UNEP NAIROBI CONVENTION SECRETARIAT

FINAL REGIONAL SYNTHESIS REPORT ON IMPLEMENTATION OF LBSA PROTOCOL TO NAIROBI CONVENTION

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Executive summary

This synthesis report contains a number of chapters. Chapter 1 is entitled General Introduction: Biophysical and Socio-Economic Setting, and covers the geophysical and oceanographic characteristics, key ecosystems and species, key LBSA problems and issues, and the impacts of LBSA. The region has unique and pristine environmental resources. All WIO countries have LBSA that are causing marine and coastal area pollution, and environmental degradation. However, these LBSA are related to important socio-economic sectors including agriculture, coastal tourism, ports and harbour developments, damming of rivers, urban development, mining, fisheries and manufacturing. The consequent key threats and impacts to the coastal and marine environment include pollution and degradation.

Chapter 2 concerns a country-by-country analysis and summaries of LBSA relevant laws, policies, institutional and other frameworks. All WIO Countries have their own sets of LBSA related laws, policies, regulatory and institutional frameworks but they do not have LBSA specific legislations. Each has a framework environmental law supported by a key framework institution. There are policy and regulatory instruments in most of the countries. Until 2008, none of the countries had a national policy framework fully dedicated to LBSA. However, in the recent years, Integrated Coastal Zone Management (ICZM) related policies, have been developed in Mozambique, South Africa, Tanzania, Mauritius, Madagascar, Comoros and Kenya.

Chapter 3 is entitled: Regional Synthesis: Overall Assessment. All the countries have sectoral legislations, policies and institutions affecting key LBSA sectors such as coastal tourism, forestry, ports and harbours, mining and extraction, fisheries, urban developments, agriculture and manufacturing. Thus major socio-economic activities are organized in a sectoral manner; concepts of integrated planning have not taken root and some of the instruments are old enactments.

However, there are proposals in some of the national reports on which this report is based indicating a move towards unified LBSA legislations and institutions. Other proposals say that there should be reviews and amendments of existing laws and other instruments needed to introduce such integration. There are gaps in the national and regional studies which will require interventions.

Another key finding is that regionally, the countries are seeking to align their frameworks with the LBSA Protocol to the Amended Nairobi Convention. The LBSA legislations or reviews of existing frameworks are to help facilitate ratification and implementation of the LBSA Protocol.

Contents

MMA - Mauritius Marine Authority

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ist of Abbreviations and Acronyms

ASCLME - Aghulhas Somali Current Large Marine Ecosystem

BCLME - Benguela Current Large Marine Ecosystem

Biodiversity(Mozambique

CDS - Centre for sustainable Development for Coastal/Urban/NaturalZones(Mozambique)

CICE - Inter-Ministerial Consultative Committee on

CITES - Convention for International Trade in Endangered

COP - Conference of Parties

DEAT - Department of Environment and Tourism (South

DFA - Development Facilitation Act (South Africa)

DOE - Division of Environment (Tanzania)

DOT - Department of Transport (South Africa)

DWAF Department of Water Affairs and Forestry (South Africa)

ECA - Environmental Conservation Act (South Africa)

EEZ - Exclusive Economic Zone

EIA - Environmental Impact Assessment

EMCA 1999 - Environmental Management and Co-ordination Act

EMPS - Environmental Management Plan of Seychelles.

EPA - Environmental Protection Act (Mauritius)

ERMA - Environmental Regulation on Mining

Evaluation (Mozambique)

FAO - Food and Agriculture Organization

GN - Gazette Notice

ICZM - Integrated Coastal Zone Management

INRAPE- Institut National de Recherche pour l'Agriculture, la Pêche et l'Environnement

KMA - Kenya Maritime Authority

KMFRI - Kenya Marine Fisheries Research Institute LBSA

- Land Based Sources and Activities.

MENR - Ministry of Environment and Natural Resources

MICOA - Ministry for the Co-ordination of Environmental Affairs (Mozambique)

MOE - Ministry of Environment (Mauritius)

MPA - Mauritius Ports Authority Mauritius

MPRDA - Africa Minerals and Petroleum Resources Development Act(South

MWI - Ministry of Water and Irrigation (Kenya)

NDEIE/DNAIA - National Directorate of Environmental Impact

NEAP - National Environment Action Plan (Kenya, Mauritius)

NEAP - National Environmental Action Plan

- National Environment Management Council (Tanzania).

NEP - National Environment Policy (Mauritius),(Mozambique)

NET - National Environmental Tribunal (Kenya)

NPA - National Ports Authority (South Africa)

NSP - National Sewerage Plan (Mauritius)

PAE - (National) Environmental Action Plan (Comoros)

PNE - National Environment Plan (Comoros)

POPs - Persistent Organic Pollutants

Rs - Rupees (Mauritius)

RSP - Regional Seas Programme(s)

SABS - South Africa Building Standards

SAPO - South Africa Port Operations

SEACAM - Secretariat for Eastern African Coastal Area

SMP - Sewerage Master Plan (Mauritius)

SPAW - Specially Protected Areas and Wildlife

SPAW - Special Protected Areas and Wildlife (Protocol)
Species

STAR - Societe de Traitement et Assainissement Regional (Seychelles)

SWAC - Solid Waste and Cleaning Agency(Seychelles)

UNDP - United Nations Development Programmes UNEP
- United Nations Environment Programme.

WIO - Western Indian Ocean Region

WIO-LAB-PMU - Western Indian Ocean Land Based Project Management Unit

WMA - Waste Management Authority (Mauritius)

List of Tables, Figures and Maps

Chapter 1: General Introduction: Biophysical and Socio-Economic Context

1.1 Dynamics of the WIO Region

1.1.1 Geo-Physical and Oceanographic Characteristics.

The WIO Region also refers to the Eastern and Southern Africa region bordering the Indian Ocean on its western part. The region represents a large array of marine and coastal settings, ranging from small island states and mainland states with extensive coastlines and tropical and subtropical climates. The continental coastal states are: Kenya, Mozambique, Somalia, Republic of South Africa and the United Republic of Tanzania. The island States are: Mauritius, Comoros, France-Reunion, Seychelles, and Madagascar (see Figure 1) Figure 1: Map of WIO Region.

The WIO Region is traversed by the Equator, with Kenya being astride the Equator. Its climatic conditions are generally tropical, with relatively moderate sub-tropical conditions and mild winter in South Africa. The mainland WIO Region has a coastal zone with an estimated surface area of 4,080,148 sq. km along a coastline of 13,041 km from Somalia to South Africa. The Island States cover a total land area of about 602, 846 sq. km, with a coastline of 6,360 km including over 400 islands and islets
(SEACAM, Vol.1, 2001). Madagascar is the largest of the WIO Region islands, and is also the fourth largest island in the world, while South Africa is the biggest on the

mainland. Some of the island states such as Comoros and Seychelles are archipelagic states, composed of several small islands. All the island states typically are comprised of more than one island, with Seychelles, with the least landmass in the Region, having as many as 115 islands and islets. The Comoros also has several islands, namely Grand Comoros, Mohéli and Anjouan, islands which cover a total of 1,659 sq. km with a coastline of about 340 km.

The South African coastline is about 3,000 km long extending from the border with Namibia in the west to Mozambique in the east. It links the eastern and western coasts of Africa and connects the sub continent to the Atlantic, Indian and vast Southern Oceans.

The hydrological environment of the WIO Region exhibits interesting characteristics. There are many river basins, some of which have highly variable flow rates and sediment loads. Freshwater discharges from these rivers have a profound effect on the marine and coastal ecosystems in the region, such as driving ecological processes and providing nutrients to sustain living marine resources. Many of these rivers have prominent estuaries and deltas. There are also extensive marine/coastal waters, lagoons, and wetlands (UNEP, 2009).

1.1.2: Overview of Population characteristics and demographics

The WIO region had a population of approximately 178 million people in 2007, out of which about one-third live within 100km of the coast (see Table 3 below). (UNEP 2009). On a country to country basis, in Madagascar, about 23% of the total population of 19.7 million people live within 25 km of the coast, compared to 32.7 % in Mozambique, which is the highest percentage of population living in the coastal zone among the WIO mainland States. In Somalia it is 30.5%; in South Africa 23%; Tanzania 13.6%, while in Seychelles, Comoros, Mauritius and La Reunion it is 100%. The population density varies in the region (UNEP/GPA and WIOMSA, 2004b) with some countries such as Madagascar and Mozambique being relatively sparsely populated with a population density of 27 and 23 people per square kilometre respectively, while other countries such as Mauritius and Comoros are very densely populated with 581 and 315 persons per square kilometre, respectively (The Encyclopaedia of Earth, 2007). Urbanization and availability of ports and harbours have attracted high concentration of population in some coastal areas (UNEP/GPA and WIOMSA, 2004b). Proximity to the coast invariably leads to greater environmental impact on coastal ecosystems. According to World Bank projections, the annual population growth rate in the region in 2007 ranged from 0.5% in Seychelles, 0.4% in South Africa, 2.4% in Tanzania to 1.9% in Mozambique, 2.0% in Comoros, 2.6% in Kenya and 2.6% in Madagascar (World Bank, 2007).

Table 1: Land area, population size and GDP of the WIO countries

Country	Area (km²) [1]	Pop. (millions)[2] 2007	% Coastal pop. In 2000[3] <25km	<75km	<100km	GDP 2007 (US$ billions)[4]	GNI Per Capita 2007[2] (US$)	HDI[5] 2005	Pop. growth rate[2] 2007	Life expectancy[2] 2006
Comoros	2,170	0.63	100	100	100	0.45	1,150	0.561	2.0	63
Kenya	582,650	37.53	6.1	7.5	8	29.51	1,540	0.521	2.6	53
Madagascar	587,040	19.67	23.2	45	55	7.33	920	0.533	2.6	59
Mauritius	2,040	1.26	100	100	100	6.36	11,390	0.804	0.7	73
Mozambique	801,590	21.37	32.7	52.1	59	7.75	690	0.384	1.9	42
La Réunion (France)	2,517	0.76	100	100	100	4.6	6,000	-	1.4	74
Seychelles	455	0.09	100	100	100	0.73	15,450	0.843	0.5	72
Somalia	637,657	8.70	30.5	52.7	55	-	-	-	2.9	48
South Africa	1,219,912	47.6	23.4	35.9	39	277.6	9,560	0.674	0.4	51
Tanzania	945,087	40.43	13.6	17.3	21	16.18	1200	0.467	2.4	52
TOTALS		178.04	20.1	30.4	34.3					

Abbreviations: HDI – Human Development Index

Sources: Gossling, 2006; World Bank, 2007, World Bank 2008, World Bank, 2009; UNDP Human Development Report, 2007; UNEP 2009.

1.2: Key Ecosystems and Species

Both mainland and island coastal States exhibit important similarities in terms of ecosystems and habitats such as coral reefs, rocky shores, sea grass beds, coastal vegetation and mangrove forests, estimated to cover over 630,000 ha (SEACAM Vol.1, 2001). The island states also share some bio-geographical history with mainland Africa, having granitic and volcanic islands features. The WIO Region exhibits a relatively high level of species endemism due to isolation, particularly in Madagascar which is the most

species endemic-rich country in Africa (UNEP, 1999, in cited by SEACAM Vol., 2001). Also, mangrove forests, wetlands and other coastal ecosystems provide important habitat to many endemic and rare species of animals (SEACAM Vol.1, 2001.)

The marine and coastal environment of the WIO Region is recognized for its high ecological and economic value, and is considered a distinct division of the tropical IndoWest Pacific, the world's largest marine bio-geographic province (UNEP, 2009). It sustains a high level of biodiversity, including more than 2,200 species of fish, over 300 species of hard coral, 10 species of mangroves, 12 species of sea grass, over 1,000 species of seaweed, and 3,000 species of molluscs, among others. Some of these species are transboundary (UNEP, 2009).

1.3: Key Marine and Coastal Resources

Key marine and coastal resources in the WIO Region include abundant fisheries, scenic and serene beauty ideal for tourism and holiday making, natural ports and harbours, mangrove forests, coral reefs, sea grass meadows, coastal forests, arable land for agriculture, sand for construction and diverse mineral resources. All the countries of the region access their fishery resources in their territorial waters and Exclusive Economic Zones (EEZ), although in many cases they lack capacity to superintend the resources found within their EEZs. Species rich coral reefs, rocky shores, sandy beaches and lagoons are some of the best endowments of nature for most of the countries of the Region, with Comoros, Madagascar and South Africa being home to endemic or rare threatened species, as well as rare sites. All the countries in the WIO Region have important marine protected areas (e.g Bazaruto, Quirimbas, Cabo Delgado, MalindiWatamu, Kisite-Mpunguti, Mafia, etc). The seabed and its subsoil are not currently significantly understood and exploited, but it is believed that there may be some nodules of precious minerals on the seabed, and natural gas and oil in the subsoil of the continental shelf(UNEP 2010a).

The WIO Region has some of the best natural ports, harbours and bays, especially on the mainland coasts of Kenya, Tanzania, Mozambique and South Africa. In addition, mangrove forests, wetlands, coral reef complexes and other coastal and marine ecosystems provide important habitat to many endemic and rare species of animals (SEACAM Vol.1, 2001.)

The socio-economic characteristics of the WIO region are dictated by availability and patterns of natural resources utilization. Among the most significant coastal and marine resources are fisheries, coral reefs, mangroves and coastal terrestrial forests, sea grass beds, coastal wetlands, minerals, and agricultural land. These resources provide several uses as a result of extractive activities of subsistence and commercial value. The coastal communities depend on these resources for their livelihood particularly for acquisition of food, fuel, shelter, and income. Therefore, the condition of these resources determines the communities' social and economic status. However, the WIO countries are different

in terms of marine and coastal resource endowments, size of population and economic settings.

1.3.1: Fisheries

Fishery resources have immense socio-economic value in the WIO Region. According to the Food and Agriculture Organization (FAO), the WIO covers approximately 8% of the world's oceans and, in 2006, generated 4.8 %(4.5 million tonnes) of the total global fish catch (FAO, 2009; UNEP 2009). The livelihoods of most of the 35.9 million people who inhabit the 25 km coastal strip of the WIO Region are intimately linked to the coastal and marine resources, and particularly fisheries for food security, employment and income generation.(UNEP, 2009). For most of the countries of the region, these resources are either primary contributors to their GDP or vital elements of socioeconomic stability in the coastal region (Van der Elst et al., 2005). According to FAO, in spite of imperfections in statistics, there has been an almost doubling of marine fish capture between 1997 to 2005 in the WIO Region(FAO 2007), demonstrating the growing importance-and vulnerability- of marine fisheries in the region. Statistics in the past five or so years suggest that catches are levelling off, suggesting that fish production may be approaching its maximum harvest potential of about 4.3 million tonnes a year. (UNEP, 2009).

Most of the many and diverse fisheries of the WIO region are harvested by the coastal states, mainly through artisanal and semi industrial fishing. However, the higher value oceanic resources are harvested mainly through purse seining and long-lining by foreign fishing vessels from Europe and Eastern Asia, with transhipment and canning in the region, mainly for the export markets. (FAO, 2007). There are over 160 artisanal fishery activities identified in the WIO Region, including passive trap net fishing at village level to extensive beach seine operations (Van der Elst et al, 2005; WIO Fish, 2008). Artisanal catches include considerable quantities of oceanic and pelagic fishes, such as tuna, larger mackerel and sailfish, when such species move inshore. Artisinal fisheries account for up to 80% of the total marine catch in Tanzania, Kenya, Comoros and Madagascar. Live capture of ornamental species for export is also a significant activity, particularly in Kenya and Mauritius. (UNEP, 2009).

Most of the fish production in Comoros is for local consumption and represents an important source of food security, although some fish production is also for the export market. It is estimated that up to 30,000 tonnes of fish could be landed from the Comorian EEZ. (UNEP, 2009).

Kenya's marine fisheries account for only 2-6% of the overall national fisheries compared to 94-98% for inland fisheries (FAO, 2007). Marine landings varied from 4,763 to 7,774 over the past decade or so (UNEP, 2009). Nevertheless, it is an important source of livelihoods and food security for coastal communities. The potential yield of Kenya's marine fisheries is uncertain, with estimates ranging from 20,000

tonnes (FAO 1990) to 350,000 tonnes (King et al., 2003; UNEP, 2009). Kenya's artisanal fisheries, which experienced growth for decades, is now considered fully exploited with overfishing and intense fishing over coral reefs, causing degradation, low productivity and interference with species diversity. (UNEP, 2009). Kenyan fisheries have also a strong recreational element, mostly targeting yellow fin tuna, sailfish, marlins and swordfishes, thus confirming their contribution to the tourism sector.

In Madagascar, marine fisheries have great value for the country. The country's large coastline boasts a great diversity of fisheries, many of which provide critical socioeconomic support and food security to the nation. Deepwater, offshore fisheries are accessed by about 100 industrial vessels that land about 25,000 tonnes a year, mainly tuna for export. Also, the industrial shrimp fisheries, both shallow and deepwater, are an important foreign exchange earner with over 7,00 tonnes landed in 1995 (FAO, 1997), and increasing to 11,500 (FAO, 2003a). Artisanal shrimp fishing also takes place, and is mostly of high quality and supplied directly to large processing plants. Small-scale fishing employs about 80,000 traditional fishers, some fulltime and others part-time, and their contribution to the national diet is significant. In 2002, traditional fishers were responsible for about 53% of the total marine fish catch (UNEP, 2009).

In Mauritius, considerable diversity of fisheries is found in Mauritius, Rodriguez and the wider Mascarene region, ranging from small-scale artisanal operators to extensive offshore fisheries. About 10,000 are employed in the fishing activities which are categorized into four as follows: coastal (artisanal) fishery, the banks fishery, the semiindustrial chilled fishery, and the sea cucumber fishery.(UNEP 2009) Artisanal fisheries, who traditionally operate in the lagoon areas, provide direct and indirect employment for about 2,300 fishers. These fishers have experienced a significant drop in catches from 1,302 tonnes in 2002, to 640 tonnes in 2007, attributed mainly to a drop in effort by artisanal fishers.

The banks hand line fishery involves seven vessels that operate on the shallow water banks of Saya de Malha, Nazareth, Albatross and in the Chagos Archipelago, while a further four vessels operate in St Brandon.The main target fishery is lethrinids which contributed 83% of the total catch while the remainder is made of snappers, groupers and tunas. In 2007 the total catch from St Brandon was 140 tonnes, while for all other areas the catch was 2,127 tonnes. Octopus resources appear to have been substantially depleted, attributable to dredging and siltation of the lagoon systems.(UNEP, 2009). Concerning semi-industrial fishing, in 2007 the approximately 171 tonnes of lethrinids, snappers, groupers and tunas were caught. In this regard, it should be noted that Mauritius has an important stake in the tuna fishery, partly on the basis of a local tuna processing industry, as well as an important tuna trans-shipment port since the early 1960s.(IOTC, 2008). Finally, regarding commercial harvesting of sea cucumbers, this started in 2006 with licenses to six operators. The total catch in 2006 was 414.5 tonnes and 620 tonnes in 2007.(UNEP, 2009)

In Mozambique the fishing industry is traditionally one of the largest generators of foreign exchange, with export of shrimp from Sofala Bank contributing about 40% of the foreign revenue generated in the late 1990s (FAO, 1997). The contribution made by fish, including shrimp, has however dropped significantly in recent years, to only 5.4% of total export value in 2005 (FAO, 2007b), partly due to greater export earnings in other sectors. Total marine fish production is estimated at between 100,000 to 120,000 tonnes per year. Artisanal fisheries provide livelihood for 70,000 fishers and their families, while also providing food to a very large segment of the population. The number of artisanal vessels is estimated at 15,000). As for industrial fisheries, deepwater fishing by about 150 industrial and semi-industrial vessels earns the country close to US$ 100 million each year (FAO, 2007b). Sport line fishing is also increasing, mainly by South Africans.(UNEP 2009).

In the Reunion (France), three main fisheries are to be found: the small scale coastal fishery, the long line fishery and the Southern Ocean fishery.(UNEP, 2009). The small scale coastal fishery targets reef fish and small pelagic fish that inhabit the narrow coastal areas, with a total catch of approximately 800 tonnes per year (FAO 2008). The long line fishery harvests approximately 3,400 tonnes of swordfish, tunas and billfishes annually, while the Southern Ocean fishery targets tooth fish and crayfish, with estimated catches in the Southern Ocean of 6,000 tonnes per year (FAO, 2008, European Union, 2006). The fishing industry in the Reunion employs approximately 900 people and a further 120 people are employed by the land based processing companies and equipment suppliers (European Union, 2006). Fish is the second most important export product for the Reunion after sugar cane. The main export destinations are Japan, USA and France. The majority of fishery products are provided by the medium and large scale industrial fisheries, accounting for approximately 6,000 tonnes a year or over US$40 million. A smaller portion, 866 tonnes per year is derived from small-scale artisanal fisheries activities, of which a large part is sold locally. (UNEP, 2009).

In the Seychelles, the fishery sector is one of two major foreign exchange earners, along with tourism. It comprises industrial, semi-industrial and artisanal fisheries. In 2005, Seychelles earned US$ 192 million from tuna exports, equivalent to 41% of total export earnings for that year (FAO, 2007b). Most of these earnings came from the industrial fishery. The artisanal fisheries are also very important for food security, employment, and cultural identity in the Seychelles. The total catch from the artisanal fishery has remained fairly stable since 1985, with landings typically ranging from 4,000 to 5,000 tonnes per year (UNEP, 2009). Moreover, the artisanal fishery sub sector employs approximately 1,800 fishers and utilises 400 vessels.

In Somalia, with a 3,200 km coastline, one of the longest in Africa, there is a huge potential for fisheries, driven by seasonal upwelling off the Horn of Africa. Most of this potential is largely untapped currently due to the nearly two decades of instability in the

country. However, considerable tuna harvests continued to be made during this period in the Somali EEZ by foreign operators and mostly offloaded in Seychelles, though this has been significantly curtailed by recent piracy incidents. (IOTC, 2008). Estimates of potential from the 1970s gave figures of 300,000 tonnes per annum, about half of which are small pelagic. An estimated 4,200 artisanal fishers target diverse species, and collectively land just about 8,000 tonnes of finfish per year to supply limited local markets. At present, Somalia does not have any vessels that are large enough to exploit offshore stocks. (UNEP, 2009).

In South Africa, the fisheries sector is a relatively small sector within the national economy of South Africa, with an overall contribution to GDP of less than 1%.The Indian Ocean fisheries are relatively minor compared to the large scale, industrial fisheries on the Atlantic Ocean coast. Nevertheless, numerous subsistence fisheries exist off the KwaZulu-Natal coast on the Indian Ocean. Overall, the industrial fishing operation generates approximately US$270 annually, while recreational fishing generates about US$ 200 million annually. The purse seine fishery for small pelagic species is the largest in South Africa in terms of volume, with the total allowable catch in 2005 approximating 697,766 most of it from the Atlantic coast. Moreover, South African commercial fisheries employ 27,000 people, with an additional 60,000 people employed in related industries. Recreational fishing employs 131,000 people in related activities. Also, at least 3.6 million South Africans depend largely on coastal and marine food resources through subsistence activities, estimated to be worth US$175 annually (UNEP, 2009).

Finally, in Tanzania, marine landings are in range of 45,000-59,000 tonnes for mainland Tanzania (including Mafia Island), and 15,000-20,000 tonnes for Zanzibar. The combined annual total is about 70,000 tonnes, and the fisheries employ an increasing number of fishers (estimated 58,000 in 2000), who land about 90% of all catches. The Tanzanian coral reefs support about 70% of the marine artisanal catches. Shrimp catches are an important source of foreign exchange, accounting for about US$ 6 million annually. Artisanal fishing, for all its socio-economic benefits, has been cited for contributing to severe degradation of the marine environment, largely due to destructive fishing methods and practices (UNEP, 2009)

1.3.2: Tourism

Tourism is another important socio-economic activity in the WIO Region. Much of the WIO Region is endowed with good climate, beautiful sandy beaches and a rich biological and cultural diversity, resulting in huge tourism potential. Tourism and associated service industries contribute significantly to the economies of the countries of the WIO Region, particularly in Seychelles, Mauritius and Kenya. (UNEP, 2006). In Comoros, with a great tourism potential, tourist arrivals are about 20,000 annually over the recent years, with the most frequented areas being the beaches of northern Grande Comoros. Others are coastal and marine areas of Chomoni and Bouni, the salt lake and

Turtle Island all on Grande Comoros, as well as the turtle nest beaches of the protected Moheli Island, and the beaches of Mutsandu and Moya on Anjouan island. The sector contributes 9.1 percent of the Gross National Product (GNP) and employs about 500 people directly and indirectly.(UNEP, 2009).

In Kenya, coastal tourism accounts for over 60% of total sector earnings and contributes a total of 45% of the coastal economy (McClanahan et al.,2005;UNEP/FAO/PAP/CDA, 2000). The main coastal tourist activities and attractions include diving, sport fishing and boating, unique cultural and historic features such as Stone Town in Mombasa and Lamu. In the 1990s approximately 800,000 tourists visited Kenya annually, making tourism a leading foreign exchange earner. In 2007 there was considerable growth over the previous years, with arrivals exceeding 2,000,000, and generating US$910 million in revenue, half of which came from coastal tourism. Over 500,000 people are employed directly and indirectly in coastal tourism (UNEP, 2009).

Madagascar, with perhaps the most unique assemblage of biodiversity in the WIO region, has a huge tourism potential. The Malagasy coast has corals, fine beaches and ample opportunities for water sports. Key coastal destinations include Cape d'Ambre, Nossy Be, Tulear, Anakoa and Diego Suarez among others. Tourist arrivals are about 80,000 annually. Revenues from tourism were US$ 91 million in 1998 and US$110 million in 2000, amounting to about 2% of the GNP (UNEP/GPA and WIOMSA, 2004b) In Mauritius, coastal tourist endowments, including hotel establishments, account for for the popularity of this sector. In 2007,. there were 907,000 tourist arrivals in the country. The contribution of tourism rose from 3% of GDP in 1995 to 17% in 2007, while the total direct employment in the tourism industry more than doubled between 1990 and 2001, increasing from about 9,000 to 20,000. Mauritius plans to increase its capacity to at least 2 million tourist arrivals annually. (UNEP, 2009).

In France-Reunion, most of the 342,000 per year tourist arrivals are from mainland France, accounting for up to 80% of the total, including 34% who have family connections in the Reunion. Beaches and marine related activities such as diving, sailing and fishing are popular with tourists. The tourism sector employs 6,000-7,000 people and fetches US$ 500 million, representing 3-4% of the Island's GDP (UNEP 2009).

In Mozambique, the coast provides many excellent goods and services, including natural and cultural attractions, such as beautiful beaches, rich mangrove edged lagoons, estuaries and bays, and extensive coral; reefs. The tourism sector is one of the fastest growing economic sectors in Mozambique, with 136,000 tourist arrivals in 1994. By 2005, tourist arrivals had grown to 470,000. Coastal tourism is well developed in places such as Ponta do Ouro on the Machangulo Peninsula, Inhaca Island, the Macaneta Peninsula, the Biline-Xai-Xai Chonguene coastline, the Bazaruto Archipelago, and the Cabo Delgado province. Many of ther tourist activities are beach based, with game fishing and and diving being very prominent (UNEP, 2009).

In the Seychelles, tourism is concentrated on Mahe Island and the nearby granitic islands of La Digue and Praslin. Apart from the usual marine water/beach based activities, other tourist attractions include excellent natural history, avifauna and geological features. More than 50% of terrestrial areas are gazetted protected areas, and many of these are linked to marine areas. Coastal and marine tourism is one of the most important economic sectors for the country, with a strong emphasis on high-value tourism where the country aims to be a "3-5 star destination". (Gossling, 2006). In 2000, a total of 130,000 tourist arrivals were recorded, generating US$ 112 million, equivalent to 20% of GDP and 60% of foreign exchange earnings. Moreover, the tourism industry employs approximately 5,000 direct jobs (UNEP/GPA and WIOMSA, 2004b).

South Africa has abundant and diverse natural and cultural resources including wildlife and beaches. Tourist arrivals have risen steadily over the years since the late 1980s, exceeding 3.8 million in 1994, 6.5 million in 2003, and 6.8 million in 2005. Between 3040% of the tourists book holidays at or near the coast, where the main tourist activities include sport fishing, beach-based water activities such as diving and snorkelling. Others are whale catching, cage diving for sharks and visits to several top class marine parks and aquariums. The Kwa Zulu Natal region attracts huge numbers of domestic and international tourists.

Lastly, in Tanzania, coastal tourism is based on beaches, seafood and aquatic features such as coral reefs and the nine marine protected areas (MPAs). Scuba diving and snorkelling are some of the key attractions in Zanzibar's main island of Unguja, and Pemba and Mafia islands. Moreover, since the 1990s there have been tourism expansions in mainland coastal areas of Dar es Salaam, Tanga, Bagamoyo among others. Tourism earns substantial foreign exchange and also provides important livelihoods for coastal populations. It accounts for about 16% of GDP and nearly 25% of the total export earnings.

The WIO countries are at various stages of economic growth with considerable differences in the Gross Domestic Product (GDP). Majority of the countries are classified as 'poor' by World Bank criteria. Since the GDP and GDP Per Capita (PPP) estimates vary significantly from one source to another, data from UNDP has been used in this analysis. The mainland countries have relatively higher GDP compared to the island states. On the other hand, Seychelles had the highest GDP Per Capita (PPP) in 2004, followed by Mauritius, South Africa, Comoros, Kenya, Mozambique, Tanzania and Madagascar respectively (UNDP, 2007). This implies that Seychelles, Mauritius and South Africa that have GDP Per Capita (PPP) of over US dollars 10,000 per annum are enjoying relatively higher living standards than the other countries, other factors being equal. (UNEP, 2010a).

1.3.3: Shipping and Ports

Each of the the WIO countries has at least one significant sea port. Examples include the ports of Mogadishu, Kismayu and Bosaso in Somalia; and Mombasa port, not only the largest sea port in Kenya but also one of the biggest and strategic along the Eastern Africa coast. The port of Mombasa is connected to the world's major ports with over 200 sailings per week to all regions of the world. Other smaller ports are at Tudor Creek in Mombasa, Shimoni, Kilifi, Mtwapa, Kipini, Vanga-Funzi aare, Malindi and Lamu. Shipping and ports are estimated to contribute 15% of the economy of the Kenyan coast.(UNEP/GPA and WIOMSA, 2004)

The major ports in Tanzania include at Dar es Salaam, Tanga, Mtwara and Zanzibar, and smaller ports at Kilwa, Lindi and Mafia. In Mozambique, key ports include Maputo, Beira and Nacala, while smaller ones include Inhambane, Quelimane, Pebane, Angoche and Pemba. In South Africa, large commercial ports on the WIO side include Saldanha Bay, Cape Town, Port Elizabeth, Coega, East London, Durban and Richards Bay. South African ports handle an average of 13,000 vessels carrying 500 million tonnes of cargo annually, with major upgrades expected to increase handling capacity and absorb the rapid increase in commercial traffic.

In Madagascar, sea transport is very important, considering the large size of the island State and the relative under development of road and rail infrastructure. The country has 19 ports of various sizes and capacities. These include Mahajanga, Toliara, Antsiranana, Tolagnaro, Manakara, Mananjary,Nosi Be, among others. In the Comoros, each of the three islands has a small port facility catering for local trade: the port of Moroni (Grande Comoro); Fomboni (Moheli) and Mirontsi(Anjouan). Comoros is on the main route of oil tankers with more than 500 million tonnes of oil passing close by, representing more than 5,000 tanker voyages per year.(UNEP, 2009)

Finally, Port Louis is the key port of Mauritius, and it handles approximately 6.5 million tonnes of cargo per year through more than 2,000 vessel calls. Vessel and cargo traffic is rising, with an increase of 9.0% in total handling and a 15.3% increase in container traffic flow in 2007/2008 over the previous year. Port Mathurin serves the Rodriguez Island, mainly transporting cargo and passengers to and from Port Louis.(UNEP, 2009) In the Reunion, the main port is Le Port, located on the east coast of the island, and about 30 kilometres to the south of the capital, St Denis. Though small, the port has excellent and efficient facilities coping with large volumes of vehicle imports, sugar exports and passenger liners.. There is a main power plant located in the port, as well as various depots and several smaller industrial enterprises.(UNEP,2009)

1.3.4: Agriculture

Agriculture, including in the coastal areas, is an important socio-economic sector in the WIO region, accounting for food security at national and household level, creating employment for millions, and contributing to GDP and foreign exchange earnings. There

are significant differences in the nature and extent of agriculture in the various countries, depending on farm sizes, climatic and weather conditions, and other factors. Arable land, irrigation, use of fertilizers, pesticides and other farm inputs differs among the countries.

In the Comoros, with mainly small farms, agriculture is a primary activity and accounts for 70-80% of employment and almost 80% of the land area. Some of the main crops produced for export are high value products of vanilla, ylang-ylang and cloves, which together account for 95% of export earnings. Cereals, rice, potatoes and legumes are grown mainly for local consumption.(UNEP,2009)

In Kenya, agriculture is the main stay of the economy, providing employment to about 70% of the country's labour force, approximately 10 million people, compared to only three million employed in the formal sector. It also generates 80% of the export earnings and supplies over 70% of the raw materials to the agro-industry. While the sector contributes more than 45% to annual government revenue, its contribution to GDP has shrunk in relative terms from 33% in 2000 to 23%in 2007(UNEP, 2009). Coastal agriculture mostly produces food and non food products at subsistence and small-scale commercial levels. Fruits and vegetables are also grown for local and export markets. Tree crops (cashew nuts, coconut, citrus and mango) occupy about 50% of the arable land. There is also livestock farming, especially in the marginal lands of the coastal region.(UNEP, 2009).

In Madagascar, agriculture, jointly with fisheries and forestry, account for one third of the country's GDP and employs 70% of the labour force.(FAO, 1997). It contributes more than 70% of export earnings (UNEP/GPA and WIOMSA, 2004b). About 3 million hectares are under cultivation, for food and non food crops, with large tracts of land used for livestock rearing. Traditional agriculture contributes 30-60% of the total agricultural production in the country.

In Mauritius, while up to 49% of the land is arable, only about 3% is under permanent cultivation, and mostly for sugar cane production. It yields about 500,000 tonnes of sugar annually. Other land agriculture yields food crops as well as tea and tobacco. In recent years more agricultural land has been converted to industrial and urban development, causing reduction of agricultural land by about 5,500 hectares over the past 10 years. In Rodriquez most agriculture is linked to highlands pastures.

In Mozambique, agriculture is an important socio-economic sector and is mostly smallscale. Commercial or mechanized farming occupies only about 250,000 hectares, or about 8% of total crop land. More than 80% of the country's population depends on agriculture for livelihood, and the sector contributes about 40% of the country's export value. In 2007, agriculture contributed 28% of GDP, up from 23% in 2000.(World Bank, 2009). Most of the agricultural activities take place along or close to the lower reaches

of the main rivers such as Monapo, Pungoe, Maputo and the Incomati. Large scale sugar cane production has developed in recent years, while the cashew nut industry has been revived, besides farming in many food crops.(UNEP, 2009)

Sugar cane farming is by far the most important farming activity in France Reunion, accounting for 33% of total agricultural production in the island, at a value of approximately US$160 million in 2004. Of the 37,000 hectares of arable land, two thirds is designated for sugar cane production. Sugar is the main export product from the Reunion. The remaining 67% of agricultural production is equally attributable to fruits, vegetables and livestock.(UNEP, 2009).

In Seychelles, due to its small size and the lack of arable land, there are only small areas suitable for agriculture. Consequently, Seychelles heavily depends on imports of agricultural products. However, there is some cultivation of coconuts, cassava, fruits and vegetables both on subsistence and commercial basis, and many small-holders provide an important contribution by cultivating crops for domestic consumption.

In Somalia, almost three-quarters of the land has agricultural potential, with rangeland production being hugely successful. Besides the various traditional crop and animal products, one of the most important socio-economic products is qaat, a semi-narcotic plant, the leaves of which are chewed daily by most of the adult male population. Qaat yields a turnover of US$150,000 daily.

In South Africa, agricultural production is well developed, providing not only most of the national food requirements, but also substantial exports. Major products include cereals, deciduous and citrus fruits, livestock, dairy products and silviculture.The coastal zone provides other and more diverse opportunities for agriculture, with generally rich soils on the east coast. There are grapes produced in the south coast while sugar cane is prominent in KwaZulu Natal. Dairy, hydroponic and vegetable tunnel farming and poultry farming are also common in the coastal belt. Although commercial farming is well developed in South Africa, small scale and subsistence agriculture prevails in most regions, providing food security and other products at local and national level.

Finally, in Tanzania, the agricultural sector employs more people than any other sector and is considered a mainstay of the economy. Coastal agriculture is mostly rain-fed and dominated by peasant small-holder farmers, with main food crops being cassava, maize, and rice. Cash crops include sisal, coconut, cardamom, cotton, fruits and horticultural produce. Poor agricultural practices such as “slash and burn” have resulted in soil erosion and subsequent sedimentation of coastal waters. (UNEP, 2009)

1.3.5: Industry

Another key sector in the WIO region is manufacturing and processing industries, mainly supportive of tourism, fisheries, agriculture, mining, construction, and other

production. Services generally make up the larger contribution in the GDP of the WIO region (58%), followed by industry (22%) and agriculture (23%). South Africa is leading in industrial developments, with about one third of GDP. Many industrial establishments are based in the port cities such as Port Elizabeth, Richards Bay, Durban, East London and Cape Town. Some of the industries located in the port cities include aluminium smeltering, fertilizer plants, kraft mills, oil refineries, paper factories, chemicals, textiles, rubber goods, ship-building, a regional container hub and sugar milling.
Elsewhere, there are textiles and sugar milling in Mauritius, both of which have contributed to Mauritius having the second highest GDP in Africa (World Bank, 2009a). In the Reunion, the largest industrial sector is associated with the production of goods and services for direct use by the inhabitants and visitors, equipment manufacturing and agro-industry, led by sugar milling. (UNEP 2009). In the Seychelles, leading industrial establishments in the coast include a tuna canning factory in Mahe, which is one of the largest in the world. Others are a paint making factory, slaughter house and brewery, which mainly produce for local use.

Kenya's coastal industries have in recent been boosted by incentives under the United States of America (USA)-African Growth and Opportunity Act (AGOA) initiatives. Examples include textile factories in Mombasa and Kilifi districts, primary production and agro-processing for local and export markets, cement making, oil refineries, steel and iron smelting, and others. In Madagascar, major industrial establishments include those dealing with small-scale labour intensive industries such as handicrafts, textiles and clothing; mining, oil refineries among others.

In Mozambique, the industrial contribution to the GDP has risen a significant 27.4 % in the period 2000 to 2006, relatively the highest of all of the WIO countries. The port of Maputo has been the main focus of this growth benefitting from its links with South Africa and thee Maputo Corridor project designed to foster transboundary economic growth. There is also a large aluminium smelter at Mozel, and power generation at Cabora Bassa. Other growing industrial cities include Beira and Pemba (UNEP 2009). And in Tanzania, there are many industrial developments, many of them located along the coastal zone, particularly in Dar es Salaam and Tanga, with a contribution to GDP of 17%.

1.3.6: Other Socio economic sectors and Activities.

Other socio-economic activities and sectors include mariculture, mining, salt production, and oil and gas production, all with various levels of contribution to the countries' GDP, employment and livelihoods.

1.4: Key LBSA Problems and Issues

1.4.1: Overview

A significant amount of the pollution load introduced into the ocean in the WIO Region emanates from land based and activities (UNEP, 2009). Pollutant loads from such

sources and activities are typically and invariably disposed in the coastal zone where they affect some of the most productive areas of the marine environment, such as estuaries and near shore waters. Moreover, contaminants which pose risks to human health and living resources can be transported long distances by water courses, ocean currents and atmospheric processes. (UNEP, 2009). The major pollutant categories responsible for pollution and degeneration of water and sediment quality include: microbial contamination, high suspended solids, chemical pollution, marine litter and eutrophication. The direct causes of pollution problems in the WIO Region are linked to eight key underlying sectors: urbanization, tourism, agriculture, industry, mining, transportation (including harbours), energy production, and aquaculture. (UNEP, 2009).

Key LBSA induced and trans boundary environmental problems include pollution leading to poor water and sediment quality, and manifested by microbial contamination, high suspended solids, chemical pollution, marine litter and other solid wastes, and eutrophication. Others are physical alteration and destruction of habitats (PADH), and alteration in freshwater flows and sediment loads from rivers. PADH impacts include degradation of mangrove forests, sea grass beds, coral reefs, coastal forests, and shoreline changes. Alteration of river flows and sediment loads lead to poor water quality. On the other hand, problems related to governance of coastal and marine environment of the WIO Region include: policy and legislative inadequacies, limited institutional capacities, inadequate awareness, inadequate financial resources and mechanisms, as well as poor knowledge management. (UNEP 2009).

1.4.2: Key Underlying Sectors: Status and Trends

There has been rapid and often uncontrolled urbanization and or including tourism developments, occurring in coastal areas of the WIO Region. These developments usually lead to an increase in municipal waste water, municipal solid wastes and atmospheric emissions such as those from the combustion of fossil fuels and vehicular traffic.(UNEP, 2009). Municipal waste water, containing untreated waste water from sanitary facilities such as septic tanks, pit latrines and malfunctioning waste water treatment plants is a major source of marine water quality degradation in many of the WIO countries. However, while available information on municipal waste water loads varies from one country to another, the highest pollutant loads entering the WIO environment originate from the mainland states as well as Madagascar, with South Africa and Tanzania being far up front. (UNEP, 2009).

Municipal waste water is usually discharged directly to the marine environment or it enters the ocean through seepage or via rivers, mainly in urban areas and tourist establishments, in all of the countries of the WIO Region. Microbial contaminants, nutrients and suspended solids are the main pollutants in untreated municipal waste water, with the highest concentrations of these being found close to the major cities. However, in many rural areas of the coast low level sewage contamination from defecation on beaches or in coastal bush is common. (UNEP, 2009).

Agricultural activities contribute mainly to marine pollution in so far as practices produce elevated levels of four types of pollutants, namely suspended solids arising from erosion due to inappropriate land use practices, inorganic nutrients mainly from excessive use of fertilizers, pesticides(persistent organic pollutants), and microbial contaminants typically associated with runoff from livestock rearing areas. Pollutants from agricultural activities usually enter the marine environment through river discharges, although agricultural activities adjacent to coastal areas can directly contaminate coastal waters through surface or sub surface run off. The physical effects of soil erosion in river basins and the subsequent impacts related to suspended solid loading and siltation in coastal systems are currently of greater concern than agrochemical pollution in most countries around the region. Impacts from soil erosion are especially notable along the coasts of Kenya and Madagascar.(UNEP 2009).

On their part, industries and mining are responsible for pollution and degradation through inappropriate disposal of liquid wastewater, solid waste or atmospheric emissions. Major industries in the WIO Region include manufacturing, textiles, tanneries, paper and pulp mills, breweries, chemicals factories, cement factories, sugar refineries, food processing, fertilizer factories, oil refineries, oil and gas exploration, and heavy minerals and sand mining.

In the Comoros, processing industries associated with agricultural and livestock products including food processing account for 85% and 92% of the BOD and suspended solid load respectively, although both are small compared to domestic waste loads.

In Kenya, most industries are concentrated in and around Mombasa, Kilifi and Lamu districts. Very few industries treat their waste water which is discharged either to municipal sewers or storm water drains. Because of proximity of the industrial areas to the natural drainage systems, most of the pollution effluent generated on Mombasa Island the surrounding mainland shores ends up in the estuarine creeks around Mombasa. In Madagascar, most industrial activities are located in the coastal urban centres, mainly near the ports of Antsiranana, Ambilbe, Mahajanga, Tolagnaro and Toamasina, although the textile industry is primarily located in Antananarivo. Most industrial activities deal with seafood processing, sugar extraction, oil and soap production, breweries, tanneries and sisal production. Most of these industries do not treat their wastes, or where it exists the same is usually limited to coagulation and decanting.(UNEP 2009).

In Mauritius, sugar production is the largest contributor to industrial waste water, with other industries being textiles, breweries and food processing plants. The estimated pollution load from the 31 major industries located in Mauritius accounts for 1,117

tonnes of BOD, 17 tonnes of nitrogen, 81 tonnes of total phosphorous and 2,306 tonnes of suspended solids to the marine environment.

Most industries in Mozambique are located in the coastal cities including the capital Maputo, Matola and Beira and they include textile, breweries, and paper and tyre factories. Most of these industries discharge untreated waste water into the Infulene River that drains into Maputo Bay. The industries discharged a total of 79,388 tonnes of BOD in 1996, including an unknown quantity of waste containing heavy metals such as mercury, lead, chromium, manganese, nickel and zinc. Major industries responsible for marine and coastal pollution in the Seychelles are the food processing and chemical industries. Estimates of BOD load introduced by industrial processes to the marine and coastal environment indicate that the food processing industries (agriculture and livestock products) account for 71.6% and 88.7% of the BOD and suspended solid loads, respectively. Others contributors are fish processing (17.7%), canning industries (6.7%), and brewing industries.(UNEP, 2009).

Elsewhere in Tanzania, even with relatively low industrialization, disposal of untreated industrial waste is causing localized pollution. About 80% of the industries in Tanzania, including food processing industries, chemical factories, breweries, soap and steel manufacturing plants, are located in the coastal city of Dar es Salaam where most of the industries discharge their waste water into the Msimbazi and Mzinga creeks. Industrial waste water discharge contributes an estimated 2,715 tonnes per year of BOD and 15,454 tonnes per year of suspended solids to the marine environment, which is equivalent to 19% and 55% of the total BOD and suspended solid loads from Dar es Salaam city. Breweries account for most of the BOD and suspended solids while nutrient loads are mainly from slaughter houses. Moreover, about 43% of the major industries in Dar es Salaam emit atmospheric pollution. Over in Zanzibar, industrial activities are concentrated around Saateni, Maruhubi and Mtoni areas and include mainly food processing (such as slaughter houses, dairy products and beverages) and chemical industries, which all generate between 15 and 16 tonnes respectively of BOD and suspended solid loads per year.(UNEP, 2009).

And in South Africa, a more industrialized country than any other in the WIO Region, industrial waste water disposed to the marine environment of the WIO occurs mainly in the larger cities along the east coast such as Port Elizabeth, East London, Durban and Richards Bay. They discharge an estimated 308,100 cubic metres per day of industrial waste water to the ocean However, fortunately, most of this effluent is discharged to the offshore environment through properly designed marine outfalls that are subject to regular environmental monitoring and assessment studies.(UNEP 2009).

Other pollution and degradation problems arise from mining, transportation, energy production and aquaculture, with varying levels of importance and impact across the

WIO Region. Coastal mining of heavy metals is especially in Madagascar and South Africa (Kwa Zulu Natal) (UNEP 2009).

1.4.3: Impacts of LBSA

Microbial contamination is one of the pollution categories with major impacts in the WIO Region. Socio-economic impacts associated with it include human health risks arising from use of water for recreation or ingestion of contaminated seafood, as well as reduced quality of sea food products, including fisheries, cultured or harvested in the affected areas. These consequences affect stakeholders across the society, including local communities, local and international tourists and industrial, fisheries and aquaculture operations, all of which depend on the marine environment for recreation and the collection and culture of seafood.

The loss of recreational value of coastal waters is widespread across the WIO Region, mainly due to unacceptable levels of faecal bacteria. (UNEP, 2009). Examples of particularly affected areas or hotspots include Taolagnaro, Mahajanga and Nosy Be in Madagascar; the Incomati River mouth, Maputo Estuary, areas near the Infulene River mouth, Beira Bay and Nacala Bay, all in Mozambique; Pointe aux Sables near Port Louis in Mauritius; and Kilindini/Port Reitz creek area, and the Sabaki estuary/Malindi Bay complex all in Kenya. Others are Beau Vallon Bay in Seychelles; some localized areas such as surf zones and estuaries, as well as highly developed urbanized sections of the coastline in South Africa; and waters around Dar es Salaam and Stone Town in mainland and Zanzibar-Tanzania respectively.(UNEP, 2009.)

High suspended solids as a pollutant category causes several environmental impacts in the WIO Region, including smothering of benthic communities, suffocation of marine organisms and loss of productivity through reduced light penetration, mortality of marine biota, chronic and acute effects on marine biota, modification of marine biota species composition and discoloration of coastal waters. On the other hand the socio economic consequences associated with increased suspension of solids in coastal waters include: loss of aesthetic value, loss of commercial and or artisanal fisheries resources and revenue, reduction in quality of sea food products, and negative impacts on the aquaculture and agro processing industries. (UNEP, 2009.)

For example, sediment loading has been noted to affect the coral reefs in the Malindi National Marine Park and Reserve, Malindi Bay leading to a decrease in sea grass species and fisheries, and the Port of Mombasa, which requires regular dredging. Other affected areas are the lagoon at Rodriguez and in Grand Baie in Mauritius, leading to modification of ecosystems, damage to coral reefs, complete siltation of certain bays, and reduced artisanal fishing. In Mozambique, the Maputo and Beira harbours are sedimentation hotspots, and large quantities of sedimentation have to be dredged from the ports annually. In Seychelles, the main islands of Mahe, Praslin and La Digue have often experienced higher sediment loads through discharge and reclamation projects,

contributing significantly to coral mortalities. And in Madagascar, with enormous river systems and high seasonal sediment load, significant impacts have been recorded in mangrove areas, smothering the root systems of trees and causing die back of some forests. Coral reef systems have also deteriorated due to localized higher suspended sediment loads. (UNEP, 2009.)

Chemicals as a pollutant category cause several environmental impacts in the WIO Region: discoloration of coastal waters, chronic effects that can alter growth, reproduction and other physiological processes of marine biota, acute effects that induce mortalities of marine biota, and modification of marine biotic species composition. Socio-economic impacts of chemical pollution, which also affects all stakeholders across society, include loss of commercial and artisanal fisheries' potential, reduction in quality of sea food products from affected areas, and human health risks associated with contact recreation or ingestion of contaminated sea food.

Cases and signs of chemical pollution have been recorded in the WIO Region. These include ports and harbors, which are regarded as hotspots of chemical pollution. Examples include Kilindini/Port Reitz and Makupa creeks, as well as the Sabaki estuary/Malindi Bay Complex, and areas around Mombasa in Kenya. There have been at least five other oil spills in Mombasa since the British tanker Cavalier incident in 1972. Such oil spills result in mangrove die back, especially in Mida Creek where the effects of the oil spill were still evident ten years after the last incident. The main effects of oiling on mangrove ecosystems are complete smothering of estuarine vegetation and organisms. Oil spills also affect sea grass habitats and other benthic biota. (UNEP, 2009.)

In Madagascar, chemical pollution hotspots include Mahajanga and Nosy Be, and particularly in close proximity to sewage outfall points where heavy metals in sediments were the highest recorded for the WIO Region. Studies conducted in Mozambique have shown presence of heavy metals, particularly lead, in the Port of Maputo, in the discharges from the Matola and Maputo Rivers and in Nacala Bay. In Mauritius, some of the industries such as steel mills, galvanizing, electroplating and battery manufacturers traditionally discharged directly into Grand River North West and St Louis River, although the situation has improved over the past few years. However, there are concerns about indications of elevated levels of zinc and lead in urban estuaries.

Chemical pollution is generally not regarded as a serious problem in South Africa, including Durban and Cape Town, where the system of waste water discharges from both municipal and industrial sources is regulated, licensed and monitored. However, some pesticides have been detected in fatty tissues of seals and dolphins along the South African Coast, as well as very high concentrations of chemical HCH associated with the use of the pesticide lindane. In Tanzania, Dar es Salaam suffers some significant amounts of heavy metals, including copper and chromium, in mangrove sediments and

associated biota near the city, including Mzimbazi and Mtoni mangrove areas, as well as different parts of Zanzibar, particularly coastal urban centres. (UNEP, 2009.)

Marine litter as a pollution category is also significant in the WIO Region. The main culprit sources are urban and tourism sectors, industry and transport, and fisheries, mainly connected with inappropriate facilities for the disposal of solid wastes. Environmental impacts of marine litter include ingestion by or entanglement of marine organisms, resulting in mortality of vulnerable species and potential loss of biodiversity, including live corals. Socio-economic impacts of marine litter include loss of aesthetic value of coastal areas and risk to human health through contact with contaminated waste products such as medical wastes. The consequences associated with marine litter affect stakeholders across the societal spectrum, including local communities and large tourist developments, compromising the aesthetic value of coastal areas and posing public health problems. However, the recent (2008) marine litter assessment report for the WIO region indicated that, except for South Africa, where the marine litter situation is reported to be "unacceptable", the environmental and socio-economic impacts of marine litter are largely inferred and are not yet adequately assessed or quantified. (UNEP, 2009.)

Finally, eutrophication and algal blooms as a pollution category has several environmental impacts including the following: nuisance, opportunistic or harmful algal blooms affecting aesthetics and biodiversity, discoloration of coastal waters, affecting light-dependent benthic species, smothering of benthic communities, mortalities of marine biota and modification of marine biotic species composition. A broad range of stakeholders are affected, including local communities and larger sectors such as commercial fisheries, aquaculture and tourism, which bear several socio-economic consequences. These include loss of aesthetic value, risks to human health arising from contact recreation and ingestion of contaminated seafood, and loss of artisanal or commercial fisheries and aquaculture.(UNEP, 2009.)

Country specific examples of eutrophication pollution include reports of abundant growth of epiphytic algae on sea grass and the dominance of the green algae in areas adjacent to dense tourism developments along the Kenyan coast; high nitrate concentrations introduced into lagoon systems through agricultural return flows associated with algal proliferation in the lagoons of Belle Mare/ Palmar in Mauritius. This causes some affected hotel developments to remove algal deposits from the shoreline on a weekly basis, as well as smothering of coral reefs in other areas.. Elsewhere, in South Africa, this problem occurs mainly in estuarine areas due in part to agricultural irrigation return flows, while in Tanzania, proliferation of macro algae has been reported in the Tanga area, due to nutrient loading from municipal waste water and industrial discharges. In Zanzibar, where eutrophication is associated with the release of inorganic nutrients from domestic sewage, it has been identified as one of the main causes of decrease in coral- reef -building algae. (UNEP, 2009).

1.5: Justifications for LBSA Protocol to the Nairobi Convention.

The foregoing overview underlines the importance of LBSA issues in the WIO region. Indeed, globally, it is estimated that LBSA accounts for as much as 80% of all marine pollution, including municipal, industrial and agricultural wastes (UNEP, 2010a). In the WIO region, as elsewhere in the world, there have been increasing challenges and severity of LBSA causing pollution and degradation of the marine environment. Many scientific and technical studies in the WIO region and in other regional seas indicate that pollution problems are taking a severe toll on human health, coastal ecosystems, and socio-economic activities in the coastal and marine areas. The WIO region needed to act sooner rather than later, inter alia, by the development of the LBSA Protocol to the Nairobi Convention.

Moreover, the Nairobi Convention itself and its other Protocols did not adequately deal with LBSA issues, thus creating a gap in the regional legal framework for the protection of the coastal and marine environment from pollution and degradation caused by LBSA. The Nairobi Convention being a framework law only provided a broad obligation for the Contracting Parties to take all necessary measures to prevent, reduce and combat LBSA. The other two protocols concern specially protected wildlife and fauna (SPAW Protocol) and oil pollution emergencies (Emergency Protocol) respectively, and do not and were not intended to address LBSA as such.

Finally, best practice from other regional seas point towards the development of framework conventions supported by more detailed and technical protocols and annexes. In the WIO region, such detailed protocol and supporting annexes has since been adopted after very rigorous and consultative processes among and within the Contracting Parties. Prior to the WIO region LBSA Protocol, several regional seas had adopted and implemented LBSA protocols, including the Mediterranean, South Pacific, Black Sea, Wider Caribbean and the Kuwait region. The Mediterranean and Black Sea regions have even reviewed their LBSA protocols in more recent years, while a new instrument was developed for the Caspian Sea region. (UNEP, 2005)

Chapter 2: Country by Country Analysis of Policy, Legislation and Institutional Frameworks Relevant to LBSA.

2.1: Comoros

The following are brief summaries of relevant policies, legislation, regulations and institutions for LBSA, including analysis of gaps in the said frameworks, assessment of

adequacy of existing frameworks, and identification and selection of effective strategies and measures.

2.1.1 Legislation

Comoros has framework legislation, institutions and several other laws that deal with LBSA. The framework environmental law is Loi No. 94-018 du 23 Juin 1994. This Act aims at preserving the diversity and environmental integrity of the Islamic Republic of the Comoros; creating a quantitative and qualitative utilisation of natural resources for the present and future generations; and guaranteeing to all citizens a safe and balanced living environment.

The Act (Part 3) provides for a mandatory impact assessment study as a prerequisite for major coastal and other developments, which have or are likely to have environmental impact (Art.11). Articles 31, 32, 33, 34, 35 and 36 generally outline marine environment problems and the legal response to them. The texts concerning the application of these articles have not yet been elaborated. Some texts have been prepared and have to be submitted to Parliament for approval. However, the provisions apply to the Comoros archipelagic waters, territorial sea, exclusive economic zone, corresponding seabed and the coastal and marine environment. Elsewhere, the Act has provisions on forests (including mangroves) (Arts 50, 51, 52,53). Government determines the national policy on forests whether in the public or private domain. The Act seeks to strictly protect the forests heritage of the Comoros. The Council of ministers is empowered to make guidelines on the general protection and exploitation of forests.

The Act also has detailed provisions regarding penalties for breach of its provisions (Part VII, Arts 73-88). In this regard power is vested in the Director General of Environment to ensure compliance of the provisions. There is a range of environmental offences as well as penalties for breach. Penalties include payment of specified fines and/or jail terms ranging from months to years (5 years maximum).

This Act is not well known in the Comoros and despite its existence many breaches happen. This Act is too general and it is noteworthy that the coastal zone relevant provisions are not sufficiently detailed. The problem of the implementation of this Act and of other regulations is common in the Comoros and particular attention should be put in enforcement. The Act is either generally ignored in application or not applied. The problem of impunity remains a major obstacle in the application of the Act. It would be good to envisage an amendment to this Act by introducing a specific chapter on the integrated management of the coastal zone; wide dissemination and awareness of the Act and its provisions; elaboration of formulation on application texts materials, particularly those in the domain of the council of ministries; and identify necessary strategies for the application and better implementation of this Act.

Some of the other laws relating to other relevant sectors include Loi no.82-005 relative a delimitation des zones maritimes, which defines Comoros' maritime zones and vests jurisdiction in the State. Of relevance also is Decret no. 71-360 of 06.05.1971 on territorial waters. A Decree of 22. 02. 1935 defines "Port" and establishes the national office for ports (Loi no. 81-37, as amended by Loi no. 82-25 of 19.11.1982).

Table 2: Summary of LBSA Relevant Comoros Legislation

Decree/ Law no.	Year	Title of Decree/law
71-360	1971	Decree on Territorial Waters
82-005	1982	Law Concerning Delimitation of Maritime Zones
82-25	1982	Decree on Ports
93-115	1993	Decree on Establishment of the Directorate-General for Environment
93-148 & 93-148 (PR)	1993	Law on Establishment of other Environmental Institutions.
94-018	1994	Framework Environmental Law

2.1.2: Regulatory and Policy Frameworks

The national policy, the Environmental Action Plan and the Environmental Strategy were elaborated in 1993: The basic principle and objectives of the National Policy on the Environment may be summarized as follows:

(a) To ensure a rational and sustainable management of resources;

(b) To define or reinforce sect oral policies;

(c) To safeguard and protect the biological diversity and zones with ecological or cultural interests;

(d) To develop or promote environmental knowledge and awareness;

(e) To put in place appropriate mechanisms for the management of marine and coastal areas by elaborating a development policy aimed at ensuring the maintenance of the coastal area, taking into account its tourist potential; rational management and exploitation of marine resources, the control and regulation of pollution in marine and coastal areas.

The Environment Action Plan includes the study of marine and coastal ecosystems; improvement of legislative and regulatory mechanisms; protection and development of biodiversity; alleviation of pressure on natural resources; and collection and treatment of household garbage/ domestic waste(Decree N°93-214/PR of December 31 1993).

The national policy and Environmental Action Plan exist but unfortunately the institutional structures charged with the responsibility of execution/ implementation has some limitations, such as on human resources, technical and financial capabilities. The main limitations are essentially as follows:

(a) Inadequate personnel at the Directorate General of the Environment since it was instituted in 1993;

(b) Extent and complexity of problems in resolving beforehand the implementation of certain measures;

(c) Weak legal and regulatory systems;

(d) Weak and inefficient institutions;

(e) Low level of education and knowledge of actors in various environmental disciplines;

(f) Insufficiency in communication, information and sensitisation between government and public entities on one hand and the population on the other; and

(g) Constant and regular mobility or turnover of managers/ directors in the administration of the environment

2.1.3: Institutional frameworks

There are also important national and regional (provincial) institutions mainly established during 1993/94 with the support of the UNDP under a national programme on the environment. The UNDP support led to the formulation of a national policy on the environment ("La Politique National de L'Environment, PNE") and a national plan of action for the environment ("Plan d'Action Environmental, PAE"). The primary national environmental institution is the Directorate General of the Environment ("La Direction General del'Environment, DGE") established under Decree No. 93-115 and further elaborated by subsidiary regulation No. 93-20/MDRPE-CAB. The DGE is responsible for the management and implementation of the PNE and the PAE and operate within their

framework. The coordination of multi sectoral environmental actions is undertaken by an inter-ministerial consultative committee on the environment ("Comite Interministeriale Consultatif pour l'Environment, CICE").

The primary role of the DGE is the protection and nurture of the environment, including regulation and control,, education and public awareness, preservation and care of the natural resources, and the management and oversight of environmental territories such as coastal and marine and other protected areas. The DGE is under the Ministry of Production and Environment ("Ministere de la Production et de l'Environment, MPE"), under particularly its natural resources department. Under the said Ministry, there are other relevant institutions such as "Le Service de la Reglementation et du Controle (SRC)", which helps elaborate environmental legislation and the mechanisms for their application; a national institution for research in agriculture, fisheries and environment ("INRAPE"); "Le Centre National de Documentation et de Recherché Scientifique (CNDRS)", whose mandate is research and development of programmes on Comorian fauna and flora and socio- cultural aspects of the environment, public education and sensitisation on diverse themes on the environment.

Other laws relevant to the environmental institutions of the Comoros include Decree No. 93-148 and No 93-148/PR of 15 September 1993. The latter established the CICE, which is comprised of ministries and institutions dealing with aspects of the environment, as well as non- governmental organizations.

2.2: Kenya

2.2.1: Legislation,

The Constitution

The Constitution of Kenya is the main law for conservation and management of the environment in Kenya. It is the supreme law of the country and binds all persons and State organs. The Constitution of Kenya came into force on its promulgation by the President of Kenya on 27th August 2010, and fundamentally changes the legal landscape for environmental conservation, management and dispute resolution mechanisms and processes in Kenya.

The Constitution includes key environmental principles such as sustainable development, which encompasses the principle of public participation in the development of policies, plans and processes for the management of the environment; the principle of international co-operation in the management of environmental resources; the principles of intergenerational and intra-generational equity; the polluterpays principle; and the pre-cautionary principle.

The Constitution also includes the principle of access to environmental justice, which entails ensuring that everyone has an equal right to a clean and healthy environment regardless of his or her means, where they live or their background, as well as being able to secure access to law in resolving environmental concerns. Access to environmental justice encompasses the right for everyone to receive environmental information that is held by public bodies. This includes information on the state of human health and safety where this can be affected by the state of the environment. It also encompasses the right to participate from an early stage in environmental decision making.

The Constitution enhances access to environmental justice by providing under Article 70 (1) of the Constitution that if a person alleges that the right to a clean and healthy environment has been, is being or is likely to be, denied or violated, infringed or threatened, he or she may apply to a court for redress in addition to any other legal remedies that are available in respect of the same matter. Further, Article 70(3) provides that an applicant does not have to demonstrate that any person has incurred loss or suffered injury, and therefore dispenses with the doctrine of locus standi.

The constitutional right to a clean and healthy environment entails a number of things. It entails freedom from pollution, environmental degradation, and activities that affect the environment or threaten life, health, livelihood, well-being or sustainable development. It also entails protection and preservation of the air, soil, water, flora and fauna and the essential processes and areas necessary for biodiversity and ecosystems. The right also includes or implies the highest attainable standard of health as well as safe and healthy food, water and working environment.

In order to manage and conserve the environment the State is obliged under Article 69 of the Constitution, to among other things: ensure sustainable exploitation, utilization, management and conservation of the environment and natural resources and ensure the equitable sharing of the accruing benefits; and establish systems of environmental impact assessment, environmental audit and monitoring of the environment. In this regard,the obligations of the State are in tandem with the objectives of the LBSA Protocol.

Thus the Constitution of Kenya implicitly domesticates the LBSA Protocol requirements by providing general environmental principles for management and conservation of the environment, enhancing access to environmental justice and dispensing with the doctrine of locus standi. Significantly, environmental rights are recognized as fundamental human rights in the Constitution.

Legislation

Under the new Constitution, in order to give full effect to the provisions relating to environment, Parliament is empowered to enact legislation within a period of four years

from the date of promulgation. In meantime, the environmental Statutes will remain in force to the extent to which they are not inconsistent with the Constitution. Consequently, pollution from land-based sources and activities on the marine and coastal environment will not only continue to be regulated by both the Constitution and Statutes. These statutes include the Environmental Management and Coordination Act (EMCA) 1999.

The EMCA is the framework law which establishes the legal and institutional framework for the coordination of various sectoral initiatives for environmental management. The Act provides a wide range of institutions charged with diverse environmental functions, such as formulation of environmental policy, issuance and maintenance of standards, monitoring and enforcement of environmental standards, investigation and arbitration of disputes. Before the enactment of this Statute, the normative framework for environmental conservation and management was largely based on sectoral pieces of legislation and Common law jurisprudence. While EMCA does not purport to replace the existing legislation, it prevails over any other Acts in the event of conflict. It has provisions which are in tandem with the LBSA Protocol, such definition of pollution; access to environmental justice; EIA and EA; compliance and enforcement mechanisms such as environmental restoration orders, environmental monitoring, criminal sanctions and others; and public participation, educational and awareness programmes.

Another LBSA relevant statute is the Agriculture Act, which generally affects non point source pollutants. Non-point source pollutants, irrespective of source, are transported over land and through the soil by rainwater. As a result of lack of vegetative cover and terraces to hold the soil , pollutants ultimately find their way into groundwater, wetlands, rivers and lakes and finally, to oceans in the form of sediment and chemical loads carried by rivers.

Although rather old and under review currently, the Agriculture Act is the main instrument dealing with preservation of the soil and its fertility. Section 48 (1) of the Agriculture Act provides that whenever the Minister may, for the purposes of conservation or the prevention of the soil from adverse effects of soil erosion on with the concurrence of the Central Agricultural Board, make rules for any or all of the following matters: prohibiting, regulating or controlling; the breaking or clearing of land for the purposes of cultivation; the grazing or watering of livestock; the firing, clearing or destruction of vegetation including stubble; the protection of land against storms, winds, rolling stones, floods or landslips; the preservation of soil on ridges, or slopes, or in valleys; preventing the formation of gullies; and the protection of the land against erosion or the deposit thereon of sand, stones or gravel.

The Agriculture Act is relevant as POPs and agricultural runoffs have been identified as key LBSA provided for under the Agriculture Act. The Act deals mainly with soil conservation and agricultural land use in general. The issue of degradation of the

coastal zone by nutrients emanating from agricultural inputs like fertilizers has not been included in the Act, a matter which obviously constitutes a gap in the law. The power by the Minister to promulgate land preservation orders is expressly contained in the Act but this power must be enhanced to include the power to promulgate preservation orders and directives specifically outlawing use of POP for the sake of the preservation of the Kenyan coastal zone.

The Minister and Director of Agriculture may issue land preservation orders to an owner or occupier of land or both owner and occupier of land for purposes of preserving soil and its fertility. In addition, The Agriculture (Basic Land Usage) Rules prohibits any person from cultivating, cutting down or destroying any vegetation or depasturizing any livestock on any land of which the slope exceeds 35 per cent. The Agriculture Act can therefore, prevent pollution of the marine and coastal environment at source.

On its part, the Forest Act 2005 states that the Act was enacted to provide for the establishment, development and sustainable management, including conservation and rational utilization of forest resources for the socio-economic development of the country. However, while Kenya has enacted a law for Forests management, mangrove forests do not fall under the special category of forests deserving a special management regime.

The Physical Planning Act is the principal legislation for the preparation and implementation of physical development plans in Kenya. The Act empowers the Director of Physical Planning to formulate national, regional and local physical development policies, guidelines and strategies and plans. Although there is no specific reference to land in marine and coastal areas, it is implied that the Director can extend his powers to marine and coastal land. The Physical Planning Act has (a) mandatory requirement(s) for EIA where construction works are likely to impact on the environment.

The Local Government Act empowers Local Authorities to require the owner of any premises to control the cutting of timber and the destruction of trees and shrubs, to prohibit the wasteful destruction of trees and shrubs, and to require the planting of trees. When the land is covered with vegetation, the roots of the plants and trees interlock and interlace to bind the soil particles. This helps the soil particles not to be carried away by wind or water thus preventing, controlling and reducing pollution on coastal and marine environment from source.

The Kenya Maritime Authority Act No 5 of 2006 also presents an opportunity for Kenya's ratification of relevant international Conventions, Protocols and Agreements as concerns LBSA. Among its key objectives is to administer and enforce provisions of the Merchant Shipping Act No 4 of 2009 and any other legislation relating to the maritime sector for the time being in force in Kenya. Its enactment into law and the establishment of the Kenya Maritime Authority is timely and highly commendable given the important

mandates that have been accorded to the Authority under the law. Among these include advising the government on legislative and other measures necessary for the implementation of relevant international Conventions, Protocols and Agreements to which Kenya is a party. The Kenya Maritime Authority Act mandates the Authority to ensure, in collaboration with such other public agencies and institutions, the preservation of the marine environment from pollution, protection of the marine environment and responses to marine environment incidents.

Elsewhere, the Coast Development Authority Act was enacted in 1990 with the sole aim of providing for the establishment of an Authority to plan and coordinate the implementation of development projects in the whole of the Coast province and in the EEZ. It covers most of the upstream areas connected with LBSA problems in Kenya.

The Water Act 2002 places special emphasis on the protection of catchment areas and gives the Minister powers to gazette such catchments areas as protected areas. Its relevance to the GPA is the outlawing of actions that deplete and degrade the quality of water, particularly in rivers, which ultimately ends up in the sea. Estuaries have been identified as some of the primary sources of pollution of coastal zone. The objectives of the GPA can be said to be articulated in sections 49 and 50 of the Water Act 2002 which define water supply and sewerage strategies. The implementation of the Water Act 2002 is still wanting. Untreated sewerage and waste water still continues to be one of the principle sources of pollution of the Kenyan coastal zone. However, NEMA has recently prepared and gazetted waste water regulations.

The Fertilizer and Animal Food Stuffs Act Cap 345 of the laws of Kenya was enacted in 1967 and last revised in 1977. This statute must now be amended to accommodate relevant matters concerning to pollution by land based sources. This includes matters of regulation of chemicals, poisons, fertilizers, agricultural pesticides, and resultant runoffs that ultimately degrades the Kenyan coastal zone. Persistent organic pollutants have also been identified as emanating also from irrigation schemes, aquaculture and mariculture, all of which are practiced along the Kenyan coast. Similarly the Public Health Act, Cap 242, the Pharmacy and Poisons Act Cap 244 and the Dangerous Drugs Act Cap 245 must be amended to provide for the reduction and elimination of POPs containing dioxins, furans, hexaclorobenzene, polycyclic aromatic hydrocarbons.

The Mining Act was also enacted in 1940 and was last substantively revised in 1987. As far as matters relating to Kenya's obligations under the GPA, the provisions in the Act outlawing discharge of poisonous substances into waterways are relevant. Mining ultimately results in physical alteration and destruction of habitats. The Mining Act has recently undergone significant amendments, which recognize the importance and impacts of mining, particularly in the seabed and the exclusive economic zone There is a pending Mining Bill which if enacted will replace and repeal the current Mining Act.

The Act requires the licensing of any mining operations and the provisions of EMCA 1999 and the EIA and Audit Regulations 2003 are relevant in regulating mining activities along the Kenyan coast. Currently the mining of salt and limestone must be regulated seriously as they can cause permanent damage to the coastal physical environment.

The Lakes and Rivers Act Cap 409 should also be amended so as to include the tenets of integrated coastal zone and river basin management. The Lakes and Rivers Act was last revised in 1983 and must be amended so as to be in line with the provisions of S.42 of EMCA 1999 which expressly outlaw the excavation, damming, pollution, interference of rivers, lakes, and dams, unless pursuant to the authority of the Director General of NEMA after an EIA study. The Lakes and Rivers Act, Cap 409 is rather shallow and does not contain any provision specifically prohibiting pollution of rivers and lakes from LBSA or activities.

Other LBSA relevant laws include several land laws which regulate the land resource, including tenure, user rights and alienation.

Table 3: Summary of LBSA relevant Kenya Legislation

Decree / Law No.	Year Enacted/ Revised	Title of law /Decree
6 of 1996	1996	Physical Planning Act
312	1977	Continental Shelf Act
391	1979	Kenya Ports Authority Act
295	1983	Land Acquisition Act
409	1983	Lakes and Rivers Act
389	1983	Merchant Shipping Act
376	1985	Wildlife Conservation and Management Act
318	1986	Agriculture Act
347	1986	Irrigation Act
308	1986	Petroleum (Exploration and Production Act
306	1987	Mining Act
382	1988	Kenya Tourist development Corporation Act
302	1989	Land Control Act
381	1990	Tourist Industry Licencing Act
378	1991	Fisheries Act
	2005	Kenya Maritime Authority Act
443	1991	Tana and Athi Rivers Development Authority Act
449	1992	Coast Development Authority Act
	2005	Forests Act

265	1998	Local Government Act
8 of 1999	1999	Environmental Management and Coordination Act
8 of 2002	2002	Water Act
242		Public Health Act
245		Dangerous Drugs Act
345	1967	Fertilizers and Animal Foodstuffs Act

2.2.2: Regulatory and Policy Frameworks

There is no specific policy document in relation to land based sources and activities. However, the following policy documents contain policy statements which are remotely linked to protection of marine and coastal environment from land based sources and activities.

The National Land Policy (2010) recognizes that Kenya faces a number of environmental problems including the degradation of natural resources such as forests, wildlife, water, marine and coastal resources as well as soil erosion and pollution of air, water and land. In order to achieve an integrated and comprehensive approach to the management of environment and natural resources, the Policy states that all policies, regulations and laws dealing with land based resources shall be harmonised with the framework established by the Environmental Management and Coordination Act (EMCA), 1999. This shall be directed by principles related to general environmental guidelines, environmental assessment and audit, urban environment problems as well as conservation."

On its part, Kenya Vision 2030 is the new long-term development blueprint for the country. It is motivated by collective aspiration for a much better society than the one we have today, by the year 2030. The Vision is anchored on three key pillars: Economic; Social; and Political Governance. The environmental sector is anchored under the Social pillar.

The vision for the environmental sector is "a people living in a clean, secure and sustainable environment". The vision is inspired by the principle of sustainable development and by the need for equity in access to the benefits of a clean environment. One of the strategic thrusts which will assist in the realization of this vision is pollution and waste management. Reducing hazards related to an unhealthy environment is the main goal under this thrust. The thrust does not, however, mention explicitly prevention of pollution on the coastal and marine environment from land based sources and activities.

2.2.3: Institutional frameworks

There is no national authority or institution responsible specifically for planning and control of marine and coastal environment in Kenya. However, there are numerous

institutions charged with matters related or incidental to control of pollution on the marine and coastal environment from land-based sources and activities. The main institution is NEMA which is established to exercise general supervision and coordination over all matters relating to environment including marine and coastal environment. Others include Local Authorities, Physical Planning under the Ministry of Lands, Kenya Forest Service established under the Forest Act and Directorate of Agriculture, Kenya Maritime Authority (KMA) and Coast Development Authority (CDA), among others.

The institutions face operational and developmental challenges that hinder effective delivery of services and contribution to national development. Some of the major challenges include:

- Overlapping/uncoordinated mandates;
- Weak political goodwill;
- Lack of adequate funds to implement their mandates;
- Untimely disbursement of funds;
- Inadequate personnel;
- Inadequate infrastructure such as equipment, vehicles and offices;
- Lack of harmonization of sectoral laws with the Constitution and EMCA leading to perceived conflicts of mandate;
- Inadequate awareness of matters relating to pollution of marine and coastal environment from land-based sources and activities.

These challenges inevitably affect the formulation, coordination and implementation of programmes, projects, measures and activities necessary to achieve the objectives of the LBSA Protocol.

2.3: Madagascar

2.3.1: Legislation

Madagascar has a framework environmental legislation (LOI No. 90-033) Relative a la Charte de Le Environment Malagasy of December 21 1990) which outlines the fundamental principles including that environment is an important pre occupation of the State and its protection is a matter and responsibility for all (Part II), as modified and completed more recently by the law n°2004-015 of August 19 2004 .Also very important is the Decree n°99-954 of December 15 1999, modified and complimented by the Decree n°2004-167 of February 3 2004.

On the general environmental policy, the main instruments are the Charter of the Environment and the Decree MECIE, and both texts constitute the basis of the legislation regarding protection and conservation of the environment of Madagascar.

Nevertheless, environmental action does not only confine itself to the protection and conservation of the natural resources, rare species or sites. Also important are issues of sustainable development and the reduction of poverty.

Some of the gaps apparent in Decree MECIE (Decree n° 99-954 of December 15 1999 as modified and complimented by the Decree n°2004-167 of February 3
2004, include that it concerns itself primarily with the provisions concerning environmental compliance. by project proponents. This decree has just been updated in 2004 before the beginning of the Environmental Program Phase 3 (PE3). It is to be reviewed periodically. Usually, only technical measures such as EIA and other environmental issues, as well as empowered organs and authorities, are provided for. However, it lacks a statement on what happens in case of violation or non compliance; and a mechanism for periodic review.

The gaps in forest related legislation also abound. Several laws and statutory texts exist for the prevention, reduction and the fight against environmental degradation and pollution of this kind. They include the following: law n°97-017 of August 8 1997 with the different orders it superseded: Order n°60-126 of October 3 1960, Order n°60-127 of October 3 1960 and Order n°60-128 of October 3 1960.

There are also gaps of the Law n°97-017 of August 8 1997 .The forest legislation is for the conservation and the restoration of the grounds, the conservation of the biodiversity and the regulation of the hydrological systems, and non wooded areas in proximity to the forests. Article 12 of the forest law stipulates expressly that wood, forests and lands for afforestation, the property of constituted groups with the intention of to take in the coastal regions a political important one of safeguard of the coastal space, of respect of the natural sites and ecological balance, are equally subjected to the forest system. All these provisions stretch to protect the coastal zone of all erosion being able to induce the pollution of the sea. Nevertheless, downgrading possibility foreseen by the Article 17 is an open door to the degradation of the forest of the coastal zone and surrounding rivers and water courses.

There are also gaps of the Decree n° 98-781 of September 16 1998 setting up the general conditions of application of the law of August 8 1997, as well as in the Decree n°98-782 of September 16 1998 relating to the system of the exploitation of natural resources. Concerning the Decree n°63-192 of March 27 1963 on the Code of Urban Planning and Housing, Article 2 does not contain a national plan for the coastal areas.. Such plans must be spread to all the towns of the coastal and surrounding zones of the rivers and water courses.

Gaps on the legislation relating to the national heritage (Order n°82-029 of November 6 1982 relating to the protection, to the safeguard and to the conservation of the national

heritage, Decree n°83-116 of March 3 1983 setting up the application methods of the order n°82-029 aforementioned).This legislation devotes itself to the safeguard of the national heritage without being concerned with harmful effects induced by the searches and researches endeavours on the coastal zones or on board rivers when they necessitate a search in depth.

There are also gaps of the legislation relating to the Public Domain (order n°60-099 of September 21 1960, Decree n°64-291 of July 22 1964 and the order n°62-064 of September 27 1962).Concerning the order n°60-099 of September 21 1960 regulating the public properties, the order foresees only the classifications of the elements of the public domain, their management and their allocation as well as the relevance in case of private allocations while private allocation of parts or portions of the zones of the coast, the rivers, lakes, ponds and lagoons could carry attained to the coastal environment and sailor according to the activities. In most of the cases, allocation is destined to tourism activities.

Decree n°64-291 of July 22 1964 concerns setting up the rules relating to demarcation, to the usage, to the conservation and to the policing of public land. The temporary occupation on the key coastal and related zones such as the shores of the sea, the harbours, protected areas, roads, rivers and canals can be authorized in conformity to the provisions of article 33. However, it is silent on the measures to take in case of environmental damage.

Concerning the development of harbors, no special text governs such developments and they are therefore regulated by the common laws relating to matters of public works. This constitutes an important gap from an LBSA/A perspective

Table 4: Summary of LBSA Relevant Madagascar Legislation

Decree / Law No	Year	Title of Law /Decree
60-099	1960	Regulation of Public Property
62-064	1962	Regulation of Public Land
63-192	1963	Code of Urban Planning and Housing
64-291	1964	Law on Conservation, Usage and Conservation of Public Land
82-029	1982	Law on National Heritage
89-216	1989	Decree on Compatibility of Investments with Environment
90-033	1990	Loi Relative a la Charte de' L Environment Malagasy.
92-926	1992	Decree of E.I.A Regulations

97-017	1997	Forests Law
98-781	1998	Law on Exploitation of Natural Resources
98-782	1998	Law on Exploitation of Natural Resources
99-954	1999	Decree MECIE
167-2004	2004	

2.3.2: Regulatory and Policy frameworks

There is a policy on the protection, management and measures against pollution in Madagascar. The declaration of the President of the Republic in September 2003 on the increase of acreage from 1.7 million to 6 million hectares of the protected areas in Madagascar in five years signifies the political will of the Government with respect to the objective of the Convention and other relevant instruments.

The Government under the coordination of the Ministry of Environment, Waters and Forests created the Steering Committee of the Vision in collaboration with financial partners, other concerned Ministries and departments, and the executing agencies of the Environment Plan.

The regulatory structures are less known, indeed absent, in the policies on the protection of the environment in Madagascar. The existing structures that could respond meaningfully are the environmental mediators provided for by the Decree n°2000-028 of February 14 2000 relating to the Environmental Mediators. Nevertheless, to be more effective regarding protection of the environment, the role of the environmental mediators must be expanded to the management activities, to fight against the pollution of the environment, and in particular the marine and coastal environment. The mediators must possess special status with a secured tenure and terms of engagement of sufficient and adequate means to allow them to assume effectively their responsibilities.

2.3.3: Institutional Frameworks

This section will be examined from two angles: the institutional structure of the general national administration and the institutional structure and the framework for the protection and management against the pollution of the marine and coastal environment The current status of the autonomous Provinces puts this structure in a rather ambiguous position as all the legislative and statutory texts give more strength to the public institutions for the management of environmental matters in their respective areas. Nevertheless, with respect to the regions, their actions are not so effective; they need reinforcement of capacities regarding management of the natural resources of their respective districts and also in the regional framework of the Nairobi Convention.

Concerning the institutional structures, the Decree MECIE (Decree n° 99-954 of December 15 1999, as modified and completed by the Decree n°2004-167 of February 3 2004); and particularly considering the noted gaps on the institutional structures of the Decree MECIE, there need to be interventions so as to improve the institutional system.

From the viewpoint of application the gaps exist on issues of, lack of clarity as to mandates and responsibilities; lack of sustainable resources for implementation and the accomplishment of defined or required tasks. To this effect, legislators ought to provide every organ with the means and determine their respective mandates and responsibilities.

The key relevant institutions are those concerning environment, water and forests, fisheries, mining, tourism, ports and rural affairs. They include the Inter ministerial Committee on Environment, National Council for the Environment, National Committee on Coastal and Marine Affairs, National Committee on Mines and ,Inter Ministerial Committee on Mining. Others are the National Office for Tourism, Marine Ports Agency, and the Fisheries Surveillance Agency.

Moreover, the Ministry of Environment, Water and Forests is responsible for national policy formulation and ensuring general compliance and enforcement. At the local and regional/provincial level, there are corresponding institutions with mandates over their defined geographical territory.

2.4: Mauritius

2.4.1: Legislation

The constitution of Mauritius lacks specific provisions on environmental governance of natural resources. The right to a clean environment can only perhaps be inferred from the human rights provisions of the constitution, and particularly the right to life.(Manna: Mauritius National Report,2007)

The Mauritius Environmental Law is scattered in various sectoral laws. The first environment law was the Environment Protection Act (EPA) 1991, which was later repealed and replaced by EPA 2002 and recently amended by GN57/05, in order to incorporate the principles of several international Conventions related to the environment. Before the EPA 1991, Mauritius was relying on the following enactments to punish any breach in relation with the Environment: the Public Health Act, Local Government Act, Central Water Act, Food Act, Forests and Reserves Act, Canal and Rivers Act, and Noise Prevention Act. Section 2 of EPA 2002 states as follows;

"…..every person in Mauritius shall use his best endeavours to preserve and enhance the quality of life by caring responsibly for the natural environment of Mauritius".

The following principles are reinforced in the EPA 2002: the concept of environmental stewardship; the ''polluter pays principle;'' the requirement of environmental impact assessments for major scheduled activities; public participation; and the right to environmental information.

The Environmental law embodies all Acts and regulations as well as any order, notice, requirements imposed under EPA 2002. It also extends to any other enactment or part of any other enactments which the Minister of Environment may by regulations declare with approval of the National Environment Commission as established under Section 5 of EPA 2002 to be an environmental law.

Section 9 of the EPA confers powers on the "Police de l'Environment' to act as a watchdog for the protection and preservation of the environment. The Act reinforces and gives more power to the enforcing agencies and in so doing decentralizes the enforcement of environmental laws in Mauritius and Rodriguez. The EPA puts in place different institutional frameworks such as The National Network for Sustainable Development (s.11), the Technical Advisory Committee (s.12), Environment Coordination Committee (s.14), and Integrated Coastal Zone Management Committee (ICZM Committee- s.50), to reinforce coordination between different government agencies.

Section 89 of EPA 2002 gives power to the Minister to set out the standard of water, effluent, air, noise, hazardous waste, non hazardous waste, pesticides residues, odours and eyesores respectively. It also set up the Environmental Appeal Tribunal and its jurisdiction. The Director of the Environment is given power to issue programme notice, enforcement notice, prohibition notice and stop order to enforce environmental laws. Fines under the EPA have increased and the term of imprisonment is provided. The fine varies from Rs 50,000 up to Rs 100,000 and the imprisonment from 2 years to 8 years. While these are commendable provisions, with reasonable deterrent penalties, the greatest concern is with the level of enforcement and compliance.

Elsewhere, The National Coast Guard Act 1988 establishes the National Coast Guard as a specialized unit of the Police force which enforces the law relating to the protection of the maritime zones, detects, prevents and suppresses any illegal activity within the maritime zones. It has the power to prevent any activity which is likely to constitute a threat or to cause pollution to the maritime zones, including the sea bed, the flora, the reefs, the beach and the coastline.. this is an important enforcement tool, and has performed commendably in guarding the coastline.

The Beach Authority Act 2002 establishes the Beach Authority as a body corporate whose object is to ensure the proper control and management of public beaches in Mauritius and Rodriguez. It shall also implement projects relating to –

(a) the conservation and protection of the environment of public beaches; and
(b) the enhancement of the quality of sea water.

The Rivers and Canals Act 1863 prohibits any person

a) to place or cause to be placed in a river, stream or canal or on the bank of a river, stream or canal, any dead animal, rubbish, manure canetrash, bagasse, poisonous, narcolic or noxious substance or any other substance which tends to pollute the water of the river, stream and canal.

b) to throw into a canal any soapy or dirty water.

c) to permit any impure water from a building or manufacturing industries to enter a canal.

On its part, the Tourism Act 2004, a Tourism Authority is established and its object is to optimize the social, economic and environmental benefits to Mauritius from tourism.

On solid waste management, Section 156A of the Local Government Act 1989 provides that the Permanent Secretary shall make arrangements for the collection and disposal of waste and the operation and management of disposal sites. The Act further provides that in making arrangement for the collection and disposal of waste, the permanent secretary shall comply with the standard and code of practice issued under the Environment Protection Act.

The Local Government (Dumping and Waste Carriers Regulations 2003 provides that no person shall carry waste of a weight in excess of 50 kilograms in a vehicle unless he holds a licence for that purpose. If a licensee fails to comply with any conditions of the licence, his licence may be revoked. The Regulations further provide that no person shall deposit, cause or allow to be deposited at a place other than a transfer station or a waste disposal site or any other site approved for that purpose.

The Environment Protection (Standards for hazardous Waste) Regulations 2001 provides for the standards of the labelling, use, storage, transport, and disposal of hazardous waste. The Fourth Schedule of the Environment Protection Act (EPA) provides that in relation to solid waste and hazardous wastes, the permanent Secretary of the Ministry responsible for the subject of the local government.

Section 52 of the EPA provides that no person shall release, or cause to release, into the zone any pollutant, waste or other noxious substance from or through, the

atmosphere, or by dumping and any person who contravene this section commits an offence.

Other legislations are the -

I. Local Government (Dumping and Waste Carriers) Regulation 1997
II. Black River District Council (Collection and Disposal of Refuse) Regulations 1997
III. Grand Port/Savanne District Council (Collection Disposal of Refuse) Regulations 1995
IV. Beau Bassin/Rose Hill (Disposal of Refuse) Regulations 1996 V. Curepipe (Disposal of Refuse) Regulations 1993
VI. Port Louis (Collection and Disposal of Refuse) Regulations 1996
VII. Quatre Bornes (Disposal of Refuse) Regulations 1991
VIII. Environment Protection(Industrial Waste Audit) Regulations 2005

The laws in relation to collection and disposal of waste though scattered in different legislations, are quite comprehensive but the enforcement of the different legislations has to be looked at.

In general, Mauritius already has sufficient policies, legislations and institutional mechanisms in place to comply with the LBSA Protocol. There may be no need for the Ministry to amend any laws in order to comply with the LBSA Protocol.

Table 5: Summary of LBSA Relevant Mauritius Legislation

Decree/ Law No.	Year	Title of law / decree
	1863	Rivers and Canals Act
	1874	State Lands Act
	1895	Geometriques Act
	1925	Public Health Act
	1954	Town and Country Planning Act
	1970	Continental Shelf Act
	1970	Territorial Sea Act
	1975	Removal of Sand Act
	1977	Maritime Zones Act
	1986	Merchant Shipping Act
	1988	Forest and Reserves Act

	1988	National Coast Guard Act
	1991	Environment Protection Act
	1993	Pleasure Crafts Act
	1993	Wildlife and National Parks Act
	1998	Fisheries and Resources Act
	1998	Marine Resources Act
	1998	Ports Act
	2001	Waste Water Management Authority Act
	2002	Beach Authority Act
	2002	Environment Protection Act
	2004	Tourism Act
		Food and Agricultural Research Council Act.

2.4.2: Regulatory and Policy frameworks

The first National Environmental Strategy and Action Plan (NEAP) was prepared in 1988 and the second NEAP was prepared in 1999 which covered the period between 1999 and 2010. The NEAP 2 report represents an environmental diagnosis of the Republic of Mauritius, assessing the pressures on the environment and the impacts of these pressures on the environment in Mauritius. The NEAP 2 can be summarized as follows:-

Sets the principles of sustainable development by providing environmental services, encouraging responsible environmental practices and enforcing appropriate environmental standards in order to safeguard the health and welfare, conserve the heritage, and enhance the quality of life of all the people of Mauritius.

The NEAP identified inadequate disposal of urban waste water as a growing threat to the quality of ground water, the principal source of domestic water supply of the country, as well as to marine and coastal zone ecosystems. As a follow up of the NEAP recommendations the Government launched the Sewerage Master Plan (SMP) Study covering a period of 20 years. The plan was completed in 1994 and it identified the technical, institutional, legislative and financial constraints. The National Sewerage Program (NSP) composing priority projects to be implemented over a decade was prepared. The policy instruments incorporate key environmental principles, including polluter pays and precautionary principles.

The Government is presently in the process of reviewing its objectives, policy instruments and strategies by way of a white paper called the National Environment Policy (NEP) 2006 (Manna: Mauritius National Legal Report, 2007). The vision and objectives of the draft NEP 2006 in achieving Environmental Sustainability in the long term is as follows:

"Mauritius has an environmentally-conscious population. It will have adopted sustainable production and consumption patterns; is resource and energy efficient in all sectors of the economy; is making optimum use of renewable energy sources and is a recycling-based society; has a built environment characterized by good architectural guidelines, beautiful townscapes with green areas and outdoor recreational facilities, such that the country is recognized as the "Garden Island". An effective partnership exists between all stakeholders and there is a strong environmental ethic in the citizen. All the key resources on the island are protected and managed effectively. We have a clean and healthy environment that Mauritians feel proud of."

Transparency, accountability and good governance practices are expected to be cornerstones of environmental policies. Government is expected to strengthen joint public, private and community sectors ownership of environmental concerns (Manna: Mauritius National Legal Report, 2007).

Finally, under the Fisheries (Reserved Areas) (Rodriguez) Regulations 1984, five areas have been proclaimed reserved areas in Rodriguez. Another major evolution in the field of environmental law is that under GN 25 of 2005, all existing laws related to building, land development, forestry, rivers, fisheries, fauna and flora of Mauritius have been declared environmental laws.

2.4.3: Institutional frameworks

The Ministry of Environment and National Development Unit (MOE) has the overall responsibility for the protection of the environment. EPA 2002 enables the MOE to control release of any pollutant, waste or noxious substance to the atmosphere or by dumping in the maritime zones of the Republic of Mauritius. The Environmental Impact Assessment (EIA) mechanism allows the Ministry to impose conditions on scheduled activities such as coastal hotels, construction of breakwaters, groins, jetties and sea walls, marinas, lagoon dredging and reprofiling of sea beds. The Ministry regulates via standards and guidelines limits in different media such as air, noise, water, pesticide residues, odour, industrial waste audit and effluent limitations.

The Ministry may by way of regulations provide for the management, protection and enhancement of the environment in the zone. It is also empowered to prepare and update an integrated coastal zone management plan which shall be used for the coastal zone planning management and development. The Director of Environment may issue a programme notice, enforcement notice, prohibition notice or stop order to control the rise of pollution in whatever form in the environment.

The Ministry of Agro-Industry and Fisheries ensures the sustainable development and management of fisheries resources, conservation and protection of living aquatic resources and the marine environment in the waters of and of interest to Mauritius and continued socio-economic benefits to stakeholders.

The Mauritius Ports Authority (MPA), formerly known as the Mauritius Marine Authority (MMA) was originally established in 1976 and following a reform programme, the MMA was renamed under Ports Act 1998 as Mauritius Ports Authority. Among other objectives, the MPA has also a duty to safeguard the protection of the environment and prevent any type of the pollution within the Port. Part XII of the Ports Act 1998 lists out the provisions to prevent pollution and protect the environment as well as other sections such as S.144 and S.150 of Ports Acts.

The Waste Water Management Authority (WMA) is a parastatal body established by the Waste Water Management Authority Act 2000 and is an Organisation operating under the aegis of the Ministry of Public Utilities. The Duties of the WMA are:-

(a) to be responsible for the wastewater sector in Mauritius and to carry out, monitor, supervise, maintain, manage and control waste water works;

(b) to conduct and undertake research and studies for the implementation and development of projects relating to waste water sector;

(c) to control and, monitor pollution, private servers and the use of equipment in relation to waste water systems;

(d) to collect, treat and dispose of waste water throughout Mauritius;

(e) to undertake waste water treatment to such predetermined quality as may be prescribed for safe disposal of the effluent and sludge to the environment or re-use;

(f) to ensure that any storm drainage is not connected and does not get mixed up with the waste water system; and

(g) to establish and maintain laboratories for the purpose of testing waste water and sanitary equipments.

The Wastewater Management Authority, by virtue of the Environment Protection Act 2002, is responsible for the quality of effluent discharged into sewers.

All industrial effluents into the waste water system is controlled by way of a licence. The licensee records the daily volume of water consumed, the daily flow of industrial

effluent discharged into the waste water system and analyses the composite sample of industrial effluent for the purpose of determining the level of pollutant. The permissible limit of pollutant to be discharged as industrial effluent should be in compliance with the permissible limit of pollutant.

2.5: Mozambique

2.5.1: Legislation

The Constitution addresses matters relating to environment and quality of life in its articles 90 and 117. The article 90, which is part of the Chapter V (economic, social and cultural rights and duties) of Title III (fundamental rights, duties and liberties) provides for the right to live in a balanced environment, and the duty of defending it (paragraph 1), the same article establishes in its paragraph 2 that, "the State and the local authorities, with the collaboration of associations of environment protection, shall adopt policies for the defence of the environment and care for the rational utilization of all natural resources". So, on one hand, the right to (good) environment is part of the fundamental rights and on the other hand legislative matters regarding the protection of the environment involves not only the State bodies, but also the local authorities and associations concerned with environment. In Article 117, Chapter III which deals with social organization, is part of the Title IV of the Constitution. This article provides for the responsibility of the State in promoting initiatives for ensuring the ecological balance and the conservation and the preservation of environment aiming at improving the quality of life of the citizens (paragraph 1). According to paragraph 2 of this article,

"as to ensure the right to environment within the frame of a sustainable development, the State shall adopt policies aiming at:

a) preventing and controlling pollution and erosion;
b) integrate the environment objectives in the sectoral policies;
c) promoting the integration of environment values in educational policies and programs;
d) ensuring the rational utilization of natural resources with safeguard of its renovation capacity, ecological stability and of rights of future generations;
e) Promoting the placing in order of the territory with view to a correct localization of activities and a balanced socio-economic development."

The existing legislation in the Republic of Mozambique comprises, thus, a great deal of the former colonial legislation and that one enacted after the independence. Some of the latter legislation has gradually been replacing the former legal instruments, but a lot has yet to be done. A small sector of the legislation prior to the independence deserves

a particular remark. Such legislation is that one passed by the Transitional Government, which mainly aimed at ensuring the harmony of social and economic life and the country during the transitional period. No legal instrument regarding matters relating to environment was enacted by the Transitional Government.

The legal framework regarding protection of the environment in Mozambique comprises a number of instruments not specifically designed to respond to the need of preventing the degradation of the marine and coastal environment from land based sources and activities. Such laws may be listed as follows:

- Decree-Law n.495/73, of 6 of October – A law determining protection measures against pollution of waters, beaches and margins;
- Law nº 20/97, of 1 October – Environment Law (Lei do Ambiente); and
- Law n° 4/95 of 6 January 1996 – Sea Law or Law of the Sea (Lei n.º 4/95 - Lei do Mar).

Decree-Law n.495/73, of 6 of October 1973 was enacted by Portugal, for the protection of coastal and marine environment in the so-called overseas provinces, including Mozambique. The article 1 provides in its paragraph 1 for the prohibition of save special license, of throwing or disposal of any noxious waters and residual substances such as petroleum products or mixtures which by any way may cause pollution in the contiguous zone and in the territorial sea of the oversee provinces, as well as in ports, docks, bottom of lakes, bed and branches of rivers beaches, margins and other areas under the jurisdiction of the maritime authority. Paragraph 2 of the same article provides for the prohibition of the pollution of any part of the area under the jurisdiction of maritime authorities by any agent from outside that area. According to paragraph 3 of the same article, maritime authorities are given power to take adequate measures as to impede and repress the violation of the above mentioned prohibitions.

Law nº 20/97, of 1 October 1997- Environment Law (Lei do Ambiente), which is the foundation to the whole set of legal instruments regarding the preservation of the environment. This Law establishes provisions of general and specific application, but it does not include any specific provision for coastal and marine environment protection from land based sources and activities. Nonetheless, as an umbrella law for environmental matters it is an important instrument for the enactment of specific regulations on the concerned subject matter.

The Environment Law (Article 2) defines the legal basis for correct utilization and management of the environment and its components, with a view to operationalization of a sustainable development system in the country. The ambit of the Environment Law comprises all activities public or private, which directly or indirectly may influence the environment components (Article 3). Taking into account the constitutional provision on

a balanced environment for all citizens, in its article 4 the Law establishes a number of basic principles for the environment management, specified below:

a) Rational utilization and management of the of environment components, with view to promotion of the betterment of the life quality of citizens and for the maintenance of biodiversity and ecosystems;
b) Recognition and valuation of traditions and knowledge of local communities, which may contribute to the conservation and preservation of natural resources and of the environment;
c) Precaution on ground of which the environment management authority must prioritize the establishment of a prevention system against any acts prejudicial to the environment, as to avoid the occurrence of negative, serious or irreversible environment impacts, regardless of the existence of scientific certainty on the occurrence of such impacts,
d) Global and integrated vision of the environment, as a set of inter-dependent ecosystems, natural and built up, which must be managed in a manner as to maintain its functional equilibrium without exceeding its intrinsic limits,
e) Wide participation of citizens, as a crucial aspect of implementation of the National Program of Environment Management;
f) Equality which ensures the same opportunities of access and use of natural resources to men and women;
g) Liability, on the basis of which, whoever pollutes, or in any other way causes degradation to the environment, has always the obligation to repair or to compensate the damages deriving there from;
h) International cooperation, for the achievement of harmonious solutions of environmental problems, as recognized in their trans-boundary and global dimensions.

Comparing those provisions from Environment Law and from the Sea Law, which attribute regulatory powers to the Government, it can easily be concluded that those of the Environment Law (articles 9 and 10) are general, while the one from the Sea Law (article 34 – f) is specific, concerning the regulatory competence with a view to prevent and to preserve the maritime and coastal environment.

Finally, The Sea Law (National Law of the Sea), Law n° 4/95 of 6 January 1996 (Lei n.º 4/95 - Lei do Mar), defines maritime belts on which the Mozambican State exercises its sovereignty, and establishes their legal regime. In general terms, this Law is in consonance with the 1982 International Convention on the Law of the Sea, which was ratified by Mozambique through its National Assembly ...

The Mozambican Law of the Sea provides, inter alia, in its article 34 – f) for the Government competence of enacting regulations on protection and preservation of the

marine environment and general management of the territorial sea, contiguous zone, exclusive economic zone and continental shelf.

Thus Mozambique too has a number of important legal instruments targeting LBSAA issues. Although it does not have a specific law on LBSAA, the existing laws are helpful. The main outstanding challenge, apart from dedicated legislation, is the question of enforcement and compliance.

Table 6: Summary of LBSA Relevant Mozambique Legislation

Decree or Law No.	Year 1927 1955	Law and regulation
40040		Protection of the soil, fauna and flora in the marine provinces
2496	1964	Protection of the wild fauna
2642	1965	Protection of the forest
265	1972	Security, safety and surveillance of the navigation, fishing game, protection of human lives, the safety of the mining of beds of the waters, water pollution.
495	1973	Protection of water pollution
3	1990	Licensing and control of fishing industry
16	1991	Control and monitoring of water use
4/95	1996	National Sea Law, Regulations of the maritime activities
	1997	Regulation of the functioning/organization of local governments concerning the environment
19	1997	Regulation of the access and use of the soil
20/97	1997	Law of Environment(Lei do Ambiente), Protection of the right of the people to the right of living in a clean and good human environment
41/2010	2010	Law Establishing Water Research Institute.

2.5.2: Regulatory and Policy Frameworks

Following the World Summit for Sustainable Development Mozambique started the preparation of a national strategy for sustainable development in 2002, with the objective of integrating the recommendations from the Johannesburg Plan of Implementation into the national agenda. Environmental management and sustainable development cannot be implemented successfully by any one sector or institution: they can only be adequately addressed by a collaborative effort by different sectors and different components (government, private, civil society) all working together. The National Strategy assumes that for different groups of society to work together they need to have a common and clear vision on sustainable development and environmental

management. It assumes also that the idea of “sustainable development” is a relatively new but it is fundamental to the development process and requires some understanding by the relevant partners. The Strategy is an important national initiative that is firmly based on local knowledge, local ideas, local expertise and local solutions. When necessary external support can be provided, drawing on appropriate experiences and ideas from elsewhere. It is extremely important that in the implementation of this strategy a common vision be built reflecting consensus, commitment, collaboration and partnership.

The priority areas identified in the National Strategy are: biodiversity conservation, land degradation, health, education, agriculture, water, energy and technology transfer. This is consistent with WEHAB (water, education, health, agriculture and biodiversity), as agreed in Johannesburg in 2002. The implementation of the strategy will be supervised by the National Council for Sustainable Development and the Council of Ministers. The Strategy will soon be approved by the Government of Mozambique and will be used by all sectors in the preparation of their plans.(Mazivila:Mozambique National Legal Report, 2007)

The National Environmental Policy was approved by Resolution nº 5/95, of 3 August, which is a principal instrument in terms of specific plans for environmental sector, and its main objective is to recommend the sustainable use of natural resources.

This policy, recommends sustainable and optimized use of natural resources with the State being responsible for creating incentives through concrete actions. This policy introduced principals and objectives of the Government in the management framework and establishment of an healthy environment, harmonizing with the foreseen principals of the Republic Constitution and in the several International Agreements, Treaties and Conventions to which Mozambique is signatory.

It was this policy that for the first time introduced the need of integration of the environmental issues in the economic planning; the role of the communities in the environmental management, the environmental monitoring, and acknowledge the role of the private sector on the environmental management, and defined the strategy that amongst others recommended the framework of the Ministry for Coordination of the Environmental Affairs, and the need of a multi-sector coordination.

The overall objectives of the environmental policy are to ensure the sustainable development of the country, taking into consideration the specific conditions, through a realistic and acceptable compromise between the socio-economic progress and the protection of the environment.

The policy aims at:

i) Ensuring an adequate quality for life to the Mozambican citizens;
ii) Ensuring the management of natural resources and of the environment in general, so as to maintain its functional and productive capacities for the present and future generations;
iii) Developing environmental consciousness among the populations to enable public participation in environmental management;
iv) Ensuring the integration of environmental considerations into the socio-economic planning process;
v) Promoting the participation of local communities in the planning and decision making process on the use of natural resources;
vi) Protecting essential ecosystems and ecological processes;
vii) Integrating the regional and international efforts in seeking solutions to environmental problems.

There is also the Strategic Plan for Environmental Sector, 2005-2015, inegrating the Action Plan for Fight Again Draught and Desertification, the Strategy for Urban Environment Management, the Coastal Zone Management Strategy, the Strategy and Action Plan Controlling and Fight against Soil Erosion, the Strategy to Combat Deforestation and Burning, The Urban Solid Wastes Integrated Management Strategy, The Hazardous Wastes Management Strategy and Biodiversity Strategy and Action Plan for Biodiversity Conservation.(Mazivila: Mozambique National Legal Reports, 2007)

The priority areas identified in the strategy are: biodiversity conservation, land degradation, health, education, agriculture, water, energy and technology transfer. This is consistent with WEHAB, as agreed in Johannesburg in 2002.

The current national environment policy is elaborated further in the Quinquennial Program of the Government for the period of 2005-2009 approved by the Assembly of the Republic through the Resolution nº 16/2005. The central objective of the said Program is to reduce the absolute poverty through the promotion of the sustainable social and economical development. In such a context, the basic role of the Government is to stimulate the human capital, economic and social infrastructures, institutional development and the provision of basic services which can create a favourable and inductive environment for the expansion of initiative, action and private investments of citizens and their institutions. Matters relating to environment are dealt with in item 3.2, as part of cross cutting issues, where in connection with the main objective of the Program of the Government, the rational use of the natural resources, through a correct planning and control of human activities, in a long term sustainable perspective. Among the various priority objectives of the Program in the scope of the environment issues, is the strengthening of the institutional and legal framework for the sustainable use of natural resources.

Regulating measures aiming at preventing pollution and degradation of coastal and marine areas in Mozambique were started log ago. This is evidenced by the Portaria (ministerial legal instrument) nº 1097 of 20 of march, 1919 which approved the General Regulation of Port Captainship of the (then Portuguese) Province of Mozambique Regulamento Geral das Capinais dos Portos da Província de Moçambique – RGCPM. According to article 336 of this Regulation, it was not permitted the throwing of ballast, refuse material, waste, ashes or other discharges, which by their quality and quantity may be prejudicial to the local conditions or to the public hygiene into bed of navigable rivers, maritime ports, land constituting public domain and marine coast. This regulation has been revoked and other legal instruments on the matter have been enacted, as it can be seen below.

There are also other important LBSA sectors related policy and regulatory instruments, including the National Forests and Wildlife Policy and Strategy; National Tourism Policy and Strategy; National Fisheries Policy; National Land Policy; Agrarian Policy; National Water Policy; and the Strategy and Action Plan for Biodiversity Conservation in Mozambique.(Mazivila: Mozambique National Legal Report, 2007).

Before the independence of the Country the Portaria n.º 23651 of 12 December 1970 was enacted. This legal instrument forbids the grasp of marine foliage of euchema gender, within the period of August 1st of each year to 31st of January of the following year. The article 1 of this instrument was changed by Portaria nº 12/72of 4 of January

Following the Environment Law above analyzed, a number of regulations have been enacted by the Government, as listed below:

- Regulation relating to the Process of Environmental auditing , approved by the Decree nº 32/2003, of 20 August 2003;
- Regulation on Management of Bio-medical Waste, approved by the Decree nº 8/2004, of 18 February 2004);
- Regulation on Standards of Environment Quality approved by the Decree nº 18/2004 of 2 June 2004
- Environmental Regulation on Mining Activity, approved by the Decree n.º 26/2004, of 20 August 2004;
- Regulation on the Process of Environmental Impact Evaluation, approved by Decree nº 45/2004, of 29 of September 2004), revoking the previous one approved through the Decree nº 7998, of 29 December 2004;
- Norms of application of fines and other sanctions provided for in environmental legislation, approved by Ministerial Regulation (Diploma Ministerial) nº 1/2006

The Regulation Relating to Environmental Auditing Process was approved by the Council of the Ministers through the Decree nº 32/2003 of 12 August 2003, as to respond to

the need of establishing the parameters for carrying out environmental auditing, under the articles 18 and 33 of the Environment Law (law nº 20/97 of 1st of October.

This Regulation on Management of Bio- Medical Wastes defines the legal outline for carrying out the management of polluting substances from the activities of sanitary units. Competences for the management of bio-medical waste fall on the MICOA and the Ministry of Health.

This Regulation on Standards of Environment Quality was enacted by the Council of Ministers under article 10 of the Environment Law (Law nº 20/97, of 1 October), as a result of the need of establishing environmental quality standards as to ensure effective control and surveillance on the environment quality and natural resources of the country.
The matter relating to water quality is dealt with in Chapter III (articles 11 to 17), providing for categories of water quality, water quality parameters, quality control, sanitary vigilance, promotion of water quality for human consumption, discharge of pollutants or industrial liquid effluents, and water for recreational purposes.

The Environmental Regulation on Mining Activity (ERMA), approved by the Decree n. º 26/2004, of 20 August aims at establishing norms for preventing, controlling, mitigating, rehabilitating and compensating adverse effects that the mining activity may cause to the environment, with view to the sustainable development of such an activity (article 2). The competence to evaluate the environmental impact of the mining activity is given to the Ministry which superintends the area of mineral resources (article 3). Such is the Ministry of Mineral Resources, the competency of which will be partially analyzed under the subject on Institutional Framework.

The Regulation on the Process of Environmental Impact Evaluation approved by the Decree nº 45/2004, of 29 of September and was enacted to update and replace the previous one, which was adopted by the Decree 76/ 79 of 29 December.

Annex I of the Regulation on Relating to the Process of Environmental Auditing is of particular interest to the present assignment, as it concerns activities located in areas and ecosystems recognized as deserving special protection under the national and international legislation, such as barriers of coral reefs, mangroves, small islands, zones of imminent erosion including dunes at the maritime fringe, etc. Infrastructures such as marinas, shipyards, pipelines, submarine cables, ports and dredging, as well as treatment and disposal of solid and liquid residues are include in said annex.

The rules of application of fines and other sanctions provided for in environmental legislation, approved by Ministerial Regulation (Diploma Ministerial) nº 1/2006 aim at regulating ways of application of fines and other sanctions when environmental

activities of controlling and surveillance are carried out (article). Article 2 provides for competencies of environmental inspectors.

2.5.3: Institutional Frameworks

Through an Order (Despacho) of the Prime Minister of 5 January 1995 a committee was created at the level of the Council of the Ministers, so as to carry out the study aiming at ensuring the marine control, by the acquisition of patrolling equipment in territorial waters. The members of the Committee were the Ministers of Transport and Communications (Chair) person), National Defence (Vice-Chair Person), Agriculture and Fisheries, Coordination of Environmental Action, Planning and Finance, Home Affairs, and Industry, Commerce and Tourism. This Committee was to identify and harmonize with relevant sectors, the existing means for guaranteeing the maritime controlling system; propose regulatory system suitable to the county, in harmony with pertinent legislation on the matter; and propose, if necessary, the alteration or the revision of the relevant legislation.

The above Committee was temporary, but it marked the start of a process aiming at the building of a new institutional framework for the preservation of the marine and coastal environment. The main public bodies constituting the institutional framework are:

- The Ministry for the Coordination of Environmental Action (Ministério para a Coordenação da Acção Ambiental –MICOA);
- National Directorate of Environmental Impact Evaluation - NDEIE (Direcção Nacional de Avaliação do Impacto Ambiental – DNAIA);
- The Centre of Sustainable Development for Coastal Zones (Centro de Desenvolvimento Sustentável para a Zona Costeira – CDS – Zonas Costeiras);
- The Centre of Sustainable Development for Urban Zones (Centro de Desenvolvimento Sustentável para a Zonas Urbana – CDS – Zonas Urbanas);
- The Centre of Sustainable Development for Natural Resources (Centro de Desenvolvimento Sustentável para a Zonas Urbana – CDS – Recursos naturais);
- National Institute of Hydrography and Navigation.

MICOA is defined in the Presidential Decree nº 6/95 as the central organ of the State apparatus, which, according to principles, objectives and tasks defined by the Council of Ministers, directs and executes the environmental policy, coordinates, assists, controls and stimulates the correct planning and utilization of natural resources of the country (article 1) Objectives and functions of MICOA are defined in article 2, and its competences for the realization of such objectives are listed, they being distributed into four domains, which are of coordination, assistance or advice, control and evaluation. So as to direct the implementation of the policy defined by the Government, for the environment sector, other competences of MICOA are described in article 4. Such competences cover, inter alia, decisions on environmental impact studies and on technical quality of the environmental impact evaluation, as well as matters relating to

environmental auditing, proposals of sustainable development policies, and creation of incentives.

As part of the organizational structure of MICOA, there is National Directorate of Environmental Impact Evaluation - NDEIE (Direcção Nacional de Avaliação do Impacto Ambiental – DNAIA), which is the competent authority for the evaluation of environmental impact. (EIA), as defined in Article 5 of the Presidential Decree no 6/95.In such a context, NDEIE(DNAIA) is competent for, inter alia, (a) carrying out of the management and coordination of the process of EIA; b) issuing and divulging directives on EIA; and (c) performing of pre-evaluation of each activity submitted to its appreciation.

In the fulfilment of its competences and functions, MICOA interacts with various institutions, such as maritime administration, fisheries, mining, agriculture and forest, etc., which have environmental controlling responsibility in their scope of activities and tasks.

The reason behind the creation of the CDS was the need for the introduction of sustainable practices for the profitability of natural resources located at coastal zones of the country, the use of which must be correctly planned. The CDS – Coastal Zone created by Decree nº 5/2003 of 18 February, of the Council of the Ministers, is defined in article 1 of its Statute as a public institution with administrative autonomy and subordinated to MICOA.

According to article 3 of the Environmental Regulation on Mining Activity (ERMA), approved by the Decree n.º 26/2004, of 20 of August, the Ministry of Mineral Resources (as the ministry with superintendence functions on the area of mineral resources) is the governmental organ competent to evaluate the environmental impact of the mining activity. The competences of this ministry cover, inter alia, the following functions: monitoring of the compliance norms established in the Regulation (the ERMA); issuing of opinions on programs, terms of reference of the environmental impact study, as well as on aspects of environment management of certain projects; exercising the environmental control in coordination with MICOA, etc. The MMR is also competent for superintending the evaluating of the environmental impact, approving, among other measures, environmental directives in the ambit of the ERMA, approving aspects of environmental management and issuing environmental licenses.

Other key institutional arrangements include government ministries responsible for public works and housing, tourism and science and technology; National Council for Sustainable Development; universities and other higher learning institutions; and non governmental institutions.

2.5.4 Analysis of Gaps and Constraints

Among the key gaps and constraints faced in Mozambique include:

- Lack of harmonized Legal Instruments and approved Strategies and Policies related to Integrated Coastal Zone Management (a Coastal Zone Strategy has been drafted for more that 7-8 years, but not yet approved, and subsequently implemented);
- Lack of legally and institutionalized Inter-Institutional Technical Working Group on Coastal Zone (supporting the Technical Committee of CONDES – National Council for Sustainable Development). The group exists, but it is functioning irregularly on adhoc basis;
- Mandates related to management and conservation of coastal and marine resources are distributed in different sectors (Agriculture – Forests and Wildlife; Fisheries, Environment, Tourism) and creating conflicts. A harmonized Conservation Policy has recently been approved by the Council of Ministers, however, discussions already underway for the creation of ANAC (National Authority for Conservation Areas) seems not to address the diverse nature of conservation, a fact that can deeply jeopardize the successes so far accomplished;
- Need for Harmonizing the Surveillance which is falling under different institutions (Navy, Internal Affairs, Fisheries, Maritime Authority). This creates conflicts and also affects the effectiveness of surveillance;
- Lack of Financial, Infra-structures and Human Resources for implementing the legislation, mainly Surveillance;
- Multiplicity of Sectors affecting LBSA Issues, which makes difficult to harmonize the mandates of the different institutions;
- Low levels of public awareness and low levels of implementation of existing legislation, probably due to the lack of Financial, Infra-structures and Human Resources, but it can also be the lack of culture to implement legislation
- Need to establish the maritime borders with Tanzania, Comoros, France (Mayotte and Europe), Madagascar, and South Africa. This creates conflicts in fisheries and with the exploration of oils and gas more conflicts can be expected;

2.6: Seychelles

2.6.1: Summary of Legislation, Regulatory, Policy and Institutional Arrangements for Management of LBSA.

The Environment Protection Act (EPA), 1994 (Cap 71) provides for the protection, prevention, control and abatement of environmental pollution. It also provides for preservation and improvement of the environment through the integration of environmental consideration into development process. The Act which is administered by the Department of Environment as the designated Authority also makes provisions

for the Authority to co-ordinate the activities of other agencies concerned with the protection of the Environment.

Section 6 of the Act gives the minister power to prescribed standards for quality of effluent. The Environment Protection (Standard) Regulations 1995 prescribes effluent quality standards and the discharge of effluents to a recipient system from any industry or operation. It specifies maximum concentrations for a range of pollutants which may be present in effluent discharges. Under section 9 of the Act, the Minister has power to establish noise emission standards from various sources including construction sites, plants, machinery, motor vehicles, aircraft, industrial and commercial activities as may be necessary to preserve the environment. The Environment Protection (Noise Emission Standards) Regulations 1999 sets the limits of noise level in respect of areas and times referred to in the Schedule to the Regulations. Noise emitted in excess of these Standards is prohibited except where an authorisation has been granted by the Department of Environment.

Section 12 of the Act provides for the management of waste and also provides the minister with the power to designate the Agency responsible for the management of wastes. The Landscape and Waste Management Agency is responsible for the management of wastes; the designation, monitoring and regulation of waste disposal sites.

Section 15 of the Act requires that an environment impact assessment study be carried out and that an environmental authorisation is obtained if any person commences, proceeds with, carries out, executes or conducts or causes to commence, proceed with, carry out, execute or conduct any prescribed project or activity in a protected or ecologically sensitive area. The criteria establishing the necessity of an EIA is found in the Environment (Impact Assessment) Regulations, 1996 amended in 2000 which lists categories of projects or activities requiring environmental authorisation. Schedule 1 of the Regulations lists the prescribed projects and activities which necessitate an authorisation.

The EIA regulations are the only piece of legislation that gives legal status to the draft Land Use Plan. The EIA process includes an extensive consultation process such as scoping and public meeting. It can be used as surrogate for stakeholder consultation. The Environment Protection (Restrictions on Plastic Bags) Regulations, 2008 prohibit the manufacture, importation, trade and commercial distribution of plastic bags below 30 microns within the Republic of Seychelles. These types of plastic bags were being discarded into the environment therefore causing visual pollution and are a threat to marine and land biodiversity. The PET Plastic Regulations (Trades Tax (Imports) Regulations 2005 was amended in 2007 to include a tax of up to 30 per cent on all pre-form bottle of plastic and an additional levy of 70 cents per bottle.

Under the Public Health Act, 1960 (Cap 189) the Ministry of Health is invested with some competences related to water protection. Under section 5 of the Minister may make regulations to provide for the chemical examination and bacteriological examination of any supply or source of supply of water which is or may be used for drinking or domestic purposes. The minister may also make regulations to provide for the control and administration of the flow of water in any natural or artificial watercourse which is or may be used for irrigation or agricultural drainage.

As far as waste is concerned, under section 16 of the Act the term "nuisance" is defined inter alia as "(g) any deposit of material in or on any building or street which causes damp in any building so as to be injurious or dangerous to health;" and further "(q) any accumulation or deposit of refuse, offal, manure or other matter whatsoever which is injurious or dangerous to health;" Given that the Minister of Health has an overall competence to fight against nuisances there might also be some overlap with the competences of the Minister of Environment. Is has to be noted, however, that the competence of the Minister of Health is restricted to those actions that tend to the protection of human health compared to the competence of the Minister of Environment.

The Pesticides Control Act, 1996 regulates the manufacture, distribution, use, storage and disposal of pesticides for the protection of public health and the environment. It also restricts the manufacture, import, export, sell, offer for sale, supply, use, store, transport, possess, dispose or otherwise dealing with any pesticides. The Act also makes provisions for the labelling of such chemicals. It also makes provisions for the establishment of the Pesticides Board.

The Public Utilities Corporation Act, 1960 (Cap 196) regulates the use of water throughout the country. It also regulates the deposition of sewage and the operation of sewage disposal system both public and private. The Public Utilities (Sewage) Regulations (1987) provides for the supply, control and management of sewage. No person may use, install and maintain a private sewage disposal system in a designated sewerage area without permission from the Corporation. Only land owners living outside sewered areas are required to use, install and maintain a private sewage disposal system. The corporation also directs the disposal method for sewage or nondomestic effluent.

The Town & Country Planning Act, 1972 (Cap 237) establishes the Planning Authority which has the mandate of regulating and controlling all development of land within the country. Section 3 of the Act provides that no person shall carry out any building operations without a planning permission issued by the Town and Country Planning Authority.

Section 4 makes provisions for the preparation and adoption of a development plan for the whole of Seychelles. Such a development plan (or Land Use Plan), which may include maps, shall specify areas for roads, public buildings, and nature reserves, including open spaces. The plan is to be reviewed every five years.

One of the conditions for development is that no building should be erected within 25 metres from the high water mark. This condition is mainly put to protect the sand dunes on the coasts from severe erosion. This is however, only a policy decision and should be incorporated into the law.

The Land Reclamation Act, 1961 (Cap 106) lays down the procedure to follow for reclamation of land by filling any foreshore. A person who believes that the proposed reclamation may adversely affect either the property owned, or public rights or the natural beauty of the coastal area may object to the reclamation. On its part, the Beach Control Act, 1971 (Cap 14) makes provision for preserving the natural amenities of the seashore and inshore waters and for protecting the peaceful enjoyment thereof.

The Removal of Sand and Gravel Act, 1982 (Cap 203) provides for the licensing and control of the removal of sand and gravel. Following the impact of the activity on beaches, a ban on removal of sand from the beach and the plateau on the Seychelles have been imposed. However, removal of gravel from rivers is still permitted subject to authorisation under the Act.

The National Parks and Nature Conservancy Act, 1969 (Cap 141) makes provision for National Parks, Strict Natural Reserves, Special Reserves and Areas of Outstanding Natural Beauty (protected areas). It also establishes the National Parks and Nature Conservancy Commission which has the power to designate any area as a National Park or other protected areas mentioned above and also to describe the different types of activities which are prohibited in such areas.

The State Land and River Reserves Act (1903) (Cap 228) protects state land, rivers and streams in the Seychelles Islands. It also describes the type of activities which are prohibited within 50 feet from the river without authorization. Rights of a person bordering rivers are also defined in this Act.

The Forest Reserves Act, 1955 (Cap 84) provides for the establishment and protection of forest reserves. It gives the minister power to declare an area a forest reserve and also restricts certain activities to be carried out in such places.

In addition to the above legislative measures, the current Government policy restricts development to the coastal zone especially for Praslin island where there is a restriction on development above the 50m contour line. A major source of land based pollution is

from Agriculture. In Seychelles, the key legislative instrument is the Seychelles Agricultural Agency regulations and the Seychelles Agriculture and Fisheries Policy.

Table 7 : Summary of LBSA Relevant Seychelles Legislation

Decree / Law no.	Year	Title of law
141	1969	Parks and National Conservancy Act.
14	1971	Beach Control Act, with subsidiary legislation, 1991).
237	1972	Town and Country Planning Act
15	1973	Building Licences Ordinance
3	1986	Licences Act
129	1991	Minerals Act
122	1991	Maritime Zones Act
	1993	National Conservation
	1994	Environment Protection Act with various subsidiary legislation (1995), (1996).
	1996	Pesticide Control Act
203		Removal of Sand and Gravel Act
25	1895	Public Utilities Corporation Act
228		State Land and River Reserves Act
106	1967	Land Reclamation Act
210		Harbours Ordinance and Harbours Regulations (No.16/1933).

Institutional Frameworks

The Department of Environment within the Ministry of Home Affairs, Environment and Transport is the Authority designated under the Environment Protection Act 1994, for enforcing environmental protection related legislation in Seychelles. It comprises several divisions and sections, among which two divisions deal with land based sources and activities. The first of these is The Wildlife, Enforcement and Permit Division, which comprises of the Standards and Enforcement Section and the Environment Assessment and Permit Section. The functions of the Division are to implement the Environment Protection Act and its regulations, and related policies, laws and programs. The other division is the Standards and Enforcement Section conducts monitoring and enforcement activities on the prevention and abatement of environmental pollution; the monitoring, collection of samples, lab testing, and collection of data on air, water, marine and noise pollution emissions and ambient quality; and collecting and submitting appropriate evidence on violations of the law.

The Environment Assessment and Permit Section enforces the Environment Protection Act 1994 and the Environment Protection (Impact Assessment) Regulations, 1996 and other related legislation and also advises on development proposals to ensure that development takes place with minimal negative environmental impacts.

The Division of Risk and Disaster Management is a division within the Department of Environment dealing mainly with disasters. It is responsible for the protection of the population, properties and also the environment to ensure that there is no degradation of the environment. It also makes recommendation to the Government as to the best ways to use land use plan.

Two other institutions, an agency and authority, were established under the Environment Protection Act 1994 dealing with land based sources and activities. The Landscape and Waste Management Agency is governed by the Environment Protection (Landscape and Waste Management Agency) Regulations 2009. It is responsible for the overall management of waste including the monitoring and control of waste disposal sites in the country. It is also responsible for the maintenance of all drains including repairs and do all that is necessary to maintain and improve the landscape of urban centers, road and highway corridors, public parks and other public places. It also plans, coordinates and monitors the development and management of public landscaping in the country.

On its part, the Seychelles National Park Authority is governed by the Environment Protection (Seychelles National Parks Authority) Order 2009 and is responsible for the management of the terrestrial and marine protected areas (national park). It monitors and controls all activities within a National Park and also combats threats to biodiversity. It prevents, detects and suppresses forest fires and the spread of invasive species. It also prevents, detects and prosecutes illegal activities including poaching of forest resources.

There are other organizations dealing with land based sources and activities in the country and they include the Public Utilities Corporation (PUC) which is the statutory body for management of water and waste water under the PUC Act 1960. The body is responsible for all aspects of water supply and demand management. Another is the Praslin Development Board (PDF), which regulates development on the island of Praslin. The Board also engages in waste collection, cleaning and management of the solid waste dumping site. The La Digue Development Fund functions in a similar manner to Praslin, by regulating development on the island of La Digue. The Fund is composed of members of the national assembly and other important individuals in the island.

The Ministry of Health; Environmental Health Section enforces the Public Health Act and has powers to shut down premises if there is likelihood of contamination to water or food.

The District Administrators are appointed public servants responsible for district development. At the moment they assist the Landscape & Waste Management Agency and Department of Environment in the monitoring of district cleaning work involving road cleaning, cleaning of rivers, bus shelters and other built public infrastructure.

The Seychelles Planning Authority was established under the Town and Country Planning Act 1972 and is the Authority implementing the development plan for the country. It proposes the manner in which land in Seychelles may be used (whether by the carrying out thereon of development or otherwise e.g. allocate areas of land for use for agricultural, residential, industrial or other purposes of any class specified in the plan) and the stages by which any such development may be carried out.

The Ministry of National Development is the authority responsible for land management in the country. The Ministry consults with the other Ministries and Departments for location of industries, residential and recreational areas. Guidance on the use of land comes from the environment field and this is derived from data and existing plans such as sensitive area atlas.

The Seychelles Agricultural Agency is the authority which promotes food security in the country. The authority is implementing a program to map and better administer agricultural land due to the fact that a large portion of the most productive agricultural land in the country lies on the coastal plain.

Finally, the Seychelles Tourism Board advises and assists the Government in the development of infrastructures supporting the tourism industry. It also explores new avenues for the development of new tourism products that will incorporate the culture, history, environment and the local community.

2.6.2 Analysis of Gaps in Policy, Legislative, Regulatory knowledge base (gap analysis) and Institutional Arrangements in Support of Management of LBSA.

Enforcement of legislation remain a challenge as in most other countries the resources to accomplish this is often limited. There is significant overlap in implementation of pollution cases between the Ministry of Health and the Department of Environment. On the greater part the Department of Environment is responsible for implementing but sometimes it may be carried out by the Ministry of Health under the Public Health Act.

Similar overlap occurs in the implementation of recycling strategies where EPA gives power to the Minister to prescribe fees on manufacturers for treatment of their waste

but for which the same can be accomplished under the Trades Tax Act of the Ministry of Finance. This is the case for the importation of PET plastic beverage containers where a levy is in place under the Trade Tax Act.

There are other organizations conducting similar activities within the country and this causes confusion. For example, the monitoring of vehicles which has failed to secure their load is done by officers from the Department of Environment and officers from the Seychelles Land Transport Agency. For this type of offence, an officer from the Department of Environment will fine the offender SR500 for the offence whereas an officer from the Seychelles Land Transport Agency will fine the offender a fine of SR200 for that same offence. Another example is the illegal discharge of sewage and also the pollution of rivers. There are three organizations dealing with these types of activities and they are the Environment Enforcement Unit of the Department of Environment, the Public Health Unit of the Department of Health and the PUC. This causes confusion because many times one of them may rely on the other for enforcement purposes. This may result in no enforcement at all and the polluters may therefore go free.

There is also the issue whereby not all organizations are using their power under the law to enforce regulations. One example is that most offences regarding oil spill pollution at sea are dealt with by the Department of Environment instead of the Department of Natural Resources. Another example is the issuing of fixed penalty notice to people littering the public place. This notice can be issued by all authorized officers empowered under the EPA such as officers of the Department of Environment, Highway Patrol officers, Police officers, District Administrators and Head teachers among others. But the only two groups of people issuing the said notice are officers from the Department of Environment and Highway Patrol Officers.

In the past few years, the government of Seychelles has streamlined its system and there are now fewer officials in the public service. This has resulted in a lack of capacity to enforce regulations. There is also the issue of unavailability of specialized equipment for example, there are no equipment for pesticides identification in fresh water. Seychelles has many laws and regulations but most of them are outdated. There is therefore the need for revision of those laws but the lack of funding is preventing this from happening. There is also a shortage of legal draftsmen in the Attorney General's office for the revision and drafting of legislation. There are many policies being implemented but they cannot be enforced because they have no legal status, for example the 25 m setbacks for construction from high-water mark.

2.6.3: Assessment of Adequacy of Existing Policies, Legislation and Institutional Arrangements to enable Compliance with the LBSA Protocol

The Seychelles already have sufficient policies, legislation and institutional mechanisms in place to comply with the LBSA protocol. These measures are reported below for the relevant articles of the protocol. Article 5 – Pollution from point sources

The Department of Environment has capacity to ensure that pollution from point sources is based on Best Available Technique and actively regulates the discharges due to these sources. A preliminary hotspot analysis was carried out under the Wio LaB Project and effluent discharge parameters are already established under the Environment Protection Act. Notwithstanding these accomplishments, no national standard currently exists for emission to the air. Environmental quality objectives although implied are not explicitly stated in the current legislation. These areas would need to be strengthened in order to fully comply with the LBSA Protocol. Article 6 – Pollution from diffuse sources

Potential for pollution from diffuse sources in the Seychelles can be attributed to vehicular emission since there is no major agricultural or other related infrastructure. The threat of air pollution has been reduced considerably, since in the early nineties, Government phased out kerosene stove ovens in place of LPG for cooking and imposed a ban on importation of old second hand vehicles. The latter action has meant that most vehicles in the country are now not more than 10 years old, are using unleaded fuel and have functioning catalytic converters. Although emissions from private vehicles are clean, public transportation buses are nonetheless relatively polluting in view of the aging fleet. This aspect would need to be considered in future management interventions for public transportation needs for the islands. In terms of big hotels, most use golf carts and buggies which are battery operated and the Government is currently looking at pilot schemes for battery operated vehicles on the third populated island of La Digue.

The Seychellois people have a culture of burning waste from sweeping their yard especially leaves. Open burning is dying slowly on the main island due to urbanisation but is still practiced at time especially in low residential places. Notwithstanding air pollution, fire threatens the unique biodiversity of the Seychelles and therefore the Department of Environment have a procedure to control open burning. This requires that all proponents apply for a burning permit issued by this Department and visits are made to ensure that environmental nuisances are minimised. These initiatives have contributed greatly to the air quality in the islands. Article 7 – Other harmful activities

There is at present a hazardous waste management system in place which complies with the Basel Convention. This procedure requires disposers to identify and characterise their waste according to the Basel Convention and UN Hazard number including the packaging and mode of transport. The notification document and mode of disposal is approved by the focal institution before the material can be transported in the country from generator to disposer. This system has worked very well in tracking the chemicals including those in Annex II of the LBSA protocol, that required disposal however there are areas for improvement. In particular, a holistic life cycle approach is required to track hazardous materials from importation to disposal. As part of the UNEP/GEF WIO LaB Project a National Implementation Plan was developed for Persistent Organic Pollutants (POPs) and this is under implementation. A Pesticide Board exists to screen the importation and management of pesticides in the country. This

board has however not been as active and under the framework of a recent UNITAR project entitled Strategic Actions for Integrated Chemical Management (SAICM), a strategy for integrated chemical use is being developed for implementation in the next 2 years.

Article 8 – Transboundary pollution

The Seychelles is isolated from neighbouring countries and shares no rivers or other resources. In this context, transboundary issues experienced in main land Africa is not relevant. The main issue would be in connection to shipping, control of ballast water and marine accidents such as major oil spill in the region. There is already work carried out in this area, the Seychelles has developed its Oil Spill Contingency plan and sourced the materials and manpower needed to act in cases of oil spills. The Marine highway project which is being implemented has already achieved much in terms of this objective.

Article 9 – Measures of implementation

In terms of implementation, a national environmental strategy exists in the form of the Environment Management Plan of Seychelles (EMPS) (if you previously used the abbreviation, so long form is not necessary) which is of 10 year duration. All elements of environmental management are planned for the forthcoming decade going as far as prioritising projects that will be implemented in order to meet the objectives of the strategy. The EMPS 2000-2010 is the referenced document and a new document is being produced by a team of local consultants for the period 2011-2020. It is thus an opportune time to ensure that the priorities of the LBSA protocol are adequately integrated. The institutional mechanism for mainstreaming the protocol objectives into policy therefore already exists and will be used for this purpose.

Article 10 - Compliance and enforcement

There is in the Department of Environment a Conventions Unit which handles with the coordination and domestication of international conventions. The latter is also tasked with the national focal points and institutions to implement. At the moment the resources for this is limited as the section is staffed by one person only. On a more general level, the enforcement of requirements of the protocol under the respective existing legislation is being carried out by the Enforcement and Standards section of the Ministry of Environment. The section has environmental inspectors to inspect and enforce the environmental legislation.

Article 12 – Data collection, monitoring and Evaluation

Data collection and monitoring is carried out but to a limited extent and only in conjunction with projects since funding and human resources are limited. There is currently an ongoing project to establish the mechanism to develop a state of the

environment report. This would contain indicators to measure and assess the state of the environment.

Article 13: Environment Impact Assessment

The Environment Impact Assessment Regulations provide that all major developments are required to conduct an EIA and engage in public consultation. The guidelines for the EIA are issued by the Department of Environment who follows the process and ensure that the law is respected. In this respect all of the provision of Article 13 is already being met.

2.6.4: Identification and Selection of Effective Strategies and Measures

Intervention measures and strategies have already been commented upon. The main thrust is the EMPS 2011-2020 which is already mainstreaming most of the requirements of the protocol into the strategy for the next 10 years. This would include update to the legislation to synergize the requirements of the LBSA Protocol as well as supporting in country institutions with resources and capacity. In parallel to this the EMPS secretariat would require strengthening in terms of human resources in order to adequately fulfill its mandate overseen by a strong steering committee.

The second approach would be the restructuring and strengthening of the conventions unit. This will ensure better coordination of conventions management and ensure that implementation is being carried out including regular reporting.

2.7: South Africa

2.7.1: Legislation

A number of aspects of the South Africa Constitution are relevant to the regulation of land-based pollution. The Bill of Rights chapter of the Constitution includes an environmental right which includes a reference to pollution generally. It states:

24. 'Everyone has the right -

(a) to an environment that is not harmful to their health or well-being; and

(b) to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that - (i) prevent pollution and ecological degradation;

(ii) promote conservation; and

(iii) secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development'.

A number of environmental acts have been enacted in conformity with section 24 above which have relevance to land based pollution. Of particular importance to the

regulatory and institutional framework for LBSA&A causing marine pollution is Chapter 3 of the Constitution, titled Co-operative Government. It provides the starting point for examining the administration of land based marine pollution laws. First, however it sets out a set of eight "Principles of co-operative government and intergovernmental relations" (Sect 41(1)). Of relevance to coastal area management generally and regulation of land based pollution particularly is that the three spheres of government (national, provincial and local) must:

Exercise their powers and perform their functions in a manner that does not encroach on the geographical, functional or institutional integrity of government in another sphere… (s. 41(1)(g)).

Laudable as this sounds, it brings into play a complex feature of the Constitution, namely the demarcation of the respective legislative and executive functions of national, provincial land local spheres of government in the context of coastal area management and land based marine pollution particularly(.Glazeweski: South Africa National Legal Report, 2006). The resultant legal framework relevant to LBSA&A, which must accordingly be considered, exists at three levels of government: national, provincial and local.

South Africa currently has two environmental framework laws, namely: the Environment Conservation Act 73 of 1989 (ECA) which was enacted prior to the transition to democracy, and the National Environmental Management Act 107 of 1998 (NEMA) passed by the new government. Many of the provisions of the ECA have been subsumed by the NEMA and in time all of the ECA will be subsumed by the NEMA. Each of these is now dealt with in turn.

The NEMA (107 of 1998) is a framework environmental law concerned primarily with co-operative environmental governance. It lays down a set of national environmental management principles in section 2(4) which all government agencies have to take cognizance of. Of particular relevance to coastal area management is the principle that:

> Sensitive, vulnerable, highly dynamic or stressed ecosystems, such as coastal shores, estuaries, wetlands and similar systems require specific attention in management and planning procedures, especially where they are subject to significant human resource usage and development pressure. (Own emphasis) Section 2(4)(r).

Another national environmental management principle set out in the NEMA, which is particularly relevant to the coast, is the public trust doctrine to the effect that:

> The environment is held in public trust for the people, the beneficial use of environmental resources must serve the public interest and the environment must be protected as the people's common heritage (Section 2(4)(o).

The Environment Conservation Act 73 of 1989, (ECA) Part 4 of which has not been repealed by NEMA, is dedicated to the control of environmental pollution generally. Of particular relevance to freshwater pollution is the section on waste management, which focuses on the potential contamination of underground water resources by waste landfill sites (S 20). This section has been discussed in the section on the ECA. It provides that no person may establish, provide or operate a waste disposal site without a permit (S 20(1)). Significantly, this section is administered by the DWAF, while the ECA as a whole is administered by the DEAT. The section provides that no person may discard or dispose of waste except at a disposal site for which a permit has been issued and in a manner which may be prescribed by the Minister (S 20(6)). The Minister is also able to issue directives concerning specific aspects of waste disposal site management and controls.

Section 31A has also not been repealed by the NEMA. It empowers the Minister of Environmental Affairs and Tourism to order any person to cease any activity which in his or her opinion may seriously damage, endanger or detrimentally affect the environment. The broad definition of "environment" clearly includes water resources.

Apart from the constitution and framework legislations, there are several other enactments which are of relevance, in varying degrees, to the LBSA/A in South Africa. Some are highlighted below.
The Development Facilitation Act (DFA) 67 of 1995 is particularly relevant as it is primarily concerned with facilitating and fast tracking reconstruction and development projects and is thus aimed at alleviating poverty and the plight of previously disadvantaged communities. The preamble to the Act sheds light on the intention of this legislation, in that it is to, inter alia, 'to provide for nationally uniform procedures for the subdivision and development of land in urban and rural areas so as to promote the speedy provision and development of land for residential, small-scale farming or other needs and uses.

Whilst providing for these objectives, the Act is being increasingly used for the provision of large scale and upmarket development (e.g. shopping malls, golfing and residential estates, etc) along South Africa's coastline particularly along the Southern Cape and KwaZulu-Natal coasts. Section 33 of the Act makes provision for the need for environmental evaluations prior to the approval of an application. It is however, common practice for application for development to use the environmental impact assessment (EIA) process required in terms of either the ECA or NEMA.(Glazewski: South Africa National Legal Reports,2006).

Other laws include the Sea-shore Act 21 of 1935; Disaster Management Act 57 of 2002; Maritime Zones Act 15 of 1994; National Water Act 36 of 1998; The Water Services Act 108 of 1997; Dumping at Sea Control Act 73 of 1980; National Building Regulations and Building Standards Act 103 of 1977; Minerals and Petroleum Resources Development

Act 28 of 2002 (MPRDA); Fertilizers, Farm Feeds, Agricultural Remedies and Stock Remedies Act 36 of 1947; Agricultural Pests Act 36 of 1983; National Environmental Management: Protected Areas Act 57 of 2003; and Conservation of Agricultural Resources Act 43 of 1983 among others.

The Sea-shore Act is indirectly relevant to land based marine pollution as it lays down the legal status of the sea and sea-shore as well as providing for administration of the area. The Act is likely to be replaced by the Coastal Zone Management Bill (see below) Most of the provisions of the Act have been assigned to the coastal provinces. Some of these include provisions relating to marine pollution. Thus the Act provides that the powers conferred by the Health Act 63 of 1977, on the Minister of Health or other competent authority, may be exercised by a local authority which adjoins the sea-shore (Sect 7).

Similarly, the Sea-shore Act provides that the authority to make regulations which vests in the Minister can be vested in the respective local authorities adjoining the sea-shore. Included in the authority to make these regulations is the authority to make regulations ". . . for the prevention or the regulation of the depositing or the discharging upon the sea-shore or on the sea of offal, rubbish or anything liable to be a nuisance or danger to health" (Sect 10(11)(d)).

A number of local authorities have made regulations in this regard.

The Disaster Management Act 57 of 2002 provides for an integrated and coordinated disaster management policy that focuses on preventing or reducing the risk of disasters, mitigating their severity, emergency preparedness, rapid and effective response to disasters and post-disaster recovery. To this end the Act establishes a National Disaster Management Centre (sect 8) as well as an intergovernmental committee on disaster management (sect 4) and a National Disaster Management Advisory Forum (sects 5) as well as a provincial equivalent (sect 37). The thrust of the Act is to oblige national departments, provinces and local authorities to prepare national (sects 22-27), provincial (sects 28-41) and municipal (sects 42-55) disaster management frameworks and plans and to report to the National Disaster Centre in this regard.

A number of provisions of the Maritime Zones Act 15 of 1994 are specifically relevant to marine pollution albeit not directly from land based sources. As regards maritime casualties, the Act stipulates that the Republic may take whatever measures are necessary in the sea or airspace above it to protect the coastline "from pollution or threat from pollution" (Sect 10.). As regards offshore installations the Act stipulates that all the laws of the Republic, including the common law, apply to such installations (Sect 9).

The National Water Act 36 of 1998 regulates not only water quality but access to freshwater, a scarce resource on the sub-continent. It is administered by the Department of Water Affairs and Forestry (DWA&F), but a number of other government

agencies such as the DEAT Departments of Transport and Minerals and Energy are involved in administering legislation which is directly or indirectly relevant to land based sources as elaborated below.

While the primary concern of the Water Act is regulating just and equitable access to water, a scarce resource in southern Africa, water quality provisions permeate the entire National Water Act. (Glazeweski: South Africa National Legal Report, 2006). This includes the definition section which defines "pollution" as seen below; the various strategies and classification system which provide the basis for controlling access to scarce water and the licensing system which is based on "use of water". Crucially "water use" includes pollution-related activities as elaborated on under (v) and (vi) below (S 20). More specifically Chapter 3 of the Act entitled "Protection of Water Resources", provides for Pollution Prevention in Part 4, and for Emergency Incidents in Part 5.

The pollution provisions of the National Water Act must be seen in the context of the Water Services Act 108 of 1997, (the "Services Act") which has as its primary focus the provision of water services including sanitation services by local authorities. The specific objectives of the Services Act include:

(a) the right of access to basic water supply and the right to basic sanitation necessary to secure sufficient water and an environment not harmful to human health and well-being; . . .
(b) . . .
(c) the preparation and adoption of water services development plans by water services authorities; . . . (S 2(a)–(c))

The Services Act defines "water services" as "water supply services and sanitation services" (Sect 1(xix)), and "sanitation services" as:

> . . . the collection, removal, disposal, or purification of human excreta, domestic waste-water, sewage, and effluent resulting from the use of water for commercial purposes (S 1(xvi)).

The draft water services development plan which each water service authority is obliged to draw up must include details ". . . of existing industrial effluent disposed of within the area of jurisdiction of the relevant water services authority" (Sect 13(f)).

The Services Act prohibits any person from obtaining water for industrial use from any source other than the distribution system of a water services provider nominated by the relevant water services authority (Sect 7(1)). It also provides that no person may dispose of industrial effluent except in a manner approved by the nominated water services provider (Sect 7(2)). The Services Act also provides that when a water services authority provides water for industrial use, or controls a system through which industrial effluent is disposed of, it must make by-laws relating to service standards, technical conditions, the determination of tariff structure payment and collection of money, and circumstances when such provision or disposal can be limited or prohibited (Sect 21(3)). Local authorities thus have important obligations under this Act regarding water quality

control and the treatment of industrial and domestic effluent (The Water Services Act: A Guideline for Local Government Department of Water Affairs and Forestry undated.).

The Dumping at Sea Control Act 73 of 1980, which is administered by the Minister of Environment Affairs and Tourism, is more or less modelled in its totality on the London Convention. The pivotal section imposes criminal sanctions for dumping substances listed in Schedule 1 to the Act, or dumping Schedule 2 or other substances into the sea without a special or general permit respectively (Sect 2(1)). The permit requirements are set out in regulations made under the Act (General regulations GN R1135 in Government Gazette No. 11348 dated 17 June 1988).

It should be noted that the term "sea" as used in the definition under the Act is specifically defined to include the internal waters, territorial sea and exclusive economic zone (Sect 1(1) Definition of "sea"). The Schedules by and large follow the scheme of the London Convention. It is a criminal offence to dump any other substance or load such other substance on or in any vessel, aircraft, platform or other man-made structure, except under the authority of a general permit (Sect 6). Contravention of this section amounts to a criminal offence and a substantial fine of up to R250 000 is provided for (Sect 6).

The criteria to be used for granting special and general permits are set out in Schedule 3 of the Act and the Director-General must take these into account in granting permits. These criteria are similar to the ones mentioned in the London Dumping Convention. The Director-General is also required to report annually to the Minister on the nature and quantities of substances authorised by permit to be dumped at sea (Sect 4). Powers of inspection and matters relating to enforcement are also provided for (Sect 5).

Another relevant law is the National Building Regulations and Building Standards Act 103 of 1977.The purpose of this Act is to provide uniformity in the law relating to the erection of buildings in areas of jurisdiction of local authorities and to prescribe building standards. The Act provides for the making of regulations, known as the National Building Regulations (Sect 17). These have been published in the Government Gazette and refer to SABS standards (R2378 in Government Gazette No. 12780 dated 12 October 1990 amended by R432 in Government Gazette No. 13054 dated 8 March 1991). They provide for a wide variety of matters concerning the construction, structure and demolition of buildings, including rules relating to structural design, public safety, demolition work, lighting and ventilation, water and related matters. Standards of construction regarding sewerage drains and related matters would accordingly fall under the purview of this Act.

The Marine Living Resources Act, 18 of 1998 (MLRA) provides for the declaration of marine protected areas (MPAs) by the Minister (sect 43). The Minister is empowered to

establish such areas in order to protect the marine fauna and flora and the physical features on which they depend, to facilitate fishery management to provide pristine communities for research; and to diminish any conflict that may arise from competing uses in the area in question and related matters (sect 43(1) (a) to (c)).

Various "closed areas" have been declared by the Minister in terms of the regulations under the MLRA; the geographic details of such areas are detailed in the regulations. Activities prohibited within MPAs without the requisite permission include fishing, destruction of fauna or flora other than fish, extraction of sand or gravel, depositing of waste or disturbing the natural environment, erecting structures within the MPA, and conducting any activity that adversely impacts on the ecosystems of the area (sect 43(2)(a) to (e)).

The Health Act 63 of 1977, provides that a function of the Department of Health is ". . . to take steps for the promotion of a safe and healthy environment". It obliges local authorities to take measures to prevent pollution of water intended for human use (Sect 20(1)(c)). The Minister may pass regulations in this regard. This includes storm water run-off (Sect 34(b), (h), (i) and (j)).

The purpose of the Foodstuffs, Cosmetics and Disinfectants Act 54 of 1972, (the Act) is to control the sale, manufacture and importation of foodstuffs, cosmetics and disinfectants. The Act is administered by the Department of Health, it is also relevant to agriculture, in that foodstuffs fall under its ambit.

The Minerals and Petroleum Resources Development Act 28 of 2002 (MPRDA) which is administered by the Department of Minerals is relevant to marine pollution because many mining activities occur at the coast as well as offshore, including the exploration and exploitation of South Africa's lucrative offshore diamond and oil and gas resources.

Regulations made under the MPRDA include a regulation on water management and pollution control (Reg 68. The MPRDA regulations cross-refer to the National Water Act 36 of 1998, other applicable laws, as well as the approved environmental management programme or environmental management plan) promulgated under the Mines and Works Act 27 of 1956, which remains in force by virtue of the Minerals Act 50 of 1991 (S 68(2)). One of these provides that: ". . . in no case may water containing any injurious matter in suspension or solution be permitted to escape without having been previously rendered innocuous" (Reg 5.9.2).

The rather out dated Fertilizers, Farm Feeds, Agricultural Remedies and Stock Remedies Act 36 of 1947 is administered by the Department of Agriculture and still extensively

applied in South Africa today. It is potentially important in giving effect to the POPs Convention discussed in Annex 2. The Act defines (sect 1) the various products referred to in its title namely “agricultural remedy”, “fertilizer”. “farm feed” and “stock remedy”.

The Act is underpinned by the requirement that no person sell any fertilizer, farm feed, agricultural or stock remedy unless they are registered under the Act. To this end it provides for the designation of an official in the Department as registrar of patents by the Minister. The Act then sets out the procedure for registration. Apart from requiring the registration of any dealer in the above-mentioned four products, the Act also requires the registration of pest control operators (sects 2,3 and 7(1)).

The Act includes a number of provisions relating to implementation. These include sections granting the Registrar power of entry, inspection and seizure, prohibitions on imports; provisions for secrecy; jurisdiction of magistrates’ courts; procedure and evidence; and related matters (Sects 15 to 20).

The Act also includes an extensive provision enabling the Minister to make regulations concerning a wide range of matters concerning fertilizers, farm feeds, agricultural remedies and stock remedies (sect 23). Acting in accordance with this provision, the Minister has made regulations in respect of a wide variety of matters including the declaration of certain substances and remedies to be agricultural remedies; prohibitions on the acquisition, disposal, sale or use of certain agricultural remedies and stack remedies; prohibitions on the sale or use of super phosphate and copper in certain areas and related matters.

The Agricultural Pests Act 36 of 1983, provides for measures for control over plants and for the prevention of plants diseases (agricultural pests). It includes control measures for the importation of controlled goods covering any plant, pathogen, insect, growth medium, exotic animal, infectious thing, and others. The Minister is empowered to impose various control measures including measures, relating to the destruction of plants, the combating of pathogens, red-billed quelea, insects or exotic animals, and a number of similar matters.

There are also several laws especially relevant to PADH.They include the National Environmental Management Biodiversity Act 10 of 2004.

The Biodiversity Act was promulgated in June 2004 and most of its provisions came into force on 1 September of that year. The overall purpose of the Act as set out in its Preamble and in the objectives section is:

- the management and conservation of South Africa’s biodiversity and its components;
- the protection of species and ecosystems that warrant national protection;
- the sustainable use of indigenous biological resources;

- the fair and equitable sharing of benefits arising from bioprospecting including indigenous biological resources; and
- the establishment of a South African National Biodiversity Institute (sect 2(a) to (d)).

As regards PADH it is relevant to note that the Act establishes the South African National Biodiversity Institute (SANBI) and one of the listed functions of SANBI in the Act is that it may "coordinate and implement programmes for... the rehabilitation of ecosystems..." (sect 11(1)(m)). This is of relevance to the Protocol on Protected Areas and Wild Fauna and Flora (SPAW Protocol)

The National Environment Management: Protected Areas Act 57 of 2003 provides for various kinds of "protected areas", a term which is defined as: "any of the protected areas referred to in section 9," (Sect 1 Definitions). Section 9 in turn lists a number of kinds of protected areas, the following of which are potentially relevant to SPAW: special nature reserves, national parks, nature reserves, (including wilderness areas) and protected environments. Section 9(d) also refers to marine protected areas.

Each of these types of protected areas is defined in some detail but in the case of marine protected areas cross-reference is simply made to section 43 of the MLRA which provides for the establishment and regulation of marine protected areas as elaborated on below.

The Conservation of Agricultural Resources Act 43 of 1983, administered by the Department of Agriculture, was passed well before the transition to democracy, but is nevertheless still the main law dealing holistically with agricultural resources. The object of the Act is:

To provide for the conservation of the natural agricultural resources of the Republic by the maintenance of the production potential of land, by the combating and prevention of erosion and weakening or destruction of the water sources, and by the protection of the vegetation and the combating of weeds and invader plants. (Sect 4)

The resources which the Act is concerned with are: land, as evidenced from the outline of the soil erosion problem above; water which has been dealt with above; and the veld or vegetation.(The Republic of South Africa: Policy on Agriculture in Sustainable Development – A Discussion Document (Draft 8))

The Department of Agriculture, as part of its contribution towards sustainable development, embarked on a process of developing a Policy on Agriculture in Sustainable Development[1] as part of its response to the commitments made by world leaders at the WSSD held in Johannesburg in 2002. The Policy forms part of the process of incorporating principles and objectives of sustainable development into the ethos of the agricultural sector of this country. It recognises the shared goals of

government, farmers and conservationists and the need for all stakeholders to work together to achieve a sustainable agricultural sector in South Africa.

The Discussion Document states that the Conservation of Agricultural Resources Act will be amended or replaced to ensure accordance with new policies of sustainable resource use. It also provides that the Fertilisers, Farm Feeds, Agricultural Remedies and Stock Remedies Act 36 of 1947, and related legislation, dealt with below, will be reviewed to protect the health of humans and prevent pollution of the natural environment. As regards land-use planning, it states that short-term commercial interests should not compromise the future of efficient and sustainable agriculture. In addition, it provides that the provisions of the Development Facilitation Act 67 of 1995 and provincial ordinances dealing with agricultural land use will be reviewed and, if necessary, strengthened to ensure appropriate levels of protection of agricultural land. To this end, a draft Sustainable Utilisation of Agricultural Resources Bill, 2004, has been proposed, but has not yet been published for comment by the Department.

The Conservation of Agricultural Resources Act 43 of 1983 is the successor to the Soil Conservation Act 76 of 1969, which in turn repealed and replaced the landmark Soil Conservation Act 45 of 1946.

As concerns the Draft National Environment Management: Coastal Zone Management Act, although it is concerned with control and management of the coastal zone and not with the marine environment per se, it should be noted that chapter 6 is devoted to Institutions and Chapter 9 to Marine Pollution.

A number of provincial ordinances are relevant to freshwater pollution and thus to LBSAA causing marine pollution.

The Cape Nature and Environmental Conservation Ordinance 19 of 1974 providesas follows:

No person shall deposit or cause to allow to be deposited –

(a) in any inland waters, or

(b) in any place from where it is likely to percolate or in any other manner enter any inland waters, anything, whether solid, liquid or gaseous which is likely to be injurious to any fish or fish food of which, if it were so deposited, in large quantities or numbers, would be so injurious (S 48).

The Nature Conservation Ordinance 12 of 1983 Transvaal, which is now applicable in Gauteng, North West and Limpopo provinces, includes similar provisions (Sect 84 of the Nature Conservation Ordinance 12 of 1983 (Gauteng)).

The Municipal Ordinance 20 of 1974 (Cape), includes a provision for local authorities in the Western Cape ". . . to drain stormwater. . . into any natural watercourse". The provision does not require that they ensure that it is of an acceptable quality (Sect 139(1)(d)). Another prohibits any person from discharging, permitting to enter or putting into any natural watercourse into which stormwater is drained, any substance likely to contaminate or impair the quality of the water therein, except with the consent of the local authority (Sect 141(1) (h)). Similar provisions exist in the municipal ordinances of the other provinces (See e.g. the Local Government Ordinance 17 of 1939 (Transvaal); Local Government Ordinance 8 of 1962 (Orange Free State)).

Local authority by-laws

Some local authorities enact their own by-laws to deal with the discharge of industrial effluent and stormwater run-off. Industrial effluent disposal requires a permit, which will only be authorised if its contents are disclosed. This is often coupled with the requirement that the effluent be monitored. The administrative requirements are more stringent at local level than under provincial legislation, because the municipality concerned usually owns or operates the treatment works into which the effluent is discharged, and therefore it must ensure that any waste water it accepts can be treated by the plant and will not detrimentally affect its functioning.

The Cape Metropolitan Council (CMC) in the Western Cape has passed an Industrial Effluent By-law containing provisions prohibiting the discharge of any substance besides stormwater into any public drain, river, stream or other watercourse, without the permission of the CMC (PN 776/1993, Sect 8). Permission will only be granted if the discharge complies with the regional effluent standards. Some municipalities within the CMC also have specific by-laws in this regard, such as the Drainage and Sewerage Bylaw passed by the Cape Town Municipality (PN 397/1987).

Table 8: Summary of LBSA Relevant South Africa Legislation Decree / Year Title of law / decree

Law no.		
	1935	Sea Shore Act
36	1947	Fertilizers, Farm Feeds, Agricultural Remedies and Stock Remedies Act
	1950	Cape Town Fore shore Act
88	1967	Physical Planning Act
54	1972	Foodstuffs, Cosmetics, and Disinfectants Act
46	1973	Seabirds and Seals Protection Act
57	1976	National Parks Act
63	1977	Health Act

103	1977	National Building Regulations and Building Standards Act
73	1980	Dumping at Sea Control Act
6	1981	Marine Pollution(Control and Civil Liability) Act
36	1983	Agricultural Pests Act.
43	1983	Conservation of Agricultural Resources Act
122	1984	Forests Act
73	1989	Environment Conservation Act
50	1991	Mines and Minerals Act
15	1994	Maritime Zones Act
67	1995	Development Facilitation Act
108	1997	Water Services Act
84	1998	National Forests Act
107	1998	National Environment Protection Act
36	1998	National Water Act
5	1998	Kwa Zulu Natal Planning and Development Act
18	1998	Marine Living Resources Act
7	1999	Planning and Development Act (Western Cape Province)
28	2002	Minerals and Petroleum Resources Development Act
57	2002	Disaster Management Act
57	2003	National Environmental Management: Protected Areas Act

2.7.2: Regulatory and Policy Frameworks

The advent of a new Constitution in South Africa set the stage for a more inclusive and comprehensive environmental policy for the country. Thus an extensive public participation process known as the Consultative National Environmental Policy Process (CONNEPP) was carried out relatively soon after the advent of democracy and culminated in the White Paper on an Environmental Management Policy for South

Africa (N/749 in Government Gazette No. 18894 dated 15 May 1998) ("White Paper on Environmental Management"). This in turn led to development and enactment of the National Environmental Management Act No 107 of 1998 (NEMA).

> Two important general features underpin the White Paper on Environmental Management and thus the NEMA: the White Paper emphasizes the notion of "sustainable development" and specifically endorses the definition and analysis offered by the 1987 Brundtland Report (The World Commission on Environment and Development "Our common future (the Brundtland Report) 1987 at 14–16,). Secondly, the Environmental Management White Paper reflects the sentiments behind the transition to democracy and its socio-economic implications.

An altogether separate policy process was initiated soon after with respect to the coastal area. This started in 1997 and was firstly underpinned by a discussion document titled Our Coast Our Future: Coastal Policy Green Paper: Towards Sustainable Coastal Development in South Africa Department of Environmental Affairs and Tourism September 1998 (the "Green Paper"). This Coastal Policy Green Paper formed the basis of an extensive public consultation process in which all interested and affected parties were invited to comment. These were collated and condensed to produce the White Paper for Sustainable Coastal Development in South Africa which was promulgated in 2000.

The Coastal Policy White Paper led in turn the preparation of draft Coastal Zone Management Bill. If enacted into law it will potentially play a pivotal role in improving the management of the coastal zone of South Africa.

The legal regulatory framework is summarised under the following six headings each of which (except the first) outlines the relevant statutes:

1. Common law
2. Statutes of general application including framework environmental statutes
3. Statutes dealing specifically with pollution from land-based activities
4. Statutes dealing with wreck pollution
5. Statutes dealing with pollution from ships and shipping (only dealt with peripherally as not directly related to LBSA).
6. Draft Coastal Zone Management Bill. Although this has not been enacted yet, it is dealt with separately as it is a potential umbrella act dealing with coastal area law generally and LBSAA specifically

2.7.3: Institutional Frameworks

There are national and regional institutions as highlighted below.

The Department of Environmental Affairs and Tourism (the DEA&T) administers the Sea-shore Act 21 of 1935, the Environment Conservation Act 73 of 1989, as well as the National Environmental Management Act 108 of 1998. Its Marine Pollution Division is responsible for various aspects of marine pollution, including clean-up of spills once they hit the sea or sea-shore. This office also issues permits to dump at sea under the Dumping at Sea Control Act. The Department of Environmental Affairs has at its disposal a number of vessels and aircraft to enforce the various laws which it administers.

The Department of Transport (the DoT) has been historically responsible for transportation generally including navigation is not directly involved with LBSA/A of marine pollution but has traditionally administered the Marine Traffic Act, the Merchant Shipping Act, the Marine Pollution (Control and Liability) Act and the Marine Pollution (Prevention of Pollution from Ships) Act described above.

The privatization process resulted also in the creation of a statutory authority, the South African Maritime Safety Authority (SAMSA), to which in 1998 many of the marine pollution functions were transferred to. SAMSA now deals with maritime navigation, including the maintenance of standards by vessels. Land based sources do not fall under its jurisdiction. Rather this agency is involved in other aspects of marine pollution such as being responsible for the implementation of standards which vessels, including oil tankers, have to comply with, and for the enforcement of these standards as well as various other aspects of navigation.

The National Ports Authority (NPA) and South African Port Operations (SAPO) (formerly Portnet)-The NPA manages and controls South Africa's eight commercial seaports (Richards Bay, Durban, East London, Ngqura, Port Elizabeth, Mossel Bay, Cape Town and Saldanha and is responsible for all aspects of management and control, including the maintenance and development of port infrastructure.

The DWAF administers the National Water Act 36 of 1998 and Water Services Act Central to the LBSA/A of marine pollution is the work of its Chief Directorate: Water Use and Conservation under which falls the Directorate: Water Quality Management. The latter in turn has four relevant sub-directorates: Urban Development and Agriculture, Mines; Waste Management; and Industries. The Directorate Water Quality is responsible for water quality generally and thus for pollution of the marine environment by pollution from land-based sources, both point sources (for example, effluent pipelines out to sea) and non-point sources (for example, seepage).

The Department of Minerals and Energy -The Department of Minerals and Energy administers the Mineral and Petroleum Development Act 28 of 2004. It grants

prospecting and mining authorizations to mine whether terrestrially or off-shore. These authorizations could include conditions relating to pollution of marine and coastal waters.

The four coastal provinces administer certain legislation assigned to them. For example the administration of most of the Sea-shore Act 21 of 1935 has been assigned to the coastal provinces. The administration of land based pollution at provincial level is not straightforward for two reasons. First because as far as the two key national departments, DEAT and DWAF are concerned, the DEAT has provincial offices in the (coastal) provinces while the DWAF does not, only regional national offices. Secondly, the 'place' of the provincial departments of environmental affairs is not consistent in the various provinces. Thus the location of the provincial departments of environmental affairs in the four coastal provinces is as follows:

- KwaZulu-Natal – Department of Traditional and Environmental Affairs;

- Eastern Cape – Department of Economic Affairs, Environment and Tourism;

-Western Cape – Department of Environment and Development Planning;

- Northern Cape – Department of Agriculture, Nature Conservation and Land Reform; and Department of Health and Welfare and Environmental Affairs

Coastal local authorities play an important role in the administration and monitoring of marine pollution rules and regulations of their respective coastlines. Many of the provisions of the Sea Shore Act described above have been delegated to coastal local authorities.

2.8: Tanzania

2.8.1: Brief Summaries of all relevant Policies, Legislation, Regulations and Institutions for LBSA

The legal framework in the United Republic of Tanzania is mainly comprised of the Constitution of the United Republic of Tanzania, Acts of Parliament, subsidiary legislation, judicial decisions, the substance of common law of England, Principles of equity, Islamic law and Customary laws. Being the state regulated mainly by written laws, Tanzania can comply with her international obligations, including obligations under Nairobi Convention and its protocols, through her pieces of legislation.

The Environmental Management Act, 2004 establishes an administrative and institutional arrangement that is designated to facilitate administration of environmental matters across the different Government institutions from the local to national level.

The legal system has a considerable legislative and institutional coverage of environmental issues, including coastal and marine environment. Despite the legislative

and institutional coverage, environmental law in Tanzania is scattered, sector based, overlapping and at times conflicting. Environmental law in Tanzania is not a homogeneous system of law as it comprises of diverse rules of administrative law, constitutional law, law of torts and criminal law. This affects the efficacy of law to function as a medium to implement the Nairobi Convention and other LBSAA relevant conventions, and indeed the coastal and marine environment. (NEMC, 2007).

The Constitution of the United Republic of Tanzania, 1977

The Constitution of the United Republic of Tanzania, 1977 does not have explicit provisions on environmental protection and management. However as the mother law of Tanzania, it lays down fundamental principles for the protection of natural resources and for establishment of national institutions for management of the environment. Article 14 of the Constitution guarantees the basic right to life to every person and subject to other laws every person is entitled to protection of his life by the society. Every person is obliged to comply with the constitution and the laws of the United Republic of Tanzania.

For purposes of the better enjoyment by all persons of the rights to life, the Constitution requires every person to conduct himself and his political, social, or economic affairs in a manner that does not prejudice the rights and freedoms of others or the public interest (Article 29 (5). Literally, the constitution obliges every person to conduct his economic activities in a manner that does not cause environmental degradation.

These basic rights are enforceable in the High Court of Tanzania. Under Article 30 where any person detects a contravention of any law involving a basic right in any part of the United Republic of Tanzania, he may institute legal proceedings in a court of law to protect the basic right. The Environmental Management Act, Cap 191 prescribes general environmental principles, that include the right to a clean, safe and healthy environment for every person living in Tanzania. Every person living in Tanzania has a duty to safeguard and protect the environment and therefore may on that basis bring an action against environmental harm or damage.

The Environmental Management Act, Cap 191 (EMA)(2004)

This is the framework environmental law of Tanzania enacted by the Parliament of the United Republic of Tanzania in 2004. It came into operation on the 1st day of July 2005 vide Government Notice No. 170/2005.Prior to its enactment, environmental management issues were governed and regulated by sector laws. The Act applies only to Mainland Tanzania as environment is not a union matter. It is a product of the National Environmental Policy, 1997.

The Act provides for the legal and institutional framework for the sustainable management of the environment generally hence very pertinent towards addressing LBSA in our coastal area. It outlines principles of environmental Management,

environmental impact & risk assessment, prevention and control of pollution, waste management, and environmental quality standards. The Act promotes public participation in environmental decision making & planning and lay down procedure for environmental compliance & enforcement including implementation of international instruments on environment.

The Act creates legal rights (SS.4, 5, 18(3), 172,178(2), impose duties, obligations (S.6), assign roles and functions, confers powers and limits over its institutions. The Act is an umbrella law in the sense that it overrides all other laws (sector laws) on environmental management issues (SS.232). The provisions of EMA override the provisions of all other laws that are inconsistent with the provisions of EMA. Section 31 (2) of the EMA imposes the duty on the Sector Ministries not to carry out functions stipulated under their respective laws that are inconsistent with EMA.

Among its fundamental principals are the right to a clean, safe and healthy environment for every person living in Tanzania, and the right to bring an action against environmental harm or damage. Every person living in Tanzania has a duty to safeguard and protect the environment. The Act also defines principles of environmental management and obliges all persons exercising powers under the Act or any other written law to promote or have regard to the National Environmental Policy.

The Act directs every local government authority to prepare an Environmental Action Plan below the National Environmental Action Plan identifying environmental problems prevalent in its area of jurisdiction (S.42). Likewise sector ministries are obliged at an interval of five years to prepare and submit to the Minister a sector Environmental Action Plan. Protection of ecologically sensitive areas has been given exceptional attention in the Act. The Minister has power under the Act to declare any area of land to be an environmentally sensitive area (S.47) and their management becomes the responsibility of the NEMC. The same power may be invoked to protect wetlands by declarations.

Each managing authority of National Protected Area is duty bound to prepare an Environmental Management Plan identifying inter alia areas of biological diversity (S.49).Ecologically fragile areas like swamps, areas prone to soil erosion, or to land slide, arid and semi arid lands, and all hazardous lands are all declared by the Act as environmentally sensitive areas (S.52).(paragraphing and other formatting details)

Rivers, river banks, lakes, or lakeshores and shore lines are protected from environmental degradation by a ministerial declarations as protected areas and subjected to restrictions as the minister deems appropriate notwithstanding any other laws regulating them (S.54).

NEMC and LGAs are responsible for issuing guidelines for the protection of Rivers, river banks, lakes, or lakeshores and shorelines. Once guidelines are issued, it will be a criminal offence to use, erect, construct, place, alter, extend , remove or demolish a structure in under the ocean, natural lake shorelines, riverbank, or water reservoir, or excavate, drill tunnel or disturb the shorelines of the natural lake river bank or water reservoir. It is an offence to introduce or plant into such water bodies a plant or any part of a plant or its specimen whether alien or indigenous, dead or alive or deposit a substance into such water bodies which is likely to have adverse environmental effects, or to direct, block or drain a river, its bank, a lake or its shores or shoreline or a wetland (S.55). Unfortunately, so far no guidelines have been made by the Council for the protection of protection of Rivers, river banks, lakes, or lakeshores and shorelines. Wetlands are also protected in the same manner and managed by respective sector ministries (S.56). However, to date the Minister responsible for environment has not promulgated the envisaged regulations for the protection of wetlands per S. 56 (5) and this has been noted as a gap.

The Act prohibits in mandatory terms any human activities of a permanent nature or which by their nature, are likely to compromise or adversely affect conservation and or the protection of ocean or natural lake shorelines, riverbanks, water dam or reservoir from being conducted within sixty meters (S.57). The Minister is tasked to make guidelines for conducting human activities within these areas, but again guidelines have not been made. Likewise regulations for promotion of integrated coastal zone management are not yet made by the Minister (S.59).This is another gap.

The Act prescribes a condition that requires every person applying for a water user permit to make a statement on the likely impact on the environment due to the use of water requested(S.60(1). The successful applicant will then be under obligation to the satisfaction of the Water Basin Boards to return the water to the water body from which it was taken, to ensure that the water that is returned is not polluted and to take precautions to prevent accumulations in any river, stream, or water course of any silt, sand, gravel, stones, sawdust refuse, sewerage, sisal waste or any substances likely to injuriously affect the use of that water by human and other components of the environment.

The Act provides for the conservation of biological diversity in situ as well as ex-situ subject to regulations made by the Minister. It prescribe measures of addressing issues of climate change, elimination of persistent organic pollutants (POPS) from the environment, and of dealing with prior informed consent (PIC) chemicals. The Act also stresses the use of cleaner production technologies.

Tanzania like other countries has adopted EIA as a tool for managing the environment. The Act places an obligation over every person who wishes to undertake any development activity or project of a type specified in the Act or its regulations to carry

out at his own cost an EIA study and obtain a certificate prior to commencing his project (Part VI).

Strategic Environmental Assessment (SEA) is a mandatory requirement for proposed Bills, Regulations, Policies, Development Plans, Strategies, and Programmes. The aim is to know the likely impact they will have on the environment at the time of their implementation.

The Act also provides a mechanism for prevention and control of pollution (Part VIII). It creates offenses where a person pollutes the environment in contravention of standards prescribed by the Act or other written environmental laws. It is an offense also to allow poisonous or noxious liquid from manufactory processes to flow into a stream or to discharge any hazardous substances, chemical or oil or their mixture into a water body or other segment of the environment (SS.109, 110).

Organizations or individuals transporting, trading, using, storing, or disposing of chemical, oil, toxic substances, inflammables or explosive substances must comply with regulations prescribed by the Minister. But the Minister has not yet prescribed the regulations. We note this as another gap although there may be other mechanisms to control those activities.

The Act provides for legal and institutional framework for the management of solid, liquid, gaseous, and hazardous wastes. This is mainly the responsibility of LGAs. It directs minimization of generation of hazardous wastes and that their disposal must be done in an environmentally friendly manner and that EIA must be done before their disposal.

Part X lays down a mechanism for pollution control through enforcement and ensuring compliance with environmental quality standards. Every person undertaking any activity must comply with environmental quality standards (S.141).

Part XI provides for powers to issue administrative orders for control of various forms of environmental degradations eg environmental restoration, easement, and conservation orders while Part XIII provides for legal and institutional framework for environmental information, education and research. Freedom to access publicly held information is guaranteed to every Tanzanian. Public participation in environmental decision making is also guaranteed under Par XIV.

Part XV provides for legal and institutional framework for international cooperation in environmental management issues eg transboundary environmental issues, coordination of implementation of international agreements etc.(paragraphing and other formatting)
Part XVI provides for legal and institutional framework for ensuring compliance with the Act. It creates various offenses and stipulates respective penalties. Under this part

NEMC has powers to issue administrative orders in the form of prevention, protection and compliance orders to address a variety of causes of environmental degradations.

Several regulations namely;

(i) The Environmental Management (Registration of Environmental Experts) Regulations, 2005, (GN No. 348/2005),

(ii) The Environmental Impact Assessment and Audit Regulations, 2005, 2005, (GN No. 349/2005),

(iii) The Environmental Management (Air Quality Standards) Regulations, 2007, (GN No. 237/2007),

(iv) The Environmental Management (Soil Quality Standards) Regulations, 2007, (GN No. 238/2007),

(v) The Environmental Management (Water Quality Standards) Regulations, 2007, (GN No. 239/2007) and the

(vi)The Environmental Management (Control of Ozone Depleting Substances) Regulations, 2007, (GN No. 240/2007) have all been made by the Minister to give effect to the provisions of the Act.

Others include;

(vii) The Environmental (Solid Waste Management) Regulations, 2009, GN No. 263/2009

(viii) The Environmental Management (Hazardous Waste Control) Regulations, 2009, (GN No. 264/2009), and the

(ix)The Environmental Management (Bio-safety) Regulations, 2009, (GN No. 265/2009)

Other laws regulating LBSA are sector laws as outlined below.

The Land Act Cap 113

This Act provides the basic law in relation to the management of land in Mainland Tanzania. Changing of land uses without adhering to prescribed procedures is prevalent in Tanzania. For instance a person granted a right of occupancy over a piece of land for construction of a residential may decide unprocedurally and unilaterally to change the use of that land into a commercial use. S.35 of the Act requires a person to apply to the Commissioner for Land for consent to change land use. Uncontrolled use of land has resulted into serious land degradations especially in coastal urban areas. Land degradation occurs because the infrastructure available at that place do not support the new land uses. Violation of land use renders the right of occupancy liable for revocation by the President (S. 45). But this is not the case in Tanzania.

The Act declares certain land to be reserved land hence protected from degrading human activities. All land designated or set aside under the Forest Act Cap 389, The

National Parks Act Cap 412, the Ngorongoro conservation Area Act Cap 413, the Wildlife Conservation Act No. 12 of 1974, the Marine Parks and Reserves Act, 1994, the Urban Planning Act, 2007, the Roads Act 2007 ie the road reserve areas, the public Recreational Grounds Act Cap 320, the Land Acquisition Act, 1967, land parcel within a natural drainage system from which the drainage basin originates, land reserved for public utilities, and land declared by an order of the Minister for Land to be hazardous land.

Ecologically fragile land such as mangrove swamps and coral reefs, wetlands and offshore island, land designated for use as dumping sites for hazardous wastes, land within sixty meters of a river bank, shoreline of an inland lake, beach or coast and land specified by authorities as land that should not be developed on account of its fragile nature or environmental significance are declared under S.7 to be hazardous land. On account of their fragile nature development of these types of land is likely to pose danger to human life and to lead to environmental degradation and therefore these areas are protected.

However the protection of reserved and hazardous land is not absolute. Upon complying with the procedures prescribed by the Act development can be permitted in both types of land.

The Village Land Act Cap 114

The Tanzanian coastline traverses through land under the jurisdiction of the villages. Given the breadths of village lands that traverse through the coastline, it is obvious that some reserved lands including most marine parks are found within village lands. The use of land in those areas will have to be in conformity with the restrictions imposed by the Marine Parks and Reserves Act 1994.

S.8 of the Village Land Act vests powers of managing the village land into the Village Council. In managing the village land, the Village Council must take into account among others the principle of sustainable development and the relationship between land use, other natural resources and the environment in other contiguous lands. Allocation of a village land is subject to approval by the village assembly.

Village land is held under customary right of occupancy. S.14 recognizes the rights of different users of land in forest reserves as regulated by the Forests Act, 2002 to regulate the use of land under customary rights of occupancy. These provisions are relevant to the coastal forests which are being used or managed by village communities.

The Forest Act Cap 389

The coastal strip of Tanzania is endowed with a number of forest ecosystems. The Forest Act was enacted in 2002 with the objective of promoting and enhancing the contribution of the forest sector to the sustainable development of Tanzania, for promoting the conservation, use and management of forest resources, for ensuring ecosystem stability through conservation of forest biodiversity, water catchments and

soil fertility. The Act is important for the protection and regulated use of coastal forests. It provides for legal and institutional framework for the management of forests including coastal forests as well as for control of LBSA in the forests sector.
The Act incorporates the EIA as a tool for managing the forests. It directs all development activities including mining activities to be subjected to EIA before being undertaken. S.22 confers powers upon the Minister to declare forest reserves.

The use of forest products also is subject to a permit system. Under S. 49 a permit is required to fell or extract timbers, gather or take away specified forest produce. A permit is also required to enter, erect a building or structure, to hunt or fish or to allow domestic animals to graze etc in the forest reserve.

The Minister may declare certain tree species such as mangrove trees to be reserved trees. For purposes of preserving and maintaining biodiversity and genetic resources the Minister may declare certain wild plants to be reserved plants in line with an international agreement. The Act through S.65 prohibits any person from burning vegetation on any land outside the cartilage of his own house or to deliberately kindle any fire that may spread and become destructive.

The Local Government (Urban Development Control) Regulations, 2008, (GN No. 242/2008)

These regulations were made by the Prime Minister under powers conferred upon him by the Local Government (Urban Authorities) Act Cap 288. The Regulations provide for a mechanism for control of insanitary premises, management of night soil including its disposal. It prohibits depositing refuse on streets, pollution of water, control of slaughter houses and animals, fire in buildings or houses, straying animals, and construction of drainage. It regulates establishment and operation of markets.

The Mining Act, 2010, (Act No. 14/2010)

This Act is one of the recently enacted laws. It repeals and replaces the Mining Act 1998. The Act provides for legal and institutional framework to governs and regulate mining activities throughout Mainland Tanzania. Pertinent is to note that the Minister cannot grant a mining license to the applicant unless he produces to the Minister an EIA certificate issued pursuant to the provisions of the Environment Management Act Cap 191.The EIA will determine the likely impacts of the mining operations on the environment and suggest mitigation measures.

The Public Health Act, 2009, (Act No. 1/2009)

The Public Health Act is one of the most recent enactments. The Act provides for legal and institutional framework for promotion, preservation, and maintenance of public health. The Act replicates some of the provisions of the Environmental Management Act.

The Act regulates LBSA in a variety of manners ways. It regulates human and housing settlements. It provides for legal and institutional framework for the management of solid and liquid wastes by prescribing conditions for keeping and maintaining dumping sites, collection and disposal of liquid wastes, designation of transfer stations etc. The Act also stipulates conditions for management and control of gaseous wastes from dwelling houses, industries and motor vehicles, management of excreta, hazardous and health care wastes and their disposal.

The Act provides conditions for construction, maintenance and use of sewerage systems, latrines, septic tanks etc. It regulates the establishment and operation of markets , supermarkets, shops, lodging, hotels, guest houses, hair dressing saloons, barber shops, swimming pools, public baths, schools and massage parlors, management of bars, restaurants, prohibits attendance of natural calls in areas other than toilets.
The Act creates offenses relating to violations of public health rules and stipulates penalties. Other legislations which provides for legal and institutional framework for addressing LBSA worth mentioning are;

The Water Resources Management Act, 2009 (Act No. 11/ 2009)

The Act provides for legal and institutional framework and outline principles for sustainable management of water resources. It incorporates provisions preventing and control water pollution, and for participation of stakeholders and the general public in the implementation of the National Water Policy, 2002.

The Act echoes the provisions of the Environmental Management Act to declare every person living in Tanzania to have a stake and a duty to safeguard and protect the water resources and to inform the relevant authorities of any activity and phenomenon that may affect the quantity and quality of water resources (S.7). The Act adopts SEA and EIA as tools for controlling water works. Any proposed development in a water resource area or a watershed must carry out an EIA in accordance with the provisions of the Environmental Management Act.

The institutional framework for the management of water resources under the Act include the establishment of the office of the Director of Water Resources, the National Water Board, the Basin Water Boards, Catchment and sub-catchment Water Committees, and Water User Associations.
The Act incorporates conditions for protection of water resources, imposes restrictions on the use of water during drought and disasters, establishes water protected zones, and ground water controlled areas. The Act incorporates provisions for control of water pollution; prescribe conditions for water use permits, ground water permits, discharge permits and regulation of water user rights.

On trans-boundary waters, the Minister responsible for water is responsible for the formulation of policies and strategies that will ensure sustainable, equitable utilization

and management of trans-boundary waters (S.98). For instance where the URT becomes a party to an international or regional agreement concerning the management of the environment, the Minister shall initiate and prepare legislative proposals for consideration by the relevant ministry for purposes of implementing those agreements, and identify appropriate measures necessary for implementation of those agreements. These provisions replicate similar ones in the Environmental Management Act. S. 99 imposes obligations over the Minister in relation to trans-boundary waters.

Finally, the Act creates offenses and stipulates severe penalties against water pollution in rivers, streams or watercourses or in any body of surface water.

The Water Supplies and Sanitation Act 2009 (Act No. 12/ 2009)

This Act provides for legal and institutional framework and outline principles for sustainable management and adequate operation of supply and sanitation of water resources with a view to giving effect to the National Water Policy 2002. The Act establishes and provides functions and duties of water supply and sanitation authorities. Water supply authorities are duty bound to enter into a trade waste agreement for the discharge of waste into a sewerage system, to prohibit the discharge of certain wastes into sewerage a system. The Act creates the offence of willfully or negligently damaging water works, any sewer, sewerage treatment plant or other assets of water supply authorities. Any person who unlawfully diverts or takes water from the water works also commits an offence.

Other laws that also provide for legal and institutional framework for control of LBSA are:

The Local Government (District Authorities) Act Cap 287

This Act was enacted in the year 1982. The Act contains extensive provisions relating to the establishment, composition, and legislative powers of district, township and village Councils. This Act is very relevant on the control of LBSA within the respective jurisdiction of the LGAs.

Under S.118 (1) is a duty of every District Council to formulate, coordinate and supervise the implementation of all plans for economic, commercial, industrial and social development in its area of jurisdiction. They are required to take all reasonable measures to provide for the protection and proper utilization of the environment for sustainable development, prevent soil erosion and protect crops.

District Councils also have power under the Act to prohibit or regulate the cultivation or possession of poisonous or noxious plants, drugs or poisons, restrict the movement of livestock, control the gaining of building minerals such as stone, sand, clay and lime, to prohibit or regulate the hunting, capture, killing or sale of animals or birds, as well as regulating and compelling the provision, construction, use and repair of privies and receptacles for solid and liquid refuse.

Above all, District Councils have powers to make By-laws inter alia to protect the environment. The coastal area of Tanzania has District Councils to which these powers are conferred.

The Local Government (Urban Authorities) Act Cap 288

This Act like the foregoing one was enacted in 1982. Following the local government sector reform, the two Acts were revised in 2000. It provides for the establishment, composition and legislative powers of urban authorities (City, Municipal, and Town councils) in Tanzania. Like the foregoing, this Act also is relevant as it confers powers on urban authorities to control LBSA in their respective areas of jurisdiction.

The Industrial and Consumer Chemicals (Control and Management) Act, 2003 (Act No. 3/2003)

This Act provides for legal and institutional framework for the management and control of the production, importation, transportation, exportation, storage, dealing in, and disposal of industrial and consumer chemicals. Mismanaged industrial and consumer chemicals have been reported to have caused serious adverse effects to the coastal and marine environment. The Act prescribes conditions for registration, production, importation, transportation, exportation, storage, dealing in, and disposal of industrial and consumer chemicals. It restricts their use particularly counterfeit and adulterated chemicals, as well as banning some of the chemicals from being imported into or used in Tanzania.

The Act prescribes the condition of labeling as a way of ensuring proper management of industrial and consumer chemicals. Disposal of chemical wastes is controlled through a licensing system. Any person involved in the disposal of chemical wastes must apply to the Ministerial Advisory Board of the LGCA for a certificate. It prescribes conditions for management of accidents, spills and contaminated sites.

The Urban Planning Act, 2007 (Act No. 6/2007)

This Act was enacted by the Parliament of the United Republic of Tanzania in the year 2007 in fulfillment of the national land reforms. The Act provides for legal and institutional framework and prescribes conditions for orderly and sustainable development of land in urban areas. It stresses preservation and improvement of amenities; put a requirement of obtaining consent from relevant planning authorities (city, municipal, town councils and township authorities) for proposed development of land. The Act also provides for powers of control over the use of land.

Planning authorities are responsible for orderly and environmentally sustainable development, in its respective area of jurisdiction and ensure hazardous land is conserved. They are conferred with powers to control development of land in urban areas through consent system. They are also responsible for reserving and maintaining all land planned for industrial and commercial purpose, formal and informal housing, urban agriculture, urban forests, green belts, open spaces, and parks in accordance with approved planning schemes.

The Act prohibits any person from developing any land without a planning consent granted by a planning authority (S.29) Any proposed development that in the opinion of the planning authority is injurious to the environment, must undertake EIA. A great part of the coastal area of Tanzania is urban, including Dar es Salaam, the commercial city of Tanzania with many land based sources activities. This Act is very relevant to coastal urban areas as it prescribes conditions for orderly and sustainable development and use of land in urban areas.

The Land Use Planning Act, 2007 (Act No. 6/2007)

This was another Act enacted by the Parliament of the United Republic of Tanzania in 2007 in fulfillment of the national land reforms. The Act provides for legal and institutional framework and prescribes conditions for preparations, administration, and enforcement of land use plans. The Act was enacted with a view to giving effect to the fundamental principles of the National Land Policy of 1996. Like the Urban Planning Act, 2007 all persons and authorities exercising powers under this Act have a duty to protect the environment of human settlements and of ecosystems from pollution, degradation and destruction in order to attain sustainable development. This Act is very pertinent to coastal urban areas as it provides for legal and institutional framework for enforcement of land uses to ensure land in the coastal and other areas is used as planned.

There are still a number of laws that also control LBSA in the coastal area but they will be just mentioned for noting:-

i. The Dar es Salaam Water Supply and Sewerage Act, 2001,
ii. The Occupational Health and Safety Act, 2003 (Act No. 5 of 2003)
iii. The Roads Act, 2007 iv. The Tourism Act, 2008 and the
v. The Petroleum Act, 2008

Table 9: Summary of LBSA Relevant Tanzania Legislation

Decree / Law no.	Year	Title of decree/law
389	1957	Forests Ordinance
	1959	National Parks Ordinance
	1963	Hotels Ordinance
	1967	Merchant Shipping Act
	1969	Tourist Agents Licensing Act
	1974	Land-use Planning Commission Act
	1974	Wildlife Conservation Act
	1994	Marine Parks and Reserves Act
	1996	Town and Country Planning Act
	1997	Plant Protection Act
	1997	Tanzania Forestry Research Institute Act

569	-	Range Development and Management Act
	1998	Mining (Environmental Management and Protection) Regulations
	-	National Industries Licensing and Regulations) Act
	1999	National land-use Planning Commission Act
5	1999	Village Lands Act
	2003	Fisheries Act
	2004	Environmental Management Act

Institutional Frameworks

In order to understand the efficacy of Tanzania's domestic laws to implement the provisions of the Nairobi Convention on the pollution caused by land based resources and the activities on the coastal and marine environment, one must understand the context within which domestic laws of Tanzania and the key actors to implement and enforce the Nairobi Convention. The key factors that are a subject of discussion in the following part includes, the Minister responsible for environment; the National Environmental Advisory Committee; the Director of Environment ; the National Environment Management Council(NEMC); Sector Ministries; Regional Secretariats and Local Government Authorities as per the Environmental Management Act Cap 191.

The National Environmental Advisory Committee

The committee is established under section 11 of the Act as an advisory body to the Minister. Its membership is from the public, private sector and civil society to foster public participation. Functions of the committee includes advising the minister on matters that include restocking and limitation of stock, watering, grazing, depasturing, and moving stock, make recommendations on environmental degradation, review and recommend on environmental standards, guidelines and regulations.

Minister Responsible for Environment

The Minister is responsible for articulation of policies for sustainable management of the environment in Tanzania. The Minister has powers over and may direct Sector Ministries, National Environment Advisory Committee, Government Departments, NEMC, and Local Government Authorities (City, Municipal or District Councils to do or abstain from doing any act relating to environmental management (S.13 (1)(2)(3).

For purposes of implementation of the Act, the minister may issue general guidelines to the above mentioned institutions. Where appropriate the Minister may designate and direct the above institutions within a specified time to perform any function or activity or within a specified time to desist from performing any function or doing any activity which may seriously endanger or detrimentally affect the environment (S.13 (3) and any institution to which the Minister has given directive must comply (S. 13 (4).

These are enormous powers given to the Minister over Government Departments, NEMC, and Local Government Authorities. Without proper control they may be abused and take away the autonomy of those institutions in dealing with environmental issues.

The Director of Environment

The Director of Environment is the day to day coordinator of all environmental activities under the Act. The Director is the principal Government advisor on environmental matters that include legislative issues, and international agreements. The DoE is also responsible for monitoring and assessing activities that may affect the environment coordinating and preparing reports on environment generally.

In his coordination role, the Director of Environment coordinates various environmental management activities being undertaken by other agencies including agencies engaging in the management of the coastal and marine environment. He monitors and assesses their activities to ensure they do not degrade environment generally and that they adhere to environmental management objectives. He coordinates issues relating to articulation of and implementation of environmental management aspects of other sector policies, as well as those of the National Environmental Policy of 1997. The

National Environment Management Council (NEMC)

NEMC is a public corporation established under EMA Cap 191 with statutory powers to undertake enforcement, ensure compliance, carry out reviews and monitor EIAs. On the management of coastal and marine environment, NEMC is responsible for ;

i. Facilitatation of public participation in environmental decision making, NEMC exercises general supervision and coordination over all matters relating to the environment under EMA or any other written law.;
ii. Identifies all projects or undertakings that are likely to have significant impact on the environment that must be subjected to environmental audits and monitoring under the auspicies of NEMC.;
iii. It is responsible for coordinating, conducting researches, investigations and the surveys in the field of environment, collect and disseminate information about the findings of such research, investigation or survey that may assist in the proper management and conservation of the environment;
iv. Upon completion of EIA studies of proposed projects NEMC reviews the EIA reports and recommend for to the Minister for approval or disapproval.Through this mechanism, NEMC will not recommend for approval and issuance of EIA certificate those projects which are likely to have adverse impacts on the coastal and marine environment;
v. For purposes of control of pollution NEMC enforces and ensure compliance with the national environmental quality standards. In the year 2007, the Minister through regulations promulgated standards on air, soil, water quality and ozone depleting substances;
vi. To ensure the coastal communities participate in the management of the coastal and marine environment, NEMC in collaboration with sector ministries, is

responsible for undertaking programs intended to enhance environmental education and public awareness about the need for sound environmental management;

vii. NEMC also supports and encourage the efforts made by other entities in environmental management of the coastal and marine environment through rendering advice and technical support where possible to such entities engaged in natural resources and environmental management so as to enable them to carry out their responsibilities.

viii. Through issuance of administrative orders – Environmental Restoration Orders, Prohibition Notices, Protection Orders, Emergence Protection Orders, Prevention Orders and Compliance Orders, NEMC may prevent activities which may pose danger to the environment and public health.

Sector Ministries

Sector ministries also may contribute to the management of the coastal and environment in various ways. Under EMA sector ministries must ensure they comply with the requirements of EMA; They must also ensure that all environmental matters assigned to themby other written laws including laws regulating and governing the management of the coastal and marine environment are implemented and a reports thereof are submitted to DoE. In their coordination role, Sector ministries coordinate all the activities related to the environment within the ministry and ensure environmental concerns are integrated into the ministry or departmental development planning and that projects implemented under the auspices of the ministries are protected in the manner that protects the environment. Where any matter requires cooperation or shared responsibility under EMA, they must liaise with the Director of Environment and NEMC.

In collaboration with other bodies, Sector ministries shall implement the policies of the Government on the protection and management of the environment generally, evaluate existing and proposed policies and legislations and recommend measures to ensure those policies and legislations take adequate account of effects on the environment.

To ensure the coastal communities participate in the management of the coastal and marine environment, sector ministries are, like NEMC also responsible for promotion of public awareness on environmental issues through educational programs and disseminate environmental information. Where a Bill for enactment of any law is prepared, or Regulations are to be promulgated, or where Public Policies, Programmes, Development Plans have been formulated, or where minerals, or petroleum resources have been identified or construction of a major hydro-electric power or a major water project is planned a Sector ministry must prepare a Strategic Environmental Assessment and submit a statement to the Minister for scrutiny.

Sector ministries oversee the preparation and implementation of EIA required for investment in the sectors. They must ensure compliance with various regulations, guidelines and procedures issues by the Minister. As licensing authorities, Sector ministries are prohibited by the EIA and Audit Regulations, 2005 from issuing licenses to any project proponent until he obtains an EIA certificate from the Minister.

Policy framework

The National Environmental Policy (1997)

The National Environmental Policy aims at ensuring sustainability, security and equity in the use of resources, prevention and control of degradation of land, water, vegetation, and air resources. The policy also advocates for the conservation and enhancement of the natural and manmade heritage and raising awareness and promote public participation. Other key objectives of the policy include enhancing international cooperation on the environmental agenda.

The National Land Policy (1997)

The National Land Policy advocates protection of land resources from degradation and requires that project development should take due consideration the land capability, ensure proper management of the land to prevent erosion, contamination and other forms of degradation.

The National Water Policy (2002)

The National Water Policy to protect the water quality and quantity, specifically by avoiding polluting of surface as well as ground water. Paragraph 2.8 of the policy provides that, In-stream flows or environmental flows and levels are necessary for riparian biodiversity, wetland systems, freshwater-seawater balance in deltas and estuaries. Reduction of water volume affects aquatic life by reducing dissolved oxygen and supply of nutrients. The effluents created by urban water use, if not treated, pollute surface and groundwater resources. Additionally, overexploitation of water resources which does not take into account other uses is also a source of environmental degradation. For example, terrestrial and aquatic animal species in the Great Ruaha National Park (Rufiji Basin) suffer from depleted dry season flows caused mainly by dry season irrigation in the Usangu plains.

The National Sustainable Industrial Development Policy (1996)

This Policy is in line with the National Environmental Policy. The sustainable industrial policy advocates for use sustainably the land based activities such as industries so as to protect flowing or any discharge of poisonous, noxious which may pollute water. The policy underscores the importance of promoting environmentally friendly and the ecological sustainable industrial Development in Tanzania.

2.8.2: Analysis of Gaps in Policy, Legislative, Regulatory knowledge base (gap analysis) and Institutional Arrangements in Support of Management of LBSA.

Gaps in Legal frameworks

This report has extensively reviewed the legal framework that is in place in Tanzania for the enforcement of the LBSA Protocol. The conclusion that the current legal framework is exhaustive suffices. In the recent years Tanzania has strived to put in place comprehensive laws in the field of environment. Each law for instance provide for a mechanism or machinery to enforce it by establishing various national institutions. The gaps that existed in laws in the past decade are addressed in the current laws. Old laws are repealed and replaced by new laws that provide for comprehensive legal and institutional framework to adequately address existing and emerging environmental management issues. Tanzania is still in the process of implementing its legal sector reform program where outdated laws are repealed and replaced to match with the contemporary circumstances.

As noted previously most if not all Acts enacted recently confer enormous powers on Ministers to make guidelines and regulations to give effect to the provisions of the laws. The Environmental Management Act can be cited to serve as an example. The Act confers enormous powers over the Ministers to make guidelines and regulations to give effect to the provisions of the Act. The Act came into operation on the first day of July 2005. Since then very few regulations and guidelines have been made by the Minister. Quite a good number of the provisions of the Act are idle waiting for either guidelines or regulations.

Another obvious challenge is the conflict of laws. The Environmental Management Act again can serve as an example. The Act was enacted as an umbrella/ framework law with overriding provisions over other written laws. Where any provision of a sector law that is inconsistent with the provisions of the Environmental Management Act the provisions of the later shall prevail. Consequential amendments were not made to bring the provisions of the sector laws in conformity with the provisions of the Environmental Management Act. The co-existence of these laws has always posed problems in their implementation. Sector laws are implemented in disregard of the overriding provisions of the Environmental Management Act.

Gaps in Institutional frameworks

This report has discussed more than twenty legislations. Each legislation establishes a network of institutions to enforce it. Institutions established under one legislation may not be inadequate to undertake effectively the enforcement of that particular legislation due to lack of financial and technical resources and the vastness of the country may render it impossible for an institution to reach all areas. But environmental issues are crosscutting and environmental laws complement each other. It is a common phenomenon in Tanzania to find one component of the environment be it water, air,

waste being a subject of enforcement by more than institution under different legislation.

In view of the legislations examined in this report, the institutional framework is adequately provided for. If each institution will play its part, a maximum level of control of impacts arising from LBSA will be achieved.

However, to-date some of the institutions established by the laws examined in this report are not yet in place the reason being lack of funds. For instance the Environmental Appeals Tribunal despite its overwhelming importance in the enforcement of the provisions of EMA it is not yet in place for five years now since EMA became operational in July 2005.

Although some of the institutions are already in place their enforcement role is seriously curtailed by lack of ministerial guidelines or regulations. They receive inadequate funds from the Government resulting into inadequate enforcement. The National Environment Management Council for instance receive inadequate budget from the Government as a result monitoring of projects, conducting awareness programs etc are not done. They are also understaffed and lack adequate working tools.

Gaps in Policy frameworks

Review of the policies points to a conclusion that policies touching LBSA of the coastal area are exhaustive. Policies in Tanzania are instruments that guide the government in making decisions. They are implemented by legislations that are enacted after formulation of policies. This fact is amplified in several laws examined in this report. For instance the Environmental Management Act, 2004, the Water Resources Management Act 2009, the Water Supply and Sanitation Act 2009 just to mention a few. The trend in Tanzania is to enact laws to enforce formulated policies.

However, we have noted that it takes a considerable time to enact laws to enforce policies. For instance, it took seven years to enact the Environmental Management Act, 2004 since the National Environmental Policy was formulated in the year 1997 and the same period for the Water Resources Management Act 2009, the Water Supply and Sanitation Act 2009 since the formulation of the National Water Policy in 2002. Some policies need to be amended to keep pace with the fast changing circumstance of the Tanzanian society.

Chapter 3: Regional Synthesis: Overall Assessment

3.1: Relevant Constitutional Provisions

A few of the countries have specific constitutional environmental provisions while others do not. Among the countries with constitutional provisions are Kenya, Seychelles and South Africa. Kenya's recently adopted and promulgated Constitution has provisions on the protection of the environment. Its promulgation fundamentally changed the legal landscape for environmental conservation, management and dispute resolution mechanisms and processes in Kenya. The major highlights of the Constitution which implicitly domesticate the requirements of LBSA Protocol include principles o environmental law, access to environmental justice and obligations of the state with regard to international legal commitments.

However, in general, the constitutional provisions, even where they exist, are not explicit on the coastal and marine environment as such, and this specificity is left to either the framework legislations or sectoral laws. Thus it may be noted that in most cases there are no direct constitutional rules to address LBSA issues as such. The implication is that they are and are treated as part of the general environment. The challenge for most of these countries is to at least incorporate environmental issues in their state constitutions and thereby create better scope for protection even of the marine and coastal environment and resources. Constitutional recognition will arguably raise the profile and effect of environmental legislations, policies and institutions and lead to better protection of environmental resources.

Table 10: Inclusion of an environmental right or related provisions in the Constitutions of the WIO countries.

Country	Environmental Right	Brief description
Comoros	No	n/a
Kenya	Yes	Citizens have a right to a clean and safe environment; right to access environmental justice.
Madagascar	No	n/a
Mauritius	No	n/a
Mozambique	Yes	Everyone has a right to live in a balanced environment; duty to protect environment imposed on the people and Government.
Seychelles	Yes	Citizens have right to clean and safe environment; State to ensure a safe and clean environment.

South Africa	Yes	Everyone has an environmental right; state to enact laws in this regard.
Tanzania	No	n/a

Source: UNEP 2010

3.2: Framework Environmental Laws, Institutions and Other Instruments

All the WIO countries do have framework legislations and other instruments on environment, including coastal and marine environment. Many of these laws are relatively recent enactments, such as in Kenya,(EMCA 1999); Madagascar (Loi No 90033);, Mauritius(EPA 2002); Seychelles (EPA 1994); and South Africa(NEMA 1998). Therefore, in many respects, these laws incorporate recent international environmental law principles and requirements, such as the polluter pays and precautionary principles, sustainable development, the establishment of environmental crimes, dispute resolution and avoidance, key institutions and EIA rules and processes.

Table 11: Framework Environmental Laws of the WIO Countries

Country	Law	Year Enacted
Comoros	Loi No. 94-018	1994
Kenya	Environmental Management and Coordination Act	1999
Madagascar	LOI No. 90-033 a la	1990
	Charte de le Environnment Malagasy	
Mauritius	Environment Protection Ac (EPA)t	2002
Mozambique	Lei de Ambiete (Law No 20/97)	1997
Seychelles	Environment Protection Act	1994
South Africa	Environment Conservation Act No 73 of 1989 (ECA) National Environmental Management Act No 107 of 1998	1989 1998
Tanzania	Environmental Management Act	2004

Source: UNEP/GPA and WIOMSA, 2004; UNEP 2010

However, there are not quite sufficiently detailed rules as to the protection of the coastal and marine environment, clear with relevant and specific institutions and regulatory and policy frameworks. For example, Kenya's 1999 EMCA has only one section, S.55, dealing with this vast environmental issue. Neither is there a dedicated policy instrument or institution to deal with coastal and marine issues aside from NEMA. Fortunately, there is an evolving integrated coastal zone and river basin management policy framework for Kenya, ICZM policy and institutional regimes exist in Mozambique, Mauritius, Tanzania, and South Africa, and there are developments in that direction in the other countries.

The framework institutions in most of the countries exist as overseers of the entire spectrum of the national environment, even in fairly decentralized systems such as the Comoros and South Africa. The effect of such arrangements is sometimes to obscure the coastal and marine environment in national resource allocation and priority setting. Consequently, there are discernible cases of lack of technical personnel and financial capacities to deal with the myriad problems in the coastal and marine environment of these countries. It is thus difficult to always adequately deal with LBSA issues, which are frequently multi-sectoral and multi-disciplinary in nature.

An important challenge facing the countries of the region is to align their framework legislations, institutions and policy instruments to give more deliberate attention to coastal and marine environment generally, and LBSA issues particularly. Alternatively, the countries should consider specific consolidated laws, institutions and policies to address these issues in a more concerted, focused and sustainable manner. The new laws and other instruments should be as closely aligned to the proposed LBSA Protocol to the Nairobi Convention as possible. It is interesting that none of the countries covered in this study has a specific and consolidated legislation, institution or policy instrument on LBSA issues as such, or even the coastal and marine environment generally, perhaps with the exception of those countries which have established ICZM policies.

Table 12: Adoption of Integrated Coastal Area Management Policies, Laws and/or Institutions in the WIO countries

	Coastal policy	Coastal area legislation	Coastal mgt institn
Comoros	Yes	Yes	DGE-

Kenya	National Ocean Policy in operation (2009) and Draft ICZM Policy in process.	Yes	NEMA/CDA
Madagascar	Yes	Yes	Comite National des Zones Marins et Cotieres-
Mauritius	Yes	Yes	MOE/ICZM Department
Mozambique	Yes	Yes	MICOA
Seychelles	Yes	Yes	MOE
South Africa	Yes	Yes; Bill in process	DEAT (MCM)
Tanzania	Yes	Yes	NEMC

Source: UNEP 2010

3.3: Relevant Sectoral Laws, Institutions and Other Instruments.

All the countries in this study have numerous sector-based legislations, policies, institutions and regulatory frameworks. Some of the sectors of LBSA relevance include coastal tourism, forestry including mangroves, manufacturing industry, coastal urban developments, agriculture, mining, ports and harbours, and the like.

3.3.1: Tourism Related Instruments

Legislation and institutions relating to tourism as an LBSA issue of concern in most of the project countries is fairly sparse. Most of the countries' commitments to tourism as a sector are apparently located in policy rather than legislative instruments. The most relevant laws and institutions on tourism, from an LBSA perspective are those concerned with land tenure, land use and planning. For example, in Kenya the laws include the Physical Planning Act (Chapter 286) and the Land Control Act (Chapter 302); in Seychelles they include the Town and Country Planning Act and the Licences Act, although they do not mention tourism directly as such.

In Seychelles, the only legislation that makes specific mention of tourism is the EIA regulations. Unfortunately, the rules have been shown to be weak and defective when it comes to regulating coastal tourism. However, the framework environmental

legislation, the EPA, maintains high standards, particularly effluent standards when physical developments have already occurred. Thus in a certain sense, sewage disposal problems, closely associated with coastal tourism establishments, and one of the more notorious LBSA problems in the region, is addressed.

In South Africa, Mozambique, Seychelles, Mauritius, Comoros and Madagascar, land use and planning legislation does not also directly deal with tourism, except to the extent that tourism infrastructure and developments including those at the coastal and marine environments are subjected to land use and planning legislation. However, in terms of the requirement for EIA the framework legislations in virtually all the project countries oblige tourist establishments' developers to seek and obtain EIA authorization to keep the integrity of the environment. However, South Africa's system, incorporating both national and provincial mechanisms, is clearly quite promising by comparison to the other countries.

The general disposition in each of the WIO countries is that tourism is an important socio-economic activity, and therefore developments in this sector are generally very welcome. Policy, institutions and some legislation tends towards encouraging development and expansion of tourist activities and infrastructure. This may mean, at least from a legal point of view that legislation or the responsible institutions would not become very eager to discourage developments though harsh penalties or controls. This explains relatively relaxed penalties and sanctions, as well as enforcement regimes for the tourism sector, which has important implications for LBSA issues in the region.

None of the project countries prohibits tourist developments along its coastal and marine environment. As long as government authorization procedures are adhered to, including the requirement for EIA where these are prescribed, and commercial licensing, tourist establishments operate in virtually all the coastal zones of all the project countries.

Most of the national legislations relevant to tourism are administered by central government or departments directly controlled by Government. Land use and planning legislation as well as tenure systems especially in the land ward side of the maritime zones are predominantly public. However, there are many private land holdings (mainly on long lease) on the beachfronts. The government institutional structure governing land use and planning may be too rigid or even too lax as to be ineffective.

Effective enforcement of land-use and planning standards necessarily requires a large outlay of policing machinery or else a system of voluntary compliance based on incentives. Currently local authorities deal with the regulation and policing of environmental standards in most tourist developments which fall under their respective jurisdictions. This system is not always effective. Tourist establishments could be persuaded to regard the environmental integrity of the coastal and marine areas as their

primary responsibility. The challenge and opportunity for the countries of the region is to guide their commercial tourism activities at their respective coasts towards a sustainable regime entailing, inter-alia, dedicated and focused legislation, institutions and policy instruments that are sufficiently sensitive to LBSA concerns. (UNEP/GPA and WIOMSA 2004).

3.3.2: Biodiversity Related Instruments

Bio diversity related laws, including forestry related instruments as they affect the coastal and marine environment are also notable as studies in the individual countries indicate. This is important because of mangrove forest extraction, destruction or depletion, which is an important PADH issue of concern, and which in turn affects other biodiversity such as fisheries. Again, like in tourism, relevant legislations, institutions and policy instruments seem to be rather fragmented, sparse and indirect. There is no country that has a "Mangroves Act or Decree" or any legislation that deals with mangroves per se. In fact few of the countries' legislations even mention "mangroves" directly. For example, Section 6 of Mauritius Fisheries and Marine Resources Act (1998) also directly mentions mangroves and prohibit their destruction. This is in reference to their importance as breeding and/or nursery grounds for fish.

In most of the countries mangroves protection is found in the respective framework legislation where it is treated as part of the natural environment (forests/flora). It is also sometimes described as "mangrove forests". Since in most countries mangroves are a source of timber and other forest products the legislation available focuses on mangrove harvesting and either regulates or prohibits the same in some cases. However, there are also problems of competing land uses, such as salt works, aquaculture, mari culture and agriculture (UNEP/GPA and WIOMSA 2004).

A legal dilemma in such cases is how to, for example, prohibit mangroves or other coastal forests destruction on private, smallholder properties where landowners or tenants prefer to change the use of their land to more productive ventures at the expense of mangroves or other forests. At the present, unless there are designated protected mangrove forests or wetlands areas or some status which come under direct state control, there seems to be a lacuna in national legislations which otherwise entitle landowners to do with their properties the best socio- economic enterprise.

The primary enforcement mechanism under the various legislations relevant to mangroves is national or provincial/ regional government authorities, or state controlled public entities. This would require large Government outlays along the coastal and marine environments to be entirely effective. Otherwise voluntary public maintenance, of the environment through deliberate protection and preservation of the mangroves and their ecosystems would be pragmatic and perhaps a cheaper option. Even apparently large state bureaucracies like South Africa's DEAT; and Kenya's NEMA may

not have the human and financial capacity to superintend the entire coastline in order to protect mangrove ecosystems and other resources. Government enforcement may even be harder in the island states which are archipelagos with numerous coastal /beach fronts, and sometimes very large islands like the case of Madagascar. The challenge and opportunity for the countries of the region is to focus on these problems by establishing dedicated and focused laws, institutions, policy and regulatory frameworks to avoid a deterioration of an already critically injured resource base.

3.3.3: Ports and Harbours Related Instruments.

It is also apparent that in most of the project countries there are various types of legislation which deal with ports, land reclamation, mining and damming of rivers and they relate to LBSA, and particularly physical alteration and destruction of coastal and marine habitats. They include Loi no 81-37 as amended by LOI no 82-25 (Comoros); Ports Act (Mauritius); KPA Act (Kenya); and the Harbours Ordinance and Regulations no 16/1933 (Seychelles). In particular, legislation on ports (and harbours) tends to be fairly explicit in most of the countries, probably because of the supreme socio-economic importance of ports in each of the countries. Ports are also important in political and military or strategic terms because of the maritime zones claimed by the coastal states.

Ports legislation is usually pre-occupied with development and expansion of physical infrastructure and port capacities and the administrative structures which are most traceable directly to central government. The ports authorities are traditionally state enterprises in most of the project countries. They therefore would usually be presumed or claim to be acting in the national or public interest. However, the national legislative studies have shown that where there are environmental impact requirements, they affect even public entities like the respective ports authorities. Enforcement mechanisms would naturally be weaker or compromised where public enterprises e.g. environmental authorities are expected to oversee or supervise other public entities to ensure environmental compliance. Thus gaps exist here especially with regard to enforcement of environmental standards and requirements. This makes ports and harbours' works, especially dredging and expansion, an LBSA problem.

3.3.4: Mining Related Instruments.

Elsewhere, there are direct mining legislations and less direct legislation on land reclamation, irrigation and damming of rivers, which are important LBSA and particularly PADH issues. However, since there are usually compelling socio-economic imperatives for land reclamation (for example agriculture, mari culture, development of ports facilities, damming of rivers (for example for irrigation, fisheries development etc), legislation if any on these activities tends to have either weak and inoperative provisions or ineffective enforcement mechanisms. Perhaps the most important legislation in most of the countries in this regards is EIA Regulations, and to a lesser extent, legislation that

creates protected areas such as forest reserves, marine national parks and nationally controlled coastal or marine zones.

A good example of apparently rare legislation is the Land Reclamation Act 1991 (Cap 106) of the Seychelles. It basically provides a framework for the authorization of land reclamation, rather than prohibition of reclamation. Elsewhere, with respect to sand mining, in 1997 the Government of Mauritius declared a ban on sand mining from the lagoon. It extended a moratorium until October 2001 when the ban was enforced. In South Africa, prospectors and miners are obliged to undertake environmental restoration programmes (Mineral and Mines Act, 1991, Part VI). The Seychelles also has, apart from the Minerals Act, Removal of Sand and Gravel Act of 1982.

3.3.5: Agriculture and Manufacturing Industry related Instruments.

Other sectors of concern, such as agriculture and manufacturing industry, pose serious problems such as the pollution of coastal and marine areas from chemical by-products and other wastes. Fortunately most of coastal agriculture is rural and subsistence with fairly low chemical concentrations, while manufacturing establishments is concentrated in the urban centres. The countries of the region seem to regard these as important socio-economic activities and the laws and other instruments applicable are therefore stronger on facilitating the said developments and weaker on imposing environmental standards and requirements. Most of the countries have laws, institutions and policy frameworks for Agriculture and related activities such as fisheries and forestry. As noted previously, the laws include Conservation of Agricultural Resources Act 43 of 1983 and Agricultural Pests Act 36 of 1983 (South Africa) the Agriculture Act (Kenya), The challenge and opportunity for these countries is to systematically include best environmental standards and principles in their sectoral laws, policies and institutions so as to make agriculture, manufacturing and other industry more sustainable and environment friendly. The concept of integrated coastal zone and river basin management(ICARM), already picking up well in many of these countries, is probably the way of the future in dealing with the LBSA issues of concern.
(IUCN/NORAD/WIOMSA 2005; UNEP/GPA and WIOMSA 2004).

3.3.6: Water Quality and Pollution Related Instruments

It is clear that for all the countries of the Region, issues of preservation and protection of water resources is important. Apart from laws, institutions and policies directly concerned with the water resource, there are also anti pollution instruments which are also concerned with the quality of water for various purposes. Examples include the Seychelles' Public Utilities (Sewage) Regulations 1997; the Maritime Zones (Marine Pollution) Regulations; EPA 1994 (Impact Assessment)Regulations 1981.In South Africa there are the: Environment Conservation Act 73 0f 1989, which deals with pollution control generally; Services Act and the Dumping at Sea Act. In Kenya, the Water Act 2002 has also introduced important rules for the protection and preservation of the water resource, including new subsidiary regulations on water quality and waste water.

3.4: Regional dimensions of the Legal, Policy and Institutional Gaps and Issues.

The WIO countries are fairly closely connected geographically, ecologically and even culturally and politically (SEACAM 2001; UNEP/NC/TDA 2009). They are all Western Indian Ocean Coastal states, some mainland and some island states. All countries are associated under the framework of the Nairobi Convention and its Protocols (1985). All of these countries have committed themselves to establish an LBSA Protocol to the Nairobi Convention and are currently engaged in the process. In spite of their diversity in political, cultural and legal systems, there are important areas of convergence with regard to LBSA issues in the region. This section briefly overviews apparent regional dimensions of the legal, policy and institutional aspects of LBSA.

It is apparent that the WIO countries experience serious LBSA related problems in their coastal and marine areas, with very similar causes, effects and manifestations.

The legal, policy and institutional responses have been characteristically similar; on the one hand an acknowledgement that a lot of the land based activities and sources causing coastal and marine pollution are legitimate socio-economic activities which should be protected, encouraged and enhanced; and on the other, that these activities have environmental consequences, and therefore ought to be controlled or regulated. In all national cases there is obvious legal, institutional and policy dilemma as to the appropriate middle ground. In efforts to create the middle ground, sometimes national legislation merely is facilitative of the rational exploitation of these activities and sources, while giving environmental considerations a lukewarm treatment. In some cases there is only peripheral legislation for the sectors (for example tourism) while any substantive legislation is absent or is otherwise general land use and planning legislation. In yet other cases, laws adopt a “command and control” approach rather than an integrated or participatory approach which encourages voluntary compliance with incentives instead of prohibitions and penalties. The evolving ICZM policies are probably the most significant changes for the future.(UNEP/GPA and WIOMSA 2004) However, many of the legislations reviewed appear to play a regulatory role in the respective sectors to facilitate an orderly and rational access to and utilisation of the coastal and marine resources without hurting the integrity of the environment. Apparently, the inclusion of EIAs in the development process (particularly at commencement) is to mitigate or forestall harsh environmental consequences while letting the socio-economic activities to proceed. Each of the project countries has at least some form of EIA regulation, whether in the national framework legislation or in subsidiary legislation or decrees.

A common characteristic of national legislation in this region is that they are scattered and fragmented across sect oral disciplines. This is in line with a sector-based approach

to governance of public affairs, which has subsisted over the decades. This accounts for apparent overlaps, duplications and contradictions in some national legislation.

Up to fairly recently, the concept of ICZM did not exist and or find expression in the countries of the region. The major issues in the Region which necessitate ICZM include destructive fishing methods and associated ecosystem or habitat destruction; marine oil pollution from tanker traffic and ballast discharge; eutrophication and siltation of coastal waters; and spiralling population growth in coastal zones, especially in urban centres, fed by high birth rates and massive in-migration (The World Bank et al, 1996). Existing institutional constraints include short-term planning horizons and lack of participation; weak policy and regulatory environment for encouraging rational resource use and checking the impacts of growth; administrative weakness and lack of coordination across sectoral agencies; and limited opportunities for developing the human potential in the growing populations of the region (The World Bank, et al 1996).A Workshop and Policy conference on ICZM in Eastern Africa, took place in Arusha Tanzania, in 1993. A key outcome of the Arusha meeting was to encourage the establishment and development of ICZM as the best vehicle to deal with the multiple and complex issues of the coastal zones in the region (O. Linden [1993]).

Most laws and their corresponding institutions are thus still old colonial time enactments, fragmented and incapable, without appropriate review and integration, of supporting successful LBSA efforts in the individual countries and the region as a whole. Central government and other public institutions having mandates in the coastal and marine areas often pursue contradictory or parallel mandates as the above national studies have shown.

Fortunately, emerging challenges, especially widespread environmental degradation and damage and the need for better conservation and protection of habitats and ecosystems, have led to the progressive development of modern legal frameworks. Some countries in the Region, including Kenya, Madagascar, Mauritius and Mozambique, have established multi-sectoral environmental policies backed by a strong legal regime for resource management.

The other interesting feature for most national legislation is that they create huge pools of authority or power in central government line ministries (sometimes with sweeping ministerial powers) and/or in public entities (usually parastatal organizations) which are almost exclusively controlled by the executive. This means that decision making, implementation and enforcement remains a government prerogative and function. However, in Kenya's EMCA (1999) attempts are made to "democratise" its key institutions particularly the National Environment Council and NEMA. This is apparently in line with a new ethic of establishing participatory processes in law making, decisionmaking, implementation and enforcement. It is probable that many institutions have been ineffective or inefficient because of so much government in their operations.

Although most of the existing legislation and institutions are sector specific (such as tourism, fisheries, mining, water or forestry) there is an increasing trend towards multisectoral legislation, policy and institutional arrangements to facilitate a more cohesive vertical and horizontal co-ordination and integration. Each of the countries has established key national institutions responsible for policy formulation and co-ordination of environmental activities including the coastal zones. They include ministries responsible for environment (with responsible state ministers); environmental protection agencies with statutory powers; and inter- ministerial committees. Examples include South Africa's DEAT; Mozambique's MICOA; Seychelles' MOET; Kenya's Ministry of Environment and Natural Resources and NEMA; and Tanzania's Division of Environment (DOE) under the Office of the Vice-President, and the NEMC. Many of these institutions work on the basis of established framework policies and action plans, with a deliberate reference to coastal and marine environment. Good examples of such policy instruments with significant emphases on the coastal and marine environments are in the island states of Comoros, Madagascar, Mauritius and Seychelles. However, only Mauritius and Mozambique seem to have created distinct coastal zone management units, in 1999 and 1995 respectively, in apparent efforts to institutionalise coastal zone management.

In addition to the national institutions some of the larger countries in the region, such as South Africa, Madagascar, Mozambique and Kenya do have regional or provincial and local environment and coastal management institutions. In Madagascar there is a deliberate move towards decentralised government and this also affects environmental governance.

There are no material differences in legal, policy and institutional arrangements between the mainland states (South Africa, Mozambique, Tanzania and Kenya), on the one hand and the island states (Comoros, Mauritius, Madagascar and Seychelles) on the other. However, it is obvious that island states are more vulnerable and exposed to the vagaries of environmental degradation, and particularly LBSA issues. These island states are generally small (except Madagascar) and archipelagic. Strong legal, policy and institutional arrangements are needed to protect all these countries from environmental degradation and especially along the coastal and marine areas.

Apart from national laws and institutions there are regional and international laws which should be of interest to the region. They include the Nairobi Convention and its protocols (1985 (under which the region is organized as a UNEP RSP); United Nations Convention on the Law of the Sea (1982); the Ramsar Convention on the Protection of Wetlands especially as water fowl Habitat (1971) (reviewed 2000); the Convention on Biological Diversity (1992) and the Convention on International Trade in Endangered Species (CITES, 1972). Many of these Conventions and treaties have been signed or ratified by the countries of the region and are at various levels of national and regional implementation. However, it is argued that they should constitute a firm basis for

concerted regional LBSA efforts, and synergize with national arrangements to establish firmer ground for stemming the tide of degrading land based sources and activities in the region's coastal and marine environment. It is expected that the ratification and implementation of the LBSA Protocol will significantly augment national legal, policy, regulatory and institutional efforts in tackling LBSA related problems, and this should also lead to review or even new enactment of instruments at the national level.

Chapter 4: Conclusions and Recommendations

4.1 Conclusions

This study has benefited from national studies in each of the countries, and they have all raised interesting perspectives, some unique to the individual countries and some generic to the region. The conclusions below highlight both regional and national perspectives.

The study has found that in each of the countries under review, the coastal and marine environment is very important, especially from a socio-economic perspective. It is even more so in the island and archi pelagic states, some of which depend heavily on LBSA related sectors such as coastal tourism, forestry (mangroves) and ports development, mining, and agriculture. All of these are direct sources and activities causing land based pollution and degradation of the coastal and marine environment. Each of the mainland countries has a long and socio-economically strategic coastal zone with major tourist establishments, large ports facilities and a rising coastal population, especially in the urban centres.

Each of the countries in the region has responded with a set of laws, institutions, policy and regulatory instruments, some constitutional, while others are framework and sectoral. Each of the eight countries has a framework environmental legislation and corresponding primary institutions. Most of the countries have fairly new framework legislation, in many cases established after the mid 1990s. In that respect, perhaps most of them may not immediately require review or amendment. Each of the countries has numerous sectoral legislation, some dealing directly and others indirectly with coastal and marine environmental protection and particularly with the LBSA issues.

However, in terms of variety and detail of legislations and institutions the various countries differ remarkably. In some cases the legislations are detailed and focused; some are sketchy and rather thin on detail. Also equally noteworthy is the fact that in the countries with a blend of national and provincial or regional legislations, policies, regulatory and institutional frameworks, such as South Africa, the level of detail and variety is greater.

In terms of major gaps, most of the countries do not have constitutional provisions on environment generally and therefore on the LBSAA issues of the coastal and marine environment as such. Even the few countries which have constitutional provisions on environment do not have anything explicit on the coastal and marine environment or indeed LBSA issues. Moreover, while virtually all countries have framework environmental laws and institutions, there is no country which has a statute or an institution dedicated to LBSAA issues or indeed to the entire coastal and marine area as such. On the other hand, many of the existing national sectoral laws and institutions are old, often colonial enactments whose continued relevance and viability is in doubt

Other gaps identified in this study include lack of or inadequate financial and material, as well as technical and professional human resources to carry forward the intent of the various legal, policy, regulatory and institutional frameworks. The shortage or absence of these capacities is apparent in all the countries, but much more so in the small island states.

It is also apparent that most of the countries have distinct environmental policies action plans and other regulatory instruments. Some of these instruments are provided for in the framework environmental legislations and even in some sectoral legislation. However, in some cases important institutions or provisions are made or located in policy documents (which may not be legally binding or judicially enforceable). Sometimes, also, legal and institutional provisions are enacted without corresponding policies and action plans to carry out their mandates. In both cases there has been noticeably weak implementation and enforcement, undermining the effectiveness of existing instruments.

As to the possibility for enactment of new unified legislation on LBSAA in the countries, or at least the review or amendment of existing laws, different scenarios emerge. Some countries argue for a new unified legislation complete with institutions, while others favour review or amendment of existing instruments. Still others prefer a blend of new and reviewed or amended instruments. This means that the way to ultimately domesticate the proposed LBSA protocol in the various countries may differ considerably depending on each country. Nevertheless, each of the countries will definitely need assistance from the Project in order to create an enabling environment for the effective domestication and implementation of the LBSAA Protocol.

It is also noted that the ratification process for the LBSA Protocol and the revised Nairobi Convention may take a variety of forms and procedures, depending also on the individual countries. This may entail longer and in some cases slower processes than others. Overall a considerable time may be required to allow for all the countries to ratify and begin implementing the LBSAA Protocol and the revised Nairobi Convention.

4.2: Recommendations

On the basis of the foregoing study and conclusions above, the following recommendations are proposed:

4.2.1: Domestication and Implementation of the LBSA Protocol to the Nairobi Convention.

In order to facilitate the effective domestication and implementation of the LBSA Protocol and the Amended Nairobi Convention, each of the countries should either undertake the enactment of new legislation and institutions, or the review, amendment or re alignment of existing laws, institutions and other governance instruments as a matter of priority. In this regard the Nairobi Convention Secretariat should establish a framework of assistance to the countries in accordance to their respective needs. Many of the existing national laws and their corresponding institutions ought to be reviewed to bring them up to date with current and emerging trends and issues such as integrated coastal area and river basin management, and importantly, the key provisions of the LBSA Protocol. Those which have no further use or relevance, including outdated legislation could be repealed altogether while those which retain validity ought to be amended and strengthened. Laws should also be progressively integrated to avoid the current sector–based divisions and fragmentation. Finally, existing instruments such as laws, regulations, policies and others should be enforced and implemented as intended. Overall, at the national level there should be, at any rate, clearly discernible LBSA legislation, institutions and other instruments. The national legal reviews should also seek synergy with the ongoing development of the LBSA Protocol for the Nairobi Convention.

4.2.2: Specific Prohibitions of Certain Harmful Activities and Practices

It is recommended that some of the specific amendments and/or inclusions into national legislation and institutional arrangements could include the progressive total ban/abolition of such practices as disposal of raw sewage into the marine environment, sand mining as an economic activity in all (or at the most sensitive) beach areas as has been done in Mauritius and Seychelles. The affected countries could declare a moratorium and then ban the activity subject to compensation for those directly affected. Others could include a mandatory process of public and private sector

consultation before important environmental decisions are made. This is to encourage public participation in environmental decision-making and governance to avoid concentrating too much power on government authorities and officials and to improve implementation and enforcement mechanisms.

4.2.3:Establishment or Strengthening of EIA Regulations

It is recommended that the EIA regulations be established in those countries which do not have them, and strengthened in those countries where they already exist. All projects and developments of environmental or socio-economic importance, including coastal agriculture, tourism, forestry/mangrove harvesting or clearing or change of land use, ports developments, manufacturing industry and mining must be subjected to vigorous and mandatory environmental impact assessment. However, the technical rules could be reviewed and simplified to enable the rules to be consumer/user friendly and to get public acceptance. Within EIA regulations or in parent environmental legislation, there should be complete avoidance of developments in critical or vulnerable areas such as wetlands, mangroves, marine protected areas, sea grass meadows, productive estuaries, shellfish beds, and coral reefs. Those who undertake such activities as mining, tourist and ports developments should be compelled by law to undertake mandatory restorative or rehabilitative activities such as filing up pits and burrows, replanting of vegetation, etc. The EIA process should also ensure strict adherence to all procedures, including scoping, mitigation and restoration.

It is also recommended that the Region consider elaborating a detailed EIA framework to be adopted under the Nairobi Convention to strengthen and consolidate the efforts and gains made by the National Governments in environmental assessment for projects and activities. Such a framework may take the form of detailed regional guidelines or a protocol additional to the Convention.(UNEP/WIO LaB/Tarr: Draft Regional EIA Report, 2007)

4.2.4: Effective Implementation and Enforcement of Instruments.

It is recommended that all instruments intended for the protection and preservation of the coastal and marine environment be implemented and/or enforced as stipulated. This could be through a combination of measures such as a dedicated Policing Unit as is the case in Mauritius; or the use of economic incentives and disincentives such as taxes, penalties and the like, as in Mozambique. There could also be special courts to deal with cases and disputes affecting LBSAA issues and coastal and marine issues generally. Such courts are provided for in Mozambique, although they are not yet operational.

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