since 1986, Tanzania has been rapidly promoting the development of tourism. Trends in tourist arrivals and earnings are all growing. For example, tourist arrivals increased from 84,021 in 1980 to 482,331 in 1998. Similarly, earning increased from US\$ 18 million in 1980 to 570 million in 1998 (ERB/IRA Study, 1999). Tourism contribution to the national economy rose from 0.4% in 1980 to about 7.4% of GDP in 1998 (ERB/IRA Study, 1999). This increase goes simultaneously with an increase in employment opportunities in direct tourism activities and associated activities (e.g. services related to tourism). However, enough data on employment is lacking. The ERB/IRA (ibid.) study indicates that employment opportunities are not significantly extended to local communities as much as the communities would wish. Instead foreigners get priority in allocation of skilled and semi-skilled jobs in the tourism sector.

Along with other areas, the coastline of Tanzania is increasingly becoming a tourist destination. The coastline is endowed with beaches, historical sites, the sea and the rich culture of the people. From Mtwara to Tanga, the whole coast is a high potential tourist attraction. Mafia Island Marine Park (MIMP) too is emerging as an excellent tourist attraction. Deep-sea diving and other water sports attract big numbers of tourist.

Bagamoyo in Coast region is also becoming an important tourist destination because of its history (it was the entry point of the anti-slave trade operations and missionaries and the exit point for slaves who were shipped to the Arab countries and Zanzibar). In addition, the Saadani Game Reserve borders with the sea to combine terrestrial and marine tourism in one area. In the south, the Rufiji delta is home to the Selous Game Reserve, one of the largest game reserves in the world.

The entire coastline from Tanga to Mtwara is set aside for tourism development as part of government policy to promote tourism. Policies have been changed to attractive incentives for developers to invest in this sector. The ERB/IRA (1999) Study has identified several issues related to tourism development. These include pressure on existing infrastructure and services (e.g. health, telecommunications and transport, water, and electricity are not well developed to meet increasing demand). Other issues include beach erosion (due to clearance of mangrove forests in order to build hotels), pollution from hotels, negative impact on cultural and social aspects, and destruction of ecosystems and habitats. Unlike, tourism in wildlife areas, coastal tourism lacks proper guidelines and arrangements on how benefits from the development the sector is to be shared among the communities and the local institutions.

Through Community Based Conservation programs, benefits accrued from tourism in wildlife areas are shared and extended to local communities through programs such as health, schools, water and transport improvement. Tourism in coastal areas is not organized along similar lines. Consequently, income and benefit sharing tend to be skewed in favor of investors (foreign) and the Central Government. There are however, some positive changes, including inspiring among people new thinking and attitudes towards business enterprises (entrepreneurship), employment, increased income and expanded economic opportunities.

Tourism in Zanzibar has become a very important activity in the Isles economy. The danger is that Zanzibar has become over-dependent over tourism, largely because it has not established proper control of the way the development of this sector is to go. Zanzibar offers a variety of coastal attractions, historical sites and the exotic Zanzibar culture. Tourism contributed about 5.2% to GDP in 1998 (ERB/IRA, 1999).

In 1996, the sector contributed about 6.3% to GDP. Tourist arrivals has increased from only 17,861 arrivals in 1980 to 86,495 in 1997 (ERB/IRA, 1999). Earnings have been increasing with tourist arrivals.

For example, in 1992 earnings were US\$ 12.4 million and increased to 22.6million in 1997(ibid.). Most of the tourists for Zanzibar are low budget back-packers and pre-paid tourists. Earnings could still increase if the focus is successfully shifted to how package tourism could bring more money into the country as well as creating conducive environment so that tourist can spend more money in Zanzibar.

The ERB/IRA Study (ibid.) has identified critical issues regarding tourism development in Zanzibar. These include increased sexual tourism, negative impact on the culture of the local people, diminishing access to beaches by locals, pollution, deforestation and damage to seaweed farms by tourists. Others, though not directly related to tourism development include, increased drug trafficking, which is rampant in areas that tourist visit – especially in and around Zanzibar Stone Town.

Land use conflicts around tourist attraction areas of the coast are also increasing (ERB/IRA, 1999). The Zanzibar government is vigorously promoting tourism development, sometimes at the expense of local interests, but there is no policy to guide this process. For example, the Zanzibar government allowed the development of a 57 square kilometer seaside tourism development at Nungwi, the northern tip of Unguja Island. This was to be the biggest tourism development on the Island and in Africa in general. It was to cost US\$ 4 .25 billion in which, over four star hotels were to be built, an 18 hole golf course, new airport, university facilities, off-shore banking, and a berth. Other includes a hospital, a desalination plant and schools. However, the project would have displaced over 20,000 people (ERB/IRA Study, 1999). Although there seems to be no further information about the status of this development, it is apparent that a development of such magnitude is likely to have a range of negative impacts on the marine environment.

### **5.2.3 Tourism in Mozambique**

Like in the other countries in the EAME region, tourism is also gaining significance as an economic activity in Mozambique. Tourism is also expanding in coastal areas of Mozambique. The coastal area of Southern Mozambique has long been recognized as an area of highest tourism potential. Since the signing of the Peace Accord in 1992, coastal areas have experienced an increase in tourism activities (casual visitors and concession seekers).

The majorities of casual tourists are campers bringing in their own equipment by road usually in 4x4 vehicles. This increases tramping on the fragile beach soils and exacerbates soil erosion. Driving along the beach also threatens loggerhead and leatherback turtles currently nesting on the shoreline. The illegal and uncontrolled activities of the tourists are causing increasing concern along much of the southern Mozambican coast.

Tourism potential varies between provinces in Mozambique. For example, the Bazaruto National Park is the first and the only marine national park in Mozambique. Islanders in Bazaruto archipelago benefit very little from tourism. Over 90% of the hired staff come from the mainland. This is also a sensitive issue in Kenya. There are no plans yet to extend benefits to local communities.

Like in other countries in EAME region, tourism development in Mozambique is expanding fast. There are several proposals for tourism development projects underway. Most of the investors are foreigners. Most of the developments involve construction of multiple service centers including hotels, petrol stations, restaurants, bars and casinos. If this tourism development plan proceeds it will result in large number of operators competing side by side in a very limited areas. It will also result in irreversible transformation of the social and natural environment (Government of Mozambique, 1996).

*In summary*, tourism is developing as an important economic activity in all the EAME countries. Government policies in the EAME countries promote tourism as an alternative economic activity and a source of revenue. Based on these efforts, it is likely that tourism will continue to grow in future, assuming that no major political or natural or social problems occurs in these countries. The coastline in the EAME countries offers a variety of tourist attractions including historical and cultural sites, the beaches and the sea. Statistics show that in most of the EAME countries, tourist arrivals are increasing simultaneously with revenues. However, there are no sufficient measures in place to address negative impacts of intensified promotion of tourism. Tourism development has increased pressure on natural resources and existing infrastructure and services; beach erosion from poorly located hotels; pollution; cultural issues, reduction of public access to the beaches and degradation of habitats.

Most of the local people, especially in the coast resent vigorous tourism development as promoted by the governments in the region. Some of the resentment stems from the appropriation of land for tourism, cultural changes and lack of direct benefits from tourism development, especially employment. In Tanzania, Kenya and Zanzibar, the predominant Muslim communities in the coast do not regard employment in hotels very highly. In addition, availability of services such as water and energy for tourist hotels and local communities is problematic, and poses threats to the development of the sector itself. Some tourist hotel owners in Zanzibar are recycling water from the sea to be used in the hotels. This is a very expensive undertaking considering that some of these hotels have to use diesel generators to get power for the recycling process. Also people resent massive tourism development as it conflicts with religion norms and teachings in Zanzibar (ERB/IRA Study, 1999). In Mombasa, people resented tourism development and associated it with all sorts of social evils including prostitution and school children dropping out of schools (Migot-Adholla et al, 1982).

### **5.3 MINING**

The EAME coastline is rich in minerals that contribute significantly to the economies of the countries concerned. Notable among them includes salt, limestone, sand, gypsum, iron ore, and gas and oil resources. Oil and gas resources have been located in some of the countries in the EAME, but these resources have not been fully exploited.

#### **5.3.1 Kenya's Coastal Mining**

Salt is exploited from extensive salt works that have been established at the Gongoni – Fundi Island area and Kurawa. The area dedicated to salt production is over 5,000 ha. That yields an average of 170,000 tons of salt annually. There are five salt production companies. Salt production entails clearing of mangrove areas to create space for the establishment of salt pans. Kenya coast is also rich in limestone and cement. These resources are abundant and extend from central Tanzania to Malindi in Kenya. Bamburi cement factory is one of largest industrial works in Mombasa. Bamburi cement plant is also implementing rehabilitation programs, which have turned most of the degraded lands into parks and recreational sites in Mombasa. Another cement factory is proposed for Shimoni in Mombasa. The Murima hill at Kwale district has an association of pyrochlore, apatite, galena, iron ore and manganese. Of these, pyrochlore appears to have the highest economic potential. Also, there are plans to mine titanium from Kwale District by a Canadian firm.

Barytes is exploited at the Vitengani deposits in Kilifi District. Galena is processed as a by-product of the barytes production. At Kinangoni, galena is the main mineral; extracted with barytes and silver as by-products. Gypsum is exploited from Roka in Kilifi District while other deposits of economic value have been discovered in Tana River District. Iron ore is exploited at Jaribuni in Kilifi District (UNEP, 1998).

Sand for building is mined in many locations along the coastal zone. Most important sites for sand mining include Tiwi in Kwale District, Mazeras in Malindi area. Silica sands for glass manufacturing are obtained from Arabuko-Sokoke and Msambweni. Clay is mined from Port Reitz area in Mombasa (ibid.). The possibility of hydrocarbon reserves exists in Kenya's coast, however, more detailed geophysical surveys, exploration and drilling is required (ibid.).

Information on the contribution of coastal mining to the local and national economy is lacking; however, some of the issues include unsustainable ways of mining (especially in areas dominated by artisanal miners). Mining pits are left without rehabilitation. Pollution arising from oil spillage in mining works; deforestation and accelerated siltation are some of the critical issues caused by mining.

#### **5.3.2 Tanzania's Coastal Mining**

Both large scale and small scale mining is undertaken in Tanzania. Beside cement works in Dar es Salaam and Tanga, most of the remaining mining works as small in scale. Minerals such as turquoise, tourmaline and gemstones are found in coastal Tanzania. In addition, Tanzania has natural gas at Songo Songo Island off the Indian Ocean near Kilwa. Gas from Songo Songo will be transported to Dar es Salaam where it will be converted into electricity. There is potential for oil exploitation but further studies are needed to verify the reserves. There are also gas reserves at Mnazi Bay but these deposits have yet to be developed and exploited.

Salt works are found in Bagamoyo, Mafia Districts and a little in the Rufiji delta. Calcite is also mined in Bagamoyo and the district is a major supplier. Gemstones are found in Bagamoyo District in Ukange, Mbewe and Miono. Kaolin is exploited in the Pugu hills in Kisarawe District.

Sand mining, limestone and coral extraction take place in Dar es Salaam. Sand and coral mining are important economic activities for most of the unemployed youths and has already caused environmental degradation in and around the city of Dar es Salaam (Jambiya *et al.* 1997). Sand is extracted around streams and river mouths for an expanding construction industry in Dar es Salaam. Corals are also mined and used in construction in Mafia. Most of the quarrying sites in Kunduchi, north east of Dar es Salaam are not rehabilitated and pose serious environmental and health risks. In a study done by Jambiya and others (1997), it was observed that the extraction of coral for lime production was seen as a measure to alleviate poverty by the urban youths. One politician visited the youths that were processing lime and commended them for the good work they were doing in alleviating their poverty (*ibid.*) despite the fact that the process involved dislodging corals from the sea, cutting down trees to obtain energy to produce lime. Here, environmental effects of lime production were secondary to the honorable politician.

In southern Tanzania, Mtwara, gemstone and coral stone are mined. Coral stone is extracted along the Indian Ocean, thus threatening the marine environment. In Lindi, the possibility of exploiting gold in Nachingwea is being considered. Should this occur, it would boost the economy of Lindi but also increase pollution in the sea. Other minerals in Lindi include salt recovery from the sea, which is associated with destruction of mangrove areas.

### **5.3.3 Mozambique's Coastal Mining**

The coastline of Mozambique contains a range of minerals including tantalum/columbalite, beryllium, bismuth, quartz and mica. The heavy coastal sands north and south of Quelimane contains titanium. A South African company Billiton has been exploring heavy mineral deposits along the coastline of Calamine, Pebane district for many years. The company intends to mine the coastal sands and to process the heavy minerals in the sand. Construction is expected to start in 2000 and production is set to begin in 2003 to produce 100,000 tons of heavy mineral concentrate per annum. The area earmarked for mining is currently used for subsistence agriculture and fishing. Fishing represents a major economic potential in the area, and constitutes the main economic activity for local people. If developed, the project will lead to clearing of about 5000 ha. (or 30%) of *brachystegia* (miombo) forest. It will also lead to loss of about 2,500 ha (17%) of coastal evergreen forest. This forest consists of endemic tree species. Loss of mangrove and loss of access to land and natural resources will also occur (MCEA, undated)

*In summary*, coastal mining is making important contribution to the economy of the countries in the EAME region, however, in absence of data, it is difficult to determine how much exactly coastal mining is contributing to local and national economies. Most of the mining is at small scale. Large-scale mining include, limestone, salt works and gypsum. Other minerals include sand, and coral. Mining provides employment to local communities and stimulates growth in other sectors (agriculture, fishing, and transport), but also it generates environmental problems such pollution, land degradation, dust and noise pollution. Mining also attracts large numbers of people to the sites and increase pressure on natural resources.

## **5.4 AGRICULTURE**

The EAME coast is endowed with good land and water suitable for agriculture development. Smallholders and subsistence farmers, who use simple tools and produce mainly for subsistence purposes dominate most of the coastal agriculture.

### **5.4.1 Agriculture in the coast of Kenya**

The Kenyan coast supports important agricultural activities including the production of food for local consumption and export. Food crops include cassava, sweet potatoes, maize, coconut and cowpeas. Paddy is grown in irrigated areas, marshes and flood plains. Fruits are grown in all the areas in the coast. Plans are also underway to expand cotton cultivation, which is becoming important in Kilifi and Lamu District. Cotton irrigation takes place around Tana River. Communities have settled along the length of the Tana River, and others have received concessions for irrigation farming on the Bura and Hola

irrigation schemes along the Tana River. The existence of irrigation potential along the River Tana has attracted more people from the up-country. Irrigation in an around the River Tana and other smaller streams probably accounts for the deposition of sand and nutrients into the marine environment in the coast. The extent this is done and its impact, is however, not well established.

Large-scale farming is limited. Farms on the coast average 6-8 hectares with low intensity farming dominated by maize. Nearly 50% of arable land is under tree crops – mainly cashew nuts and coconut. Population pressure has driven cultivated areas into marginal lands with low rainfall or mountain slopes or river margins the streams and inter-dune areas. Subsistence farmers practice shifting cultivation. Fire is often used for land clearing and burning is a critical environmental problem along the coast of Kenya.

Livestock is not a major activity along the coast of Kenya, however, the limited livestock keeping accounts for the destruction that takes place near the fragile dune vegetation as a result of tramping by animal hoofs.

#### **5.4.2 Agriculture in the coast of Tanzania**

Similarly, small-scale subsistence producers dominate agriculture in the coast of Tanzania. Main crops include cassava, maize, cowpeas, sorghum, paddy, and cashew nut. Other crops are coconut, sweet potatoes, fruit and sisal. Sisal is grown in large estates. World demand for sisal and sisal products declined in the late 1970s to 1990s when synthetic fibers were discovered. Most of the sisal estates slumbered. However, through a World Bank funding arrangement, Tanzania is leasing or selling the farms to private sector to develop them. Some of the farms have begun to show improvements. This is also in line with the raising trend in demand for natural products, including sisal by products. Attempts to expand cotton cultivation failed due to lack of markets. Most of the farms are located in remote areas, which have poor infrastructure to support agricultural production. Farming in the coastal regions, is very much affected by vermin and erratic weather.

There are several large and small-scale irrigation schemes in Tanzania. For example along the Usangu plains in Mbeya (Kapunga and Mbarali) for paddy. There are over 120 irrigation schemes along the Rufiji River (for paddy, vegetable and cotton farming). Other irrigation schemes include those along the Pangani River for paddy and vegetables (over 540 small holder, 69 private and 6 parastatal projects); Ruvu and Wami Rivers (about 33 schemes in these two areas) for paddy and cotton and, along the Ruvuma River in the south of the country. There are also irrigation schemes along the Kilombero River (for sugar), Ruaha River (for maize, paddy, and vegetables, and onions and tomatoes from some of the tributaries that drain into Ruaha and Lukosi Rivers, which feeds into the Kilombero River that drains into the Rufiji)

Overall, there are about 188,500 ha. suitable for irrigation in the Wami, Ruvu and Rufiji basins. Most of the paddy cultivation is in flood plains, marshes and irrigated areas. Paddy production in the Rufiji delta increases the deforestation of mangrove forests through clearing for expansion of the farms. Irrigation is taking place in major rivers, tributaries and streams that flow into the Indian Ocean. Overall production trends for major food crops such as paddy and maize in all the coast regions of Tanzania has been fluctuating between 1986/87 and 1990/91.

There is very little use of agro-chemical or other fertilizers in the coastal regions of Tanzania. Thus increase in production can be attributed to expansion of farms or better harvesting techniques (extensification, rather than intensification). Farm expansion accounts for large proportion of deforestation of coastal forests. The use of agro-chemicals in irrigation farms in the up-country probably accounts for pollution and that is entering the marine environment. Irrigation activities along the major river systems also account for the sedimentation that is accumulating along the seashore in the coast. It is estimated that Tanzania hoards about 1,000 tons of harmful toxins. Among them is DDT. Most of these harmful chemicals are lying dangerously in parts of the country (including the Coast region) for the past 10 years. The National Environmental Management Council (NEMC) conducted a search of these obsolete chemicals and called for their disposal. Very little has been done to dispose of them.

DDT has been prohibited internationally but it is still stored in broken tins in different sites. At least 17 storage facilities where leakage was observed, are close to water bodies. DDT has a long residual life and is known to jeopardize both marine and human life.

### **5.4.3 Mozambique's Coastal Agriculture**

Two types of agriculture systems are common in Mozambique. These are small-scale farming and commercial farming. In some provinces some of the farmers rely on organic fertilizers. In other provinces, farmers still practice-shifting cultivation. There are scattered large-scale farms for sugar cane, paddy, fruits, and coconut.

Small-scale peasant farming on land derived from slash and burn agriculture is common throughout coastal Mozambique. Most of the small-scale farmers are concentrating on food production. The main crops are cassava, cashew nuts, coconut, groundnuts, beans, sweet potatoes, millet, maize, paddy and fruits. However, due to the inherent infertility of the soil, agriculture is marginal. Shifting cultivation is common, with fallow period of about three to four years. Although woody biomass increases over time, soil status fails to increase even after 15 years of abandonment (Campbell et al 1991 in David et al, 1996). Small stocks of goats and cattle are kept and graze freely in semi-open woodlands, however most of the cattle were lost during the wars. This affected farming especially for farmers who were using draft animal power for primary tillage.

Inland agriculture, especially irrigation in or around the riverbanks contributes to the changes that take place along the marine environment. Large and small scale irrigation schemes along the Zambezi, Limpopo and other rivers for paddy, sugar and vegetables is likely sending into the marine environment, nutrients and sand, which alters the ecological status of the marine environment.

*In summary*, small-scale farmers undertake most of the farming along the EAME coastal regions. Most of the farmers resort to expansion of farmland in order to increase production. Infrastructure that supports agricultural development – e.g. markets, transport, information, storage, farm input supply and credits in some areas is lacking or inadequate. Underlying this is that, labor availability for agricultural production is declining largely because most of the youth have migrated to urban areas.

Poor Agricultural practice contributes to pollution, deforestation and soil erosion. Small-scale farmers that produce for subsistence undertake most of agriculture. Irrigation schemes taking place in the terrestrial area impact upon the marine environment by sending in nutrients (from fertilizers used), agro-chemicals (pesticides) and sand. There are large and small-scale irrigation schemes in all the countries in the EAME region. All the river systems in which irrigation takes place flow into the Indian Ocean.

### **5.5 TIMBER AND LOGGING**

Throughout the EAME region, most of the timber and logging activities are done in the few remaining mangrove and coastal forests. Mangrove cutting is done as a means of poverty alleviation and income generation. Many poles are transported to Zanzibar and to the countries of the Arabian Peninsula. In Tanzania, most of the mangrove poles are harvested in the Rufiji delta. Commercial harvesting of mangrove poles contributes to the largest proportion of illegal harvesting. Beside mangrove poles, there is some timber emanating from the traditional East Arc Mountains forest areas.

### **5.6 INDUSTRY AND MANUFACTURING**

Most of the industrial and manufacturing works are concentrated in large cities and towns in the EAME coastal areas. For example, Maputo, Sofala, Beira, in Mozambique, Dar es Salaam, Tanga, Zanzibar in Tanzania, and Mombasa, Malindi, Lamu in Kenya. Oil refineries are located in the cities of Maputo, Dar es Salaam, and Mombasa. Other industries include textiles, cement, beverages, fruits, fertilizer (now closed in Tanzania) and chemicals.

The siting of the industries and manufacturing activities in the towns near the coast has direct implications to the level of pollution in these areas. These areas suffer from constant effects of pollution on natural resources due to the combined effects of industrial development and increased population pressure. Government policies further aggravate the problems by designating some of the areas as free economic processing zones. By designating these areas, Government policies attract more investments to these areas and hence increase pressure on local ecosystems and natural resources.

**Box 1 The Proposed Maputo Iron and Steel Plant, in Maputo Bay.**

The Maputo iron and Steel Plant is under the Industrial Development Corporation (IDC) of South Africa (shareholders of the Mozal Aluminium). The project will exploit large mine dumps containing magnetite found in Phalaborwa, Mpumalanga province in South Africa. The magnetite will be mixed into slurry from recycled water in Phalaborwa and pumped via an underground pipeline to Maputo. In Maputo, the water will be separated from magnetite and the magnetite will be transformed into iron and steel. The magnetite also contains small quantities of copper, phosphates, sulphur, titanium, cobalt, nickel, chromium, vanadium as well as radioactive substances such as uranium and thorium.

The Phalaborwa Mining Company has accumulated about 200 million tons of magnetite over the past 30 years. The magnetite dumps at Phalaborwa mining occupy about 280 hectares of land. The plant will demand power supply in the production process. It is proposed that phosphates and sulphur can be removed through purification process. However, it is not clear how radioactive substances will be removed through purification. The plants will require energy and water (for cooling and washing) and other minerals in production processes (e.g. lime, sand and alloying metals). Demand for water for example is at 57 million litres per day, of which 31.6 million litres per day would be discharged into the Maputo estuary via water treatment plant. About 192 kg of solid waste in the form of slag and 10 kg of furnace dust would be generated per ton of steel produced. Slag and furnace dusts from steel plant are classified as hazardous waste. There are no suitable waste disposal sites for in Mozambique.

In Tanzania, industrial development is picking up after many years of neglect caused by policy decision, which did not pay adequate attention to the need to establish a supportive infrastructure. Prior to the 1986 policy reform, most industries were under the state. Most of them were concentrated in Dar es Salaam, Tanga, Arusha and Mwanza. Textiles, beer and Coca-Cola, cement, chemicals, spins industries, soap and oil, food related industries, metal and petroleum industries are located in Dar es Salaam. Most of these plants were built in the early 1960s and 1970s and did not consider the environmental implication arising from the production process. Most of them emitted untreated waste directly into streams and rivers. For example, the sediments in Msimbazi river which flows into the Indian Ocean is very much polluted by heavy metal from the industries that are located near this river.

Some of the industries are closed (e.g. Sungura and Kilimanjaro textiles) but their impacts are still felt today. Recently, a newly opened textile mill, the Karibu textile in Dar es Salaam was reported to be releasing hot waste products from their plant directly into a river, which flows into the sea. Grass and other species around this river are very much affected. Some of the people use the water from this river for domestic and agriculture purposes. Attempt to address the pollution problem from the Cement industry started very recently. However, still the industry is causing significant air pollution. A more recent plant which will produce power from diesel engines (the Independent Power Tanzania Limited – IPTL) is built very close to a river that flows into Indian Ocean. This plant is not operational now, but it will likely cause pollution when it starts production of power.

A fertilizer industry that was located near the seashore in Tanga has been closed. However, some of the chemicals that was used as raw materials for the production of fertilizer was left at the factory premises for a longtime, before it was dumped into the sea. Several thousands cubic liters of liquid ammonia was released into the sea without any EIA and monitoring plan. Similarly, a cashew-nut processing industry, which located in Mtwara, a southeastern town in Tanzania, has been closed down after failing to produce

due to technical and financial problems. Like other industries in Tanzania, no proper decommissioning process was undertaken therefore, effluent from this factory is degrading the environment.

In Kenya, the Government has an ambitious industrial transformation plan to the year 2020. The plan envisaged utilizing resources from other sectors to finance industrial development. Although it does not specify exactly how others sectors will be used, its implication is that, more pressure will be put on natural resources in order to generate capital for the industrial development. Governments in other EAME countries are engaged in similar macro-economic reforms, which among others seeks to increase GDP and to reduce balance of payment problems. These new policies are likely to lead to the expansion of industrial and manufacturing development and, which may be detrimental to the coastal environment. Small-scale industries are located along the coast. A new cement factory will be established at Shimoni in Mombasa.

Mozambique, like other countries in the EAME region is trying to “fast track” development by offering attractive tax incentives. In this context, several “mega- projects” have been authorized or are being planned. Some of these projects include the Aluminum production project at Mozal (box 1); the proposed Maputo Iron and Steel Plant, on the Maputo bay (box 2). This would be second largest factory in Mozambique after the

Mozal Aluminum factory. Waste disposal and high demand for water are some of the potential environmental problems that have not been well addressed in this proposed project.

**Box 2: The Proposed Maputo Iron and Steel Plant, on Maputo Bay.**

The Maputo iron and Steel Plant is under the Industrial Development Corporation (IDC) of South Africa (shareholders of the Mozal Aluminium). The project will exploit large mine dumps containing magnetite found in Phalaborwa, Mpumalanga province in South Africa. The magnetite will be mixed into slurry from recycled water in Phalaborwa and pumped via an underground pipeline to Maputo. In Maputo, the water will be separated from magnetite and the magnetite will be transformed in to iron and steel. The magnetite also contains small quantities of copper, phosphates, sulphur, titanium, cobalt, nickel, chromium, vanadium as well as radioactive substances such as uranium and thorium.

The Phalaborwa Mining Company has accumulated about 200 million tons of magnetite over the past 30 years. The magnetite dumps at Phalaborwa mining occupy about 280 hectares of land. The plant will demand power supply in the production process. It is proposed that phosphates and sulphur can be removed through purification process. However, it is not clear how radioactive substances will be removed through purification The plants will require energy and water (for cooling and washing) and other minerals in production processes (e.g. lime, sand an alloying metals). Demand for water for example is at 57 million litres per day, of which 31.6 million litres per day would be discharged into the Maputo estuary via water treatment plant. About 192 kg of solid waste in the form of slag and 10 kg of furnace dust would be generated per ton of steel produced. Slag and furnace dusts from steel plant are classified as hazardous waste. There are no suitable waste disposal sites for in Mozambique.

The third “mega-project” is the Lubombo Spatial Development Initiative (SDI). South Africa together with other countries in the region has adopted the SDI program as a way of bringing about development. The Maputo Development Corridor involving South Africa and Mozambique (with potential impacts to Swaziland, Zimbabwe and Botswana). The SDI seek to achieve benefits from spin-off opportunities arising from the strategy of ‘crowding-in” of private and public investments. Projects include infrastructure development, agriculture, mining etc. Tanzania and Mozambique are also developing the Mtwara corridor with the same objectives as the SDI in Mozambique. However, the environmental implications of these developments are not adequately addressed. Another “mega-project” is a proposal to develop a hot briquetted iron (HBI) plant at Savanaf, in Sofala province. The plant will produce 2.3

million tons of briquettes to international standards from 4.4 million tons of iron imported from Brazil. The environmental aspects of this proposal have not been fully analyzed.

## **6.0 LAND TENURE**

Land policies and legislation govern Land tenure issues in all the EAME countries. Mozambique and Tanzania have similar land tenure systems.

### **6.1 LAND TENURE ISSUES IN MOZAMBIQUE**

The new Land Policy, which was approved in September 1995 maintained the basic principle that land ownership is vested in the State, but recognized the legitimacy of the customary law, or the right attributed by such law. The law also recognizes the role of traditional leaders in land management and conflict resolution.

Under this law, land can also be acquired on the basis of long term lease i.e. 50 years. Related to land law is the issue of community rights to natural resources and to benefits derived from these resources. Investors have realized the economic potential of Mozambique's resources (and indeed in all the EAME countries), however, this is currently taking place with little benefit to, or consultation with, local communities. Investors will have to deal with local communities; especially in areas, which are not occupied (Tanner 1995). Sometimes, the amounts paid to gain concessions are far below the actual market value. There are little safeguards for local communities, especially in the light of inability to negotiate right compensations from developers.

However, land speculation is rife in Mozambique. Speculation is increasing as a result of developments taking place along the coast. Prime coastal sites are being acquired without any long-term and land use plan in place (Hatton, 1996). There are potential land use conflicts between local land users and concession seekers, especially competing for limited land and coastal resources. For example, entire coastal area between the northern tip of the Machangulo Peninsula and Ponta do Ouro is under request by concession seekers for the establishment of eco-tourism projects. Indeed these tourism developments will provide benefits to the people, the precise limits are not known, and the potential for environmental and land use conflicts are great. It is not clear what are the legal rights of the local communities as opposed to the developers. It appears that local communities have not been properly advised on the implications of the changes status to what they consider to be their land and their resources (Hatton, 1996).

### **6.2 LAND TENURE IN TANZANIA**

The legal framework governing land matters was for many years provided by the Land Ordinance, Cap 113 of 1923. All subsequent legislation was grounded on this Ordinance. With this legislation, all land was made public and vested under the President who is empowered to make land grants and leases if deemed to be beneficial or of public interest. Based on the 1923 Ordinance, two sets of land laws emerged; statutory law, which govern land granted by government. This is land held by private companies or state. It is known as granted rights of occupancy. The second law is customary tenure, which govern all untitled land under small holder production. These are known as deemed rights of occupancy.

The 1923 Ordinance has been repealed by two land acts, namely the Land Act, 1998 (Bill) and the Village Land Bill, 1998. The Land Act, 1998 is designed to translate into law tenets of the official new Land Policy published in 1995. Together with the 1923 Ordinance, the Land Act, 1998 repeal Land (Law of Property and Conveyancing) Ordinance (Cap.114). The Land Act, 1998 addresses the needs of modern Tanzania in the context of liberalized economy. This implies that land marketing is likely to increase, and increase speculation.

Under the Village Land Act 1998, the whole of mainland Tanzania will be divided into three categories of land for purposes of land administration i.e., general land, reserve land and village land. The Commissioner for Lands will govern land outside the villages. Village Assemblies and Village Councils will administer land within respective village areas.

The proposed Land Bills will encourage sale of land, and it will permit individual titling for land within registered villages. However, most of the developments along the coast of Tanzania were based on the

1923 Ordinance. On the basis of this Law, the whole of the Tanzania coastal line is set aside for tourism development. In effect, the government allocates land to hotel developers along the coast. Although, initial discussions with existing land users must take place prior to transfer of user rights, local people are not well versed in negotiation skills and, often their land is taken at the value much less than the actual market value. Compensation is sometimes given, but it is often inadequate.

Land use conflicts are common and involve central and local government authorities, local people and investors (local or foreigners). Land use conflicts are not only about the loss of access to land (land alienation), but also, and more importantly, about the loss of livelihood and the cultural way of life, which is linked to people's livelihood (e.g. fishing or cultivation). Land alienation in both Zanzibar and Tanzania mainland, as a result of tourism development, has caused considerable social conflicts (ERB/IRA, 1999). Between 1990 and 1998, over 80 new investment projects were approved in tourism along the coast of Tanzania. These investments represent a significant proportion of land alienation because local land users in these areas do not have much choice since the whole beach area is directly under the jurisdiction of the central government. In Tanzania, proposals have been submitted to the government to convert the Saadani Game Reserve in Bagamoyo to a National Park. Saadani Game Reserve is in Bagamoyo, Coast Region and borders with the sea to provide a unique blend of marine and terrestrial tourism attractions. According to this proposal, the new National Park will also include large part of the Wami River estuary, which is home to large herds of hippopotamus and many hectares of mangrove forests. If approved, TANAPA – the national agency, which is responsible for national parks will be required to manage mangrove forests which are currently under the Division of Forestry and Beekeeping, and the fishery resources in some sections of the Wami River.

### **6.3 LAND TENURE IN KENYA**

Similarly in Kenya, the government allocates land through its agencies, although customary tenure systems are also recognized. Private land holding was introduced in Kenya during colonial period and has remained the main component of the land management system of Kenya. In some areas of Kenya, there are still some absentee landowners. These landowners still maintain ownership even as they do not use the land. They charge user fees and exacerbate land shortage and land speculation.

Marine Parks and Reserves have been established in Mozambique, Tanzania and Kenya. Special provisions have been made that allows access to the reserves for consumptive uses. In Kenya for example, local communities are allowed to fish in the Marine reserves. About 70% of the hotels in Kenya's coast are in the beaches, and in the proximity of the Marine Parks or Reserves. Commercial fishing is prohibited within the Reserves.

In the Marine Parks, fishing is regulated. Beside limited access to marine parks, local community's access to the beaches is restricted, especially in areas where private tourism facilities have been established. This limited access has affected fishermen more, as their access to landing sites and fish markets is restricted. The limited access to some areas has intensified land use in open access areas, thus increasing possibility of environmental damage in these areas.

In all the EAME countries, the existing land tenure systems provide for lease under specified duration or other forms of tenure (including customary tenure). This system is often abused by some of the landholders that may decide to abandon their lands, but still legally own them. In these countries, absentee landlords complicate access, use and investment in the land, and partly account for environmental degradation that take place in these areas. For example, most of the sisal estates in Tanga region are under absentee landlords. Local communities have invaded these farms and gradually convert them from sisal to maize farms, albeit without sufficient investment in the land.

### **7.0 MAIN SOCIOECONOMIC THREATS TO THE EAME**

The EAME region is endowed with a variety of natural resources that can sustain the people of the region if used judiciously. However, ranges of socio-economic problems threaten the sustainability of the resources in this region. Most of the threats are caused by human activities on the environment. The main underlying threats includes:

## 7.1 HUMAN DIMENSION (ANTHROPOGENIC)

*Increasing human pressure and concentration in the coastal regions.* This is the biggest threat to the natural resources in the EAME region. In all the countries in the EAME region and the coastal areas in particular, human population is increasing fast, and trends suggests that more people will continue to move into coastal towns and cities from the rural areas. However, increasing numbers alone do not pose major threats. It is the distribution of the population and how the resources are used and distributed that really constitutes the main problem. Most of the coastal population is concentrating in small areas, raising densities to higher levels. In addition, there are no adequate measures that guide the use of natural resources in sustainable ways.

*Poverty: Most rural communities in the EAME region are poor.* The daily struggle for survival keeps people from improving their situation and conservation becomes less importance. How to raise income motivates and influences the way resources are used. More and more people depend on natural resources for their survival, and the lack of alternatives and opportunities leads to unsustainable use of the resources.

*Awareness/cultural perceptions on consumption and resource use.* More data is needed to determine the extent to which inadequate awareness is a threat to biodiversity. However, cultural perceptions, such as those related to how natural resources are utilized (fishing gear for example), are a threat to biodiversity. Consumption behavior among people are changing and increasing pressure to nature resources. For example, increased demand for seafood (e.g., prawns), and attractive prices that are offered in the international market attract international fishing vessels. Increased fishing activities in order to meet raising consumption demands put more pressure on marine resources.

## 7.2 FISHING

Threats related to fishing industry include: Destructive fishing practices such as dynamiting, poisoning, beach seining and bottom trawling all put immense pressure on the marine resources. However, pirate fishing and subsidies that provided by European Union to the European fishing industry, put more pressure in the fishery resources in the EAME countries. Pirate fishing in the EEZ of Tanzania is becoming a major problem.

The use of unauthorized net sizes poses the greatest threat to the survival of sea turtles and marine mammals. The animals are caught deliberately or accidentally in the nets, especially gill nets and shark nets.

Over Fishing and Depletion of Resources, Caused by Inappropriate Fishing Gear.

Traditional uses of sea turtles, dugongs, whales and dolphins by the coastal people threaten the survival of these marine resources as demand for them increases. Increased demand in the absence of sustainable exploitation methods and tools often leads to destruction of resources.

As part of the liberalization process, more international fishing vessels are allowed to operate in the EAME countries. This has resulted in putting more pressure on the fishery resources but also increased social conflicts between local and international commercial fishing companies.

Approval for large-scale development projects such as aquaculture is becoming common in the EAME region. Such development projects are threatening coastal areas and the local populations.

## 7.3 TOURISM

Poor implementation of the existing tourism regulation is one of the main problems that threaten the EAME. Specifically:

Approval for large-scale tourism development projects is often done with little considering for the social, cultural and environmental implication. The number of tourist facilities is increasing, often beyond the carrying capacity of the relevant areas. Sometimes, there are also too many tourists in some of the areas e.g. Mombasa and Zanzibar, to the point that such small areas are over-stretched by the large volume of visitors.

Tourist facilities are sited close to the sea, causing degradation of the sensitive coral reefs and limiting public access to the beaches.

Pollution from hotels and related tourist activities is another major concern. Solid and liquid waste disposal facilities are poor or not available at all. Thus contributing the degradation of the very resource that attracts tourism.

The nature of the industry itself constitutes a threat because of its seasonality and unpredictability. Tourism fluctuates with seasons and therefore, employment and other benefits are also dependent upon these changes. Because of this “uncertainty” people are engaged in other practices, often natural resource based, especially during off-season periods, thus causing more pressure on the natural resources.

#### **7.4 AGRICULTURE**

Agriculture in the EAME coastal regions exerts pressures and is causing clearing of forests due to shifting cultivation. Also, soil erosion and land degradation are common in many coastal areas. Land degradation near the rivers, leads to increased sedimentation down-stream. Paddy cultivation in the mangrove forest areas is also a major threat to mangrove and marine ecology.

Pollution from agro-chemicals (fertilizers and pesticides) used in the irrigation in the terrestrial areas – along riverbeds and basins is a major threat to the marine environment. Alongside agro-chemicals, is the potential danger caused by siltation in the marine areas, as a result of farming near the rivers. However, the extent these are problems is not known yet due to paucity of data over long period of time. Large and small irrigation schemes are taking place in Tanzania (along the Rufiji basin, Ruvu river, Wami River and Pangani river); Tana River in Kenya. In Mozambique, irrigation is taking place along the Limpopo, Zambezi rivers and several other small rivers, which drain, into these two large rivers or directly into the Indian Ocean. These schemes are for paddy, maize, flower farms (in Kilimanjaro and Arusha regions in Tanzania), and vegetables. Also, cotton is cultivated in the coastal areas of the EAME. Cotton is high degrading crop due to its reliance on the use of fertilizers and chemicals. It is likely that agro chemicals used in these farms finds their way into the rivers and to the sea. Further investigation to determine type, levels and impacts of pollution in the river systems is needed.

Farming methods such as slash-and-burn are detrimental to the environment. In some coastal areas (e.g. Tanga, Bagamoyo – Tanzania and, Kiunga in Kenya), local people compete in lighting such fires. In Kiunga, for example, people hold big parties as soon as slash-and-burn of the farms is accomplished. Such poor and unsustainable farming practices are detrimental to the EAME and the biodiversity found in this area.

#### **7.5 TIMBER AND LOGGING**

Over-exploitation and illegal harvesting of coastal forests and mangroves have led to the destruction of breeding and nursery grounds of fish species. Rates of utilization are higher than afforestation measures. There is as yet no alternative to timber and fuelwood.

#### **7.6 INDUSTRY AND MINING**

Over half of the heavy industries and manufacturing facilities are located among the EAME coastal cities and towns. This has contributed to pollution of marine resources and pressure on natural resources as population increases rapidly in these areas. Oil refineries are located in coastal areas. Oil spills from tankers and refinery plants pose major threats. However, Mozambique and Tanzania do not have oil prevention or clean up equipment, and no contingency plans in place in the event of such hazards or accidents. The pumping, storing and piping systems of the Mozambique/Matola complex (where pumps and storage facilities are located) are in poor state and leakage are reported to be frequent. The complex is currently being rehabilitated. Kenya has contingency plan in place but it has no equipment to implement it effectively.

Extractive activities such as sand mining, quarrying and coral mining destroy coastal habitats.

Salt production that involves the construction of salt pans leads to destruction of mangrove forests. This activity causes soil erosion, and salination of underground water. Some salt mining projects are licensed and allowed to operate in sensitive areas, without considering environmental implications.

Pollution from industries and mining activities: Pollution is a major threat however, although regulations that prohibit dumping of waste or engaging in practices, which may cause pollution are in place, enforcement has proven to be difficult.

### **7.7 URBANIZATION**

Sprawl and uncontrolled land use is increasing in high population areas in the EAME coastal regions. Squatting is worse in urban areas, but unplanned settlement is also common in rural areas, where social services such as clean and potable water and sanitary system are lacking. Untreated domestic waste from these areas is left to flow into streams and rivers into the sea.

Related to this is an increase in consumerism tendencies that are shown by the few affluent sections of the communities. Consumption patterns have changed, and now people like more exotic consumptive goods, that put more pressure on natural resources. For example, traditional food items are gradually being ignored in favor of more imported or expensive food items.

Local communities themselves want development. Pressure to attain development, including obtaining better housing lead to increased pressure on natural resources.

### **7.8 INFRASTRUCTURE DEVELOPMENT/IMPROVEMENT**

Almost all the countries in the EAME are engaged in major rehabilitation and expansion of ports, railway lines, oil refinery and roads. These developments will increase demand for natural resources and increase population pressure in the coastal towns and cities. The fragile marine environment is increasingly being threatened by these developments.

In a recent report on “Tanzania Country Study on Biological Diversity (1998), the Government of Tanzania identified general issues that affect biological diversity, including marine biodiversity. Most of the issues raised in this report are similar to the ones identified above as socio-economic threats to the East African Marine Ecoregion. These aspects are summarized in box 3 below.

### **Box 3 Summary of General Issues Affecting Biological Diversity in Tanzania**

Most of the impacts on biodiversity are associated with human activities and causes. Some of the most critical ones for Tanzania include the following:

- (a) *Poverty*: Poverty limits socio-economic development opportunities and put pressure on natural resources. Also poverty discourages investment in measures to conserve biodiversity.
- (b) *Loss of traditional knowledge*: Loss of traditional conservation practices and indigenous knowledge as people move into new areas under new environments and systems. Demand for economic growth, socio-cultural change, population growth and 'modernism' are some of the factors that have eroded traditional knowledge
- (c) *Population dynamics*: Rapid population growth of 2.8% per annum is causing pressure on natural resources. Urbanization continues to exert pressure on biological diversity through demand for charcoal, hard wood, food resources and animals and birds.
- (d) *Poor agriculture practices*: Extensive and shifting cultivation, use of fires, deforestation, cultivation on slopes all contributes to loss of biodiversity.
- (e) *Pollution*: Pollution of water and land from industries, agricultural activities, urban development, transport systems, mining and domestic waste impact negatively on biodiversity.
- (f) *Energy crisis*: About 92% of energy used come from bio-energy sources. Petroleum products constitutes 7.2% and electricity is about 0.2%. Continued dependence on charcoal. Wood threatens biodiversity
- (g) *Tourism*: Tourism related problems include destruction of vegetation and wildlife,

## **8.0 CROSS CUTTING ISSUES**

Threats to EAME resources are all related to human activities originating from local, national, regional and international levels. Some of the proximate causes of these threats can be traced from various sources, suggesting the cross cutting nature of the problem.

### **8.1 EMPLOYMENT TRENDS**

Up to date figures on employment trends from all the sectors and countries are very hard to get. Those available do not show long term trends or detailed breakdown. Many of the countries in the EAME region are implementing Structural Adjustment Programs, which aims to, among other objectives, reduce the size of the government employees. This has led to retrenchment of some of the government staff. In Tanzania for example, formal sector job creation has fallen from 5% per year between 1970 and 1980 to less than 2.5% per year between 1984 and 1992 (Bagachwa, *et al*, 1995). Although the involvement of private sector in economic development is expanding formal job creation is not expanding as much, since prior to the reform programs, the state in Tanzania was the largest employer. Employment opportunities are also expected to increase with the expansion in the private sector in EAME, although generally, employment opportunities in these countries will be small because, the private sector in these countries is only beginning to expand (e.g., Tanzania and Mozambique). However, there is not sufficient data that shows trends in private sector employment. Without this data, it is difficult to project how the future employment scenarios would look like. In the absence of this data, it is also difficult to address the issue of poverty alleviation, especially from the formal employment perspective.

Informal sector is contributing so much in job creation in all the EAME countries, although, likewise, employment data is scarce. Informal sector employment in areas such as fisheries, mining and logging attracts many people, simply because of easy access to them. However, this "easy access" and the fact

that employment in formal sector is limited, puts more pressure on natural resources in areas that can easily be accessed.

## **8.2 SUBSIDIES**

Governments in the EAME are implementing austerity measures, which, among others, address the issue of subsidies. Prior to these changes, Tanzania and Mozambique, which pursued similar central planning policies for a long time, provided hefty subsidies to their local populations. These subsidies covered, but not limited to education, transport, health, water supply and some consumer goods (sugar, fuel etc). Most of the common subsidies were however, given to farmers, although in practice, large-scale farmers benefited more than the small-scale farmers did. Through SAP, most countries are removing these subsidies. However, investment incentives that are offered by the governments in order to attract investors, provide some kind of subsidies too. Information on type and extent of subsidies that is currently being provided by each government in the EAME region was not available by the time of writing this report.

However, the removal of subsidies has had implications on the natural resources. For example, the removal of subsidies in fertilizers has increased the price of fertilizers, with the possible consequences to farming practices. Some farmers open up new farms in order to obtain more yields per area cultivation. This can result in deforestation and soil erosion. The fundamental issue with subsidies actually not whether or not subsidies should be paid. The issue perhaps is on which aspects should subsidies be granted; namely in production or consumption areas? Equally more important is a critical analysis of the effect of the subsidies on the environment in general, and marine environment in particular. None of the EAME countries has ever considered the impact of subsidies on the marine environment.

## **8.3 INCOME**

Income distribution in all the EAME countries tend to be in favor of the rich and well to do sections of the population. Less than 20% of the population is getting more than 60% of national income. Wealth tends to concentrate in the hands of few individuals. In this context, poverty is wide spread in most of the rural areas and is also a major problem in urban areas. The few rich dominate not only the economy but also, influence pattern of consumption in local areas. Most of the people in rural and urban areas of the EAME exist on subsistence level; their daily struggles to raise their incomes have implications on natural resource. The quest for more income, especially from the small section of the well – to – do population further exacerbate environmental problems. For example, industries are located on fragile areas and dispose of untreated waste directly into rivers, streams and the sea.

## **8.4 CONSERVATION EFFORTS**

EAME countries have implemented some conservation programs in the east African marine region for many years in the past. These efforts have resulted in the formation of marine parks and reserves, in Kenya, Tanzania and Mozambique. Also, measures such as preparing integrated coastal management policies and programs contribute to the conservation process in the EAME region. Several local based programs and activities are initiated in the countries with the purpose of conservation.

Conservation is a costly undertaking. In study done by Bagachwa et.al (1995), it was observed that Tanzania's government effort to undertake conservation was low compared to the rate of degradation. This was attributed to what has become a common reason for every inadequacy – namely government lack of financial resources. However, this is only one reason, and sometimes not the most important one. Conservation effort in most of the EAME countries is affected by factors such as inadequate coordination of the efforts, lack of proper and clear conservation and natural resource management plans. Other factors include too much dependence to the donors for conservation effort. Once donor money is stopped, incentives and capacity to undertake conservation wanes away.

Conservation efforts are also affected by inadequate participation of local communities. Local communities and particularly their knowledge in conservation is ignored. Attempts have been made to involve local communities through Integrated Coastal Zone Management projects in Kenya, Tanzania and Mozambique. This has generated enthusiasm and support to conservation efforts by the local

communities. In Tanzania, the involvement of local communities in fisheries management has helped to reduce the problem of dynamite fishing in the coast of Tanzania.

However, communities still resent conservation if they do not see benefits accruing to them. Key to successful conservation therefore to the insurance that local communities will benefit from the exercise. This poses challenges in conservation methods.

Conservation efforts are likely to succeed if they rely on proven better practices – be they traditional or introduced. Data on what works and what do not work in local communities in the EAME region is not available. However, conservation efforts, including practices that are being adopted by the local communities are very much influenced by other factors. Some of such factors are population pressure and trade regimes.

Population is increasing fast in all the coastal areas of the EAME region. This increase puts more pressure on the natural resources, and sometimes, conservation is not a priority. But also, trade regimes – including trade practices, rules and regulations may influence behaviors and life style, which is detrimental to conservation efforts. For example, prawns are one of the most expensive food items, which the affluent communities demand.

This high demand and high prices have generated a lot more interest in fishing vessels that look for prawns and other expensive fish species. Taxes and tariffs do not seem to reflect the cost of managing the resources in which prawns are obtained. In this context, efforts to conserve the resource will be threatened by trade practices that encourage further exploitation of resources because of the lucrative prices. Broadly then, this implies that there is little socioeconomic incentives to conserve natural resources in the EAME region. However, this area needs further analysis and understanding, since there is little information on socioeconomic incentives or disincentives that can spur/hinder conservation in the region.

## **8.5 EDUCATION**

Tanzania was one of the few developing countries, south of Sahara that had attained much progress in delivery of education services up until late 1970s. At that time, indeed up to 1986, most of education services were supported by the state through huge subsidies. To a large extent this helped many children to obtain basic education, which otherwise could not have been possible to achieve. Primary education was declared a basic human right and compulsory to all. Adult education was also stepped up in order to reduce illiteracy. Tanzania had the highest rate in literacy among developing countries. However, these gains were achieved at the cost of quality provided. As more schools were being opened, the government found that it was no longer possible to sustain the demand. Gradually, parents began to “*contribute*” some money for the services, and it has now become a norm that “*free education*” is no longer provided. Still though, the state is subsidizing a lot – especially in secondary, tertiary and higher education.

Overall scenario of Tanzania’s education sector is basically gloomy. There is a huge public out-cry on the quality of education in Tanzania, with many people claiming that it has gone down so much. Many government schools are in poor condition although statistics indicate that the numbers of schools is increasing. For example, the number of primary schools has been increasing from 10,891 in 1994 to 11,339 schools (both public and private) in 1998. Similarly, the ratio of teachers to pupils has increased from 1:36.5 in 1994 to 1:37.9 in 1998. This shows that more pupils were enrolled in primary schools. Similarly, enrolment in secondary education is increasing as more secondary schools are opened in the country. For example, enrolment of secondary school students rose from 11,832 in 1961 when Tanzania attained independence to 226,903 in 1998 (URT, 1999). However, of late, the quality of education provided in both secondary and primary schools has deteriorated and, school drop out rates is very high. This is particularly so in coastal areas too. For example Tanga region registered about 38,000 pupils in standard one in 1990, but only 35,000 pupils entered standard two in 1991 (URT, 1998b). The pace of education development in Coast region has been slow compared to other regions in Tanzania. Dropouts among girls are higher than among boys are in most Coastal regions of Tanzania.

Most schools in Tanzania do not have adequate teachers, facilities and infrastructure (class rooms, chairs, tables, staff houses, books); generally the environment is not conducive for learning. Some schools are conducted under trees and pupils seat on the ground. Some schools, e.g., in Mtwara region are made of

temporary building materials, therefore, not suitable as schools. Dar es Salaam is perhaps the only region along the Tanzania's coast that has more public and private schools, training institutions and colleges than the rest of the regions in the coast of Tanzania. This is due to the status of Dar es Salaam as the main commercial and administrative center. Most of the private schools try to bridge this gap and provide good services, but due to lack of proper enforcement of regulations and follow-ups, some private schools are equally in bad conditions. The same applies to secondary and higher education institutions.

The poor quality of education and education institutions in Tanzania, especially primary education has been a focus of intense debate in the country. Some parents associate the dismal performance of primary education with environmental degradation. For example, in Rufiji, parents argued that poor education standards and poor learning (measured in terms of number of pupils joining secondary schools) was partly responsible for the destruction that takes place in the mangrove forests (box 4) (Kulindwa et. al, 1998).

The perception that Tanzania's education standard has declined partly accounts for the increasing trend where some parents prefer to take their children abroad for studies. Parents take their children to Kenya, Uganda, Malawi, Zimbabwe and Zambia. Some go to Europe and America.

The liberalization of policies has opened the door for private involvement in education sector. Now there are many private schools in Tanzania, and some of the parents who used to send their children abroad are now sending them to these private schools. Intake in secondary schools (both private and public schools) has been increasing, but still the number of students who fail to obtain places in secondary schools is growing bigger.

The social sectors (health, education and water) in Tanzania, consume about one third of the public budget. However, the social sectors' share of public expenditure has declined in recent years in Tanzania. Expenditure on health, education and water has declined in real terms in Tanzania. Illiteracy is about 32.2%.

Education sector in Kenya is facing more or less the same problems as in Tanzania. The Kenya's education has been organized along private sector involvement since prior to independence in Kenya. The state has been providing guidance and support, as well as financing some aspects of it. Overall however, student enrolment has been low. For example in 1995, only 76% of the primary school age population (6-13 years) was enrolled in primary schools. Also about 27% of secondary school age population (14-17) were enrolled.

#### **Box 4 Poor Education Delivery, a Threat to Mangroves**

Mr. Muhsin Mohamed Kuchombeka, the chairman of Nyamisati sub-village tells the story of 22 years of frustrations from poor education delivery in the Rufiji delta:

*“For the past 22 years, our primary schools in this side of the District had never sent any of their pupils to secondary schools. Last year (1997) we decided to set up a camp here in Nyamisati to help our children with their education. All parents contributed money, chicken, fish and everything to our children selected from various schools in the delta so that they can prepare themselves for the final exams. We also paid for the teachers who came from different schools in the delta. After intensive training, six pupils were selected to go to secondary schools. We were very happy indeed. We realised it is possible for our children to go to secondary schools. We will do the same thing this year”* (However, only three of these were able to go, the other three did not go due to lack of fees - Author).

*“Our children are frustrated, they have resigned and lost interest in schooling because of the dismal performance of our schools in examinations, they have decided instead to cut mangrove poles so as to earn money”.*

*“The government has decided to abandon us in education, our schools have no enough teachers, not enough materials, we are left like this so that our natural resources can be stolen from us, without us questioning”.*

Source: Kulindwa, K., H. Sosovele and Y.D. Mgaya (1998) Socio economic root cause of loss of biodiversity in Tanzania: The Case of Mangrove Forest in the deltas of Rufiji, Ruvu and Wami. WWF-Washington.

Completion rates at primary level are as low as 47%. Enrollment shows declining trends. Education provision is beset with problems such as inadequate teachers, facilities, and poor working conditions.

In Mozambique, many years of war destroyed many social infrastructures, including education. Some coastal districts do not have schools or what remains in the name of schools require major investments to bring them back to utilization. Mozambique government however, is now putting more emphasis in rehabilitation and construction of new schools. The structural adjustment programs in Mozambique will focus on improving the delivery of social services, among other key issues. As a result of the emphasis on social service delivery, the primary school enrollment rate increased from 62% in 1996 to 71% in 1998. The number of primary classrooms increased by more than 60%. The share of education in total current government expenditure increased from 16% in 1995 to 18% in 1998.

Increasingly however, parents are asked to contribute money for the education of their children. Like Tanzania, Mozambique is also moving away from providing subsidized social services to the people. As governments in EAME in the region disengage from direct management and provision of social services has given rise to the increasing role of private sector in the provision of these services.

There is a strong relationship between the level of education one attains and his/her behavior. Education provides an individual with the tools to see things differently and form his/her own opinion about them. Although there is not enough data on levels of education and conservation awareness or efforts at household level, it can be argued that were there are many people, whose levels of education are low according to relevant national standards, such areas will be facing numerous environmental problems. Most of the coastal areas in Kenya and Tanzania are facing low levels of education institutions, attendance and performance. Attempts to introduce changes, if these attempts will depend on availability of skills such as reading and writing, may become major problems. This may affect the environment both in the short and long-term perspective.

Education is not only going to classroom in formal education institutions. Traditional knowledge has for a long time in the past; served as the only education that was made available to the local communities. Traditional communities have had programs, which enable conservation of resources to be perpetuated from generation to another. For example, the pastoral communities in Tanzania have had a long tradition of imparting conservation education to the younger generation. Population pressure and changes in government policies have undermined the role of traditional conservation education. However, gradually, interest in this type of conservation education is now gaining support from some governments and international institutions. There is however, very little information on traditional conservation knowledge for the communities in the EAME region.

Education institutions in the EAME region are affected by inadequacies as much as other sectors are. However, with the involvement of private sector in the provision of education many changes and improvements are taking place. However, the lack of clear monitoring plan from the governments, leaves more room for abuse of this opportunity. Many private schools are in urban areas and serve a small section of the population. Most of the schools are expensive; therefore the majority of the poor people are kept out or forced to rely on state run schools, which have run down so much.

## **8.6 WATER**

All the countries in the EAME region are still facing problems in provision of safe and clean water to the population. Tanzania's ujamaa policies aimed at the provision of safe and clean water to the whole population within a distance of not more than 400 metres by the year 2002. This target has been difficult to achieve. About 56% of the rural population and 48% of the urban population was provided with safe and clean water by 1996. Most of the water schemes and projects were donor funded, and sustainability issues were not adequately considered. Most of these schemes have now closed or are not functioning anymore due to technical problems, which followed the departure of the donors. In rural areas, women are still walking long distances in search of water. In urban areas, constant breakdown of the water systems and frequent closure of the systems have become common, necessitating urban population to walk long distances too, in search of water. However, often, people end up using unsafe and unclean water from the stream and rivers in urban and rural areas. The main sources of water include, piped water, rivers, deep and shallow wells, natural and man made dams (especially in rural areas) and rain water harvesting.

About 75% of Kenya's urban population has access to safe drinking water, while only 50% of the rural population has access to potable water from various schemes, including piped water, bore holes, springs, pans and dams. Kenya's coast districts are also facing inadequate water supply systems. Most of the tourist areas are connected with safe tap water. However, most rural areas are still dependent on wells, rivers and streams. Supply of clean and safe water is still a major problem in Kenya.

Currently, out of the 142 gazetted urban areas in Kenya, only 30% have sewerage system. This is partly because in many urban areas, the development of water supplies has not been matched by a corresponding increase in facilities for sanitary disposal of waste water, thereby posing serious environmental and health problems.

According to the District development profiles for Mozambique, most of the coastal districts do not have safe and reliable water. The main sources of water include boreholes, wells, rivers, lakes and ponds. Water is provided by state owned institution. Most of the services – boreholes, water pumps etc are concentrated in the district capitals, rural areas outside the districts are facing water shortage or the people have to walk long distance to reach water sources. For example, in Morrumbene District, people have to walk 12 kilometres to reach water sources. In other districts, people walk up to 20 kilometres in search of water.

Mozambique, like Tanzania, implemented socialist policies until very recently when the government decided to change to market economies. However, many years of liberation war, civil wars and the inability of the socialist government to provide adequate social services has left Mozambique in critical need of improved water supply. The government is addressing the critical need of improved social services, but recently, Mozambique has had the misfortune of being severely hit by the cyclone, which has caused significant destruction on the infrastructure.

## **8.7 HEALTH**

Like water supply, provision of health services in the EAME is facing difficulties. As most of the countries implement reform programs, the private sector is getting more and more involved in providing this service.

In Mozambique, government expenditure for health services increased from 7% in 1995 to 9% in 1998. This follows deliberate government policies to improve social services after many years of civil war, which left most services in poor condition. However, despite these efforts, most of the services are still in need of improvement. Most districts have no secondary health care facilities. However, the quality and type of services varies in each coastal district. Some districts have rural hospitals while others have not. Doctors and nurses are in short supply and facilities are inadequate.

Tanzania's health sector is facing institutional and infrastructural problems. The services, especially in rural areas are poor. Most rural areas have health posts or dispensaries, but most of these dispensaries serve large numbers of people as opposed to the national standard (namely one dispensary to 50,000 people. Currently one dispensary serves about 90 – 100,000 people.) Most of these dispensaries lack medicine and qualified staff. Hospitals are located in District capitals. Since the government owns most of the dispensaries, lack of funds to provide for these dispensaries, district and referral hospitals is major bottleneck.

The increasing number of private health services in urban areas is offering additional support to the government provided system. However, most of the services are too expensive for the majority of the poor people. About 58% of the population have no access to health services and life expectancy has declined to 40 years from about 58 years. Increasing incidences of HIV/AIDS and breakdown of social service provision accounts for these changes.

Sanitary services are also poor, and many people use pit latrines, while many also do not have toilets in or near their houses. Drainage systems in urban areas are poor. No such services are provided in rural areas. Diarrhea and other infectious diseases are common but malaria is the major disease in all the coastal towns and villages.

Kenya government has invested heavily in the health sector. Life expectancy has risen from 40 years in 1960 to 58 years in 1994. Both private and public health services are offered in Kenya. About 42% of the population are within 4 kilometres of health facility while 75% are within 8 kilometres. Despite seemingly improved system; health delivery is still facing some infrastructure and financial problems. Health staff and medicine are inadequate, especially in rural areas.

Health delivery in all the EAME countries is facing major systemic problems, including shortage of staff, medicine and facilities. In the absence of efficient health delivery system, more and more people are turning to traditional healers for support.

## **8.8 ECONOMIC INFRASTRUCTURE**

Countries in the EAME region are involved in macroeconomic policy reform programs. One of the key areas that this program addresses is the improvement of economic infrastructure. The EAME has key economic infrastructure facilities along the coast, which also serves many land locked countries in the interior of the continent. In all the EAME countries, harbors, railway lines, airports, roads and telecommunications are improved with support from international donors. In Tanzania, efforts have been made to dredge the Dar es Salaam port in order to expand its capacity to service not only Tanzania, but also the neighboring states. The Dar es Salaam port is a natural harbor, however expansion was considered important in view of the need to service neighboring countries. The port of Dar es Salaam is close to several sensitive factors; point source discharges (TIPER Refinery, storm and sewage outlets and tributaries). In addition the inner port is close to non-point source discharge (e.g. oil spills, ship waste, run-off). The outer harbor is under heavy human influence, related to sewage discharge, and storm water run-off. The dredging focused on the expansion of the entrance channel so as to enable large vessels to anchor, but also to minimize the likelihood of oil spill. However, although EIA knowledge is now wide and the practice has been accepted in the region, some of the infrastructure improvements are not subjected to EIA. A decision was made that the dredged material is disposed off in confined shoreline,

however, the two selected sites were small to accommodate all the dredged materials. The alternative solution was to dispose all the materials in unconfined open water. Dredging was assumed to have less impact on seagrasses and coral reefs because the amount of sedimentation would be tolerable and that the coral reefs were already dead anyway. Already the dredging has been completed and the channel has been enlarged from 80m to 140m and deepened from 7.4mcd to 10.7mcd. The channel can now allow vessel from 175m to 234m.

Alongside the expansion of the port of Dar es Salaam, the Kurasini Oil Jetty (KOJ) is also expanded to take more oil. Before the expansion, the KOJ capacity was 18,000 tons dead weight (TDW) of vessels. Now it can take 45,000TDW. The KOJ is also able to receive bigger tankers in size. Also there has been effort to construct a new small jetty – Coastal Tanker Jetty presently serves vessels between 1,000 to 5,000 TDW vessels. The small jetty reduces congestion on the main jetty. The oil liberalization process has spurred decisions to increase the capacity of the jetty and to improve the Single Point Mooring and Offshore/Onshore Pipeline system, which is owned by the TAZAMA Pipeline Limited of Zambia (in Dar es Salaam). Some of these developments have implication on the environment.

Similar efforts were considered for the expansion of Zanzibar port. The Zanzibar government is considering land reclamation near and at Stone Town, following the concept of an inner marine basin consisting of 39hectares of land. The inner marine basin concept would enhance the land reclamation area and provide opportunities to accommodate tourist cruise ships, pleasure craft marine, and pedestrian bicycle oriented water front promenade and parks system. The proposed development will have implication on a variety of habitats in and adjacent to the land reclamation areas, and part of larger marine, freshwater and intertidal mudflat. It will also impact upon coral reefs in the marine. The proposed development also threatens mangrove forests in the intertidal mudflats. These areas are already affected by pollution from domestic waste, but reclamation will probably expose these areas to more environmental damage than is the case now.

In Mozambique, the government is implementing programs to improve and expand the capacity of the Maputo port, roads and railway line. Mozambique's geographical setting makes it an ideal transit route for the international trade of the neighboring land locked countries of Zimbabwe, Swaziland and Malawi, and the Northeastern Transvaal Region in South Africa. The rail-port distances to Mozambique Ports are considerably shorter than those to alternative ports, resulting in major comparative advantage in transport costs.

Mozambique has three important corridors; each consisting of integrated railways and port facilities and serving mainly regional transit traffic. These corridors include the Maputo corridor, comprising of the main port of Maputo, the subsidiary port of Matola and three rail connections with the port. Maputo port currently handles over 3.2 million tons/annum with the capacity to handle 14 million tons/annum. Three railway lines connect Maputo to the outside: the Ressano Garcia Line, 88 km linking Maputo with South Africa, the Goba Line, 68km connecting Maputo port with Swaziland and the Limpopo Line, 534 km linking Maputo port with Zimbabwe. The rail network currently handles about 2.7 million tons of freight traffic/year.

The second corridor is the Beira Corridor system, which is linked with two rail systems to Beira port. Beira port handles about 4.6 million tons/year. One of the railway lines, the Machipanda Line (317) links Beira port with Zimbabwe. The other one, the Sena Line (331km) links Beira with Malawi.

The Nacala Corridor system comprises of Nacala and the rail link, 615 km long to Malawi. The Nacala port currently handles 240,000 tons per year. The port of Quelimane is also included in the expansion program. The Mozambique government is implementing a restructuring program in which the railway lines and the ports were privatized. Both privatization and expansion of the railway line and the ports impacted negatively and positively to the socio-economic characteristic of the Mozambique population. These were areas of high population concentration and potential employment areas. Privatization is likely to reduce the amount of employment opportunities and increase unemployment. Improved services will however, attract more business in the areas, stimulate spill-off effects into other sectors (e.g. agriculture, fishery, tourism, etc) and create further boost to the economy. Significant environmental implications are also likely to take place. Kenya Port Authorities (KPA) are not planning major expansion. However, Kilindini Port in Mombasa was dredged in the 1970s. In addition services such as oil refinery and

railway link are likely to be improved as demand for these services increase in the land locked countries of Uganda, Rwanda and Burundi.

Overall, in all the EAME countries, major rehabilitation and expansion of ports, railway lines and roads is taking place. Dredging is done so often in Mozambique's ports (because some of them are in shallow waters). This will have both positive and negative impacts to the socio-economic condition of the local population.

## **9.0 POLITICAL ACCOUNTABILITY**

Political accountability, transparency and public participation pre-suppose having in place a democratic institutions and processes. All the countries in the EAME region, with the exception of Somalia are undertaking political changes, which stresses the role of political pluralism, enhancing local participation and increasing transparency. Although several political parties have been established and local communities are taking active part if the process, still accountability and transparency are not well practiced.

Still many people do not know their rights and obligations, and therefore, can not question or demand accountability from the leaders. Many decisions are passed by the governments in the region albeit without involving as many people as possible. For example, in Tanzania a decision was made to allow a prawn farm developer to establish a project in the Rufiji delta without involving many people who would be affected by the proposed development. Also, the entire coast of Tanzania has been set aside for tourism development. But local governments in respective areas were not involved. Similarly, in Zanzibar, a decision to allow a multi-million tourism development at Nungwi is still surrounded with secrecy.

The local communities in the EAME region fail to exercise their democratic rights partly as a result of lack of awareness in political processes, or as a result of apathy. For some people, political changes that are taking place do not make much different. To these people, any leadership that comes into power is the same. They have not seen any change because poverty is still entrenched in their society, because democracy is anything but true democracy; and, because human right is still an alien concept. The civil society has important roles to play, but they can only do so if democratic institutions are established and respected. Further information is required to enable full understanding of the extent in which transparency, accountability and participation are implemented, and their impact on conservation. This is important because, if the local communities are not democratically involved, they will not have the incentive to respect ideas and suggestions from the leaders. This can also affect conservation efforts. Strong democratic institutions are the foundation for a peaceful environment in which development activities, including conservation can take place. No conservation work can succeed in the absence of peace. To be able to secure the participation of local communities in political processes, more effort is needed in raising the awareness of the local communities about their rights and obligations.

## **10.0 ANALYSIS OF KEY THREATS AND TRENDS**

Several aspects threaten the natural resources in the EAME region. The EAME region is a large heterogeneous area therefore; not all threats have the same impact or magnitude. It is important to prioritize these threats in order to facilitate focused attention. In the absence of clear criteria, prioritization is based on the sensitivity of the threat on the natural resources as well as the geographical distribution of the threat.

*Increased human population pressure* Top on the priority is the threat posed by population pressure. Population trends indicate an upward swing in almost all the coastal town in the EAME region. Population in the coastal areas in these countries is not evenly distributed. Most of the people are in the cities and towns, where there the infrastructure is not well developed to accommodate big numbers of people. It is important to address population growth and distribution in order to minimize pressure on the resources. However, population growth should be addressed together with the issue of poverty. Although data is scarce, AIDS will probably cause significant demographic changes in the EAME states, and coastal towns in particular. AIDS is already a major problem in major towns and cities in all the EAME states, and this may slow down future population growth and change future demographic

characteristics. Many of the victims are young people who die at a tender age, leaving behind the very old and very young, who can not take care of themselves.

*Pollution:* Second on the priority list of threats is pollution. All East African coastal towns and cities are expanding rapidly. Economic activities have stimulated rising consumption, industrial expansion and hence industrial waste and domestic wastes. Pollution is becoming a major threat to the marine resources. Most conspicuous pollutants include oil slick (in and around harbors, motorized boats and trawlers). Others are plastic (mostly wrappings) originating from domestic users, industrial dumping, ships; ship and boat wrecks (in all ports) and debris (from agriculture in the hinterland).

*Poverty.* Third on the priority list as a threat is increasing poverty among communities in all the EAME coastal regions. Poverty is both a cause and effect of environmental degradation. All the countries, with the exception of Somalia recognize poverty as a major problem and have established program to address it. Tanzania has a National Poverty Eradication Strategy (URT, 1998a) but Tanzania has not put in place mechanisms to implement the strategy, nor is there any time frame or strategy monitoring plan. Income data indicate a widening gap between the rich and the poor. Equity issues must be addressed if threats posed by poverty are to be reduced. Poverty also manifests itself in non-income parameters such as in inadequate access to water, health, education and poor housing.

*Destructive fishing practices.* Fourth priority threat is destructive practices such as dynamiting, poisoning, beach seining and bottom trawling. These practices damage the marine ecology and resources. It is important to address this issue because EAME countries support fishing as a major economic activity in the region.

*Overfishing.* This is a threat especially as catch decline in most of the areas. Anecdotal evidence from most of the fishermen in the coastal areas, suggest that if catch per unit effort is declining, and most fishermen return home with too little too few fish. This is further confirmed by complaints from the local communities that certain types of fish species are not easily available these days. This suggests that overfishing is a problem in some of the areas in the EAME region. EAME countries issue licenses to foreign fishing companies to operate. The inability to check on what foreign fishing vessels are doing, whether they are fishing the right species and sizes, leads to considerable loss and by-catch, which is sometimes thrown away. Moreover, conflicts between local and foreign fishing companies are increasing and threaten the fishery resources. It is claimed that foreign fishing vessels fish closer to areas where local fishermen fish or have set their nets. Complaints are common in prawn fishing areas (near river mouths – e.g. Rufiji, Wami and Ruvu river mouths in Tanzania (Kulindwa, et al 1998).

Threats related to tourism development. Cultural problems and land degradation associated with tourism development are a threat in the EAME region. Its significance differs from one country to the other, however tourism development has almost the same effect in all the coastal areas of the EAME region. Threats posed by development are more critical in Zanzibar, Kenya, Mozambique and Bagamoyo (Tanzania mainland). These areas receive many tourists, who put pressure on the fragile coastal natural resources. Tourist arrival trends indicates that these areas will continue to receive too many tourists and, more tourism development projects are still being developed (ERB/IRA, 1999). This development will exert more pressure to the marine environment and to coastal people.

*Extractive activities.* Mining, quarrying and coral mining destroy coastal habitats. This is a major problem in Tanzania, some parts and Mozambique and Kenya coast. Even with the absence of data, which shows trends in mineral extraction, extractive activities pose major threats as they exacerbate land degradation and pollution. Salt production and sand mining are some of the critical issues that require immediate attention.

Overexploitation and illegal harvesting of mangrove forests. This threat is critical in Rufiji and Bagamoyo in Tanzania.

## **11.0 RECOMMENDATION FOR THE ASSESSMENT PHASE**

Part III has identified and prioritized key threats. It is important to address them. However, WWF and partners can not address all the problems in all the areas within the EAME. It is important to select focus

areas. This is the activity that follows in the assessment phase of the EAME. The following specific and general recommendations address both the selection and the approach in doing the assessment.

*WWF should work closely with on-going programs and projects in the EAME to identify critical threats and issues of concern.* This approach is critical for it will allow WWF forge links with regionally and local based partners who have accumulated enough experiences in the areas. It will also help sharpen the focus of the assessment to critical issues and assist in selection of areas for intervention.

*Create environmental data.* There is need to help create data bank for the EAME especially for monitoring purposes. As the project develops, all the information that has been collected should be stored in manner that can be easily accessible to all partners. One of the critical problem this reconnaissance has faced (especially the socio-economic part) is the paucity of up to date data. This should be regarded as part of the capacity building effort.

*Filling Gaps.* The reconnaissance was able to identify some critical elements of the socio-economic aspects of the EAME. But data is inconsistent and inaccurate. Gaps must be identified and addressed before a decision to move into a specific area in made.

## **12.0 AREAS THAT NEED FURTHER INFORMATION**

This reconnaissance was undertaken within a short period of time. Some important areas were not visited and information pertaining to these areas was not obtained. In order to have a comprehensive picture of what is actually happening in the EAME region, more information on the following issues will be required:

*Alternative sources of income and income levels at households.* This is important in order to determine options available as well as the impact of differential levels of income at the household on natural resources.

*Traditional governance structure in the coastal regions.* This is important in order to understand traditional systems that worked in the coastal regions, not only in ensuring that administration was properly dispensed, but also, to link that system of administration with local efforts in conservation of natural resources. This information will help us learn from past experiences and see what we can emulate to enhance current efforts in conservation.

*The impact of irrigation and terrestrial farming on the marine environment.* It is assumed that irrigation agriculture (and indeed rain fed farming) that takes place in the terrestrial areas or near the major rivers, impact upon the marine environment. It is however not clear to what extent this is problem and which component of the marine biodiversity has actually been affected. It is important to collect and analyze this information over a long period of time in order to develop intervention measures if the problem is significant.

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