

UNEP NAIROBI CONVENTION SECRETARIAT

Draft Final Regional Policy Paper

*State of Ratification of the LBSA Protocol to the Nairobi Convention:
Challenges and Solutions for the Western Indian Ocean*

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EXECUTIVE SUMMARY

This Regional Policy Paper covers the state of ratification of the recently adopted Land Based Sources and Activities Protocol to the Amended Nairobi Convention (LBSA Protocol), and addresses various challenges and proposed solutions towards ratification and implementation of the LBSA Protocol. It borrows from and heavily relies on recent reports and outcomes of the UNEP/GEF WIO LaB Project which phased out in June 2010. Key among those reports and outcomes were: the Transboundary Diagnostic Analysis (TDA), Strategic Action Plan (SAP), regional legal and other reports and the relevant decisions of the 6th Conference of Parties (COP 6) of the Nairobi Convention. This Paper is intended to catalyse action towards the timely ratification, entry into force and ratification of the LBSA Protocol.

The Paper contains a number of chapters. Chapter 1 is entitled **General Introduction**, 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 is entitled: **Overview of the LBSA Protocol**. It briefly highlights the main features and elements of the LBSA Protocol, including its objectives, key terms, geographical scope, application and obligations; categories of LBSA pollution and degradation (point and diffuse sources, physical alterations and destruction of habitats (PADH); measures of effective implementation; institutional and financial arrangements among others. It also covers legal and institutional implications of the adoption of LBSA Protocol for the WIO countries.

Chapter 3 is entitled **Regional Synthesis: Overall Assessment**. It shows that all WIO Countries have their own sets of LBSA related laws, policies, regulatory and institutional frameworks but they do not have LBSA specific provisions. 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.

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 Paper 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.

Finally, a key finding in chapter 3 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.

Chapter 4 covers the Options for Developing LBSA Legislations in the WIO Region. It is acknowledged that national law making is an act of sovereignty of States, and each of the legal systems in the countries should be able to accommodate the ratification, implementation and enforcement of the LBSA Protocol. Some of the options proposed include the "Adoption Model,"(new "LBSA Act") the "Adaptive Model"(repair and refurbishment of existing laws, institutional and policy regimes) and the "Middle Ground Model"(blend of Adoption and Adaptive Models). It also provides details of core elements and features of the national LBSA legislation, whatever the model preferred by the concerned State.

Chapter 5 is entitled: **Monitoring and Evaluation framework for the Effective Implementation of LBSA Protocol.** Apart from a conceptual understanding of monitoring and evaluation (M&E), including relevant provisions in the LBSA Protocol, the chapter covers the proposed core objectives and sub objectives, core indicators, methodology and approach, data collection and management, as well as key outcomes. While most of the Contracting Parties signed the LBSA Protocol during COP 6 in April 2010, it is anticipated that the remaining Contracting Parties should all sign by 01 April 2011, and all Contracting Parties should ratify or accede to the instrument by December 2012. At the same time all countries should take measures to finalize national plans and measures of implementation and enforcement of the LBSA Protocol, also by December 2012.

Chapter 6 is entitled: **Conclusions and Recommendations.** The Paper concludes that there is need for the Contracting Parties to the Amended Nairobi Convention to sign and or ratify or accede to, domesticate and implement and enforce the LBSA Protocol. The Contracting Parties should strengthen and implement environmental impact assessment (EIA) regulations, nationally and regionally. There should be specific prohibitions of certain degrading activities and practices such as beach sand mining, mangrove harvesting and disposal of raw sewage into the ocean.

The Contracting Parties should also intensify efforts towards better implementation and enforcement of existing laws and policies. This has been identified as a major weakness across the region. It is strongly recommended that the countries, individually and as a region, seek more sustainable funding mechanisms including the establishment of strategic partnerships, grants and long term low interest credit facilities.

Acronyms and Abbreviations

BOD	Biological Oxygen Demand
CDA	Coast Development Authority
CITES	Convention of International Trade in Endangered Species
DEAT (MCM)	Department of Environment and Tourism (South Africa)
DOE	Division of Environment (Tanzania)
EA	Environmental Audit
EAI	Environmental Impact Assessment
ECA	Environment Conservation Act
EEZ	Exclusive Economic Zone
EMA	Environmental Management Act
EMCA (1999)	Environmental Management Coordination Act (Kenya)
EMPs	Environmental Management Plan of Seychelles
EMPS	Environment Management Plan of Seychelles
GDP	Gross Domestic Product
GNP	Gross National Product
GEF	Global Environment Facility
GN	General Notice
HCH	
ICOA	
ICZM	Integrated Coastal Zone Management
IUCN	International Conservation of Nature
KPA	Kenya Ports Authority
LBSA	Land Based Sources Activities
LGAs	Local Government Authorities
LPG	Liquefied Petroleum Gas
M&E	Monitoring and Evaluation
MICOA	Ministry for the Coordination of Environmental Affairs (Mozambique)
MOE	Ministry of Environment (Mauritius)
MOET	
NC	Nairobi Convention
NEMA	National Environment Management Authority of Kenya
NEMC	National Environment Management Council of Tanzania
NORAD	Norwegian Agency for Development
PADH	Physical Alteration and Destruction of Habitats
PDF	Project Development Facility
POPs	Persistent Organic Pollutants
PPT	Per Capita
SAICM	Strategic Actions for Integrated Chemical Management
SEA	Strategic Environmental Assessment
SEACAM	Secretariat of Eastern African Coastal Area Management
TDA	Tran boundary Diagnostic Analysis
UN	United Nations

UNDP	United Nations Development Programme
RSP	Regional Seas Programme (UNEP)
UNEP	United Nations Environmental Programme
UNEP/GPA	Global Programme for Action for the Protection of the Marine Environment from Land-based Sources and Activities led by the United Nations Environment Programme
WIO	Western Indian Ocean
WIO-LaB	Project for Addressing Land-based Activities in Western Indian Ocean
WIOMSA	Western Indian Ocean Marine Science Association

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Chapter 1: General Introduction

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.



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The WIO Region is traversed by the Equator, with Kenya 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 approximately one-third live within 100km of the coast (see Table 3 below). (UNEP 2009). On a country to country basis, in Mozambique, 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 (km ²) ¹	Pop. (million) ² 2007	% Coastal pop. In 2000 ³			GDP 2007 (US\$ billion s) ⁴	GNI Per Capita 2007 ² (US\$)	HDI ⁵ 2005	Pop. growth rate ² 2007	Life expectancy ² 2006
			<25km	<75km	<100km					
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	10	10	10	6.36	11,39	0.804	0.7	73

s			0	0	0		0			
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: Gosling, 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 Indo-West 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, seagrass 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, Malindi-Watamu, 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, seagrass 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 socio-economic 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 transshipment and canning in the region, mainly for the export markets. (FAO 2007). There are over 160 artisanal fishery

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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. Artisanal 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.

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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 socio-economic 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*).

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In Mauritius, considerable diversity of fisheries is found in Mauritius, Rodrigues 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 semi-industrial 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 lethrins 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 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 longline 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 toothfish 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).

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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.

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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 million 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 tonnes, 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 million 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

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

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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).

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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 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).

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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 the tourist activities are beach based, with game fishing 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 30-40% 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.

1.3.3: Shipping and ports

Each of 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, Shimoani, Kilifi, Mtwapa, Kipini, Vanga-Funzi area, 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, Nosy 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

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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)

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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 Rodriguez most agriculture is linked to highlands pastures.

In Mozambique, agriculture is an important socio-economic sector and is mostly small-scale. 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 product 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, rice. Cash crops include sisal, coconut, cardamom, cotton, fruits and horticultural produce.

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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

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Another key sector in the WIO region include 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 smelting, 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.

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Kenya's coastal industries include, in recent years 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 the 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%.

1.3.7: Other Socio-economic Sectors and Activities.

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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.

Finally, the WIO countries, with a combined population of 178 million in 2007, 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*).

1.4: 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 (*UNEP2009*). 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 transboundary 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. (*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, Ambilibe, 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. Other 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 harbors 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 for a 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: Overview of the LBSA Protocol

2.1: Objectives of the LBSA Protocol

The recent adoption of the LBSA Protocol underlines the determination of the Contracting Parties to implement the Amended Nairobi Convention and particularly Article 7 thereof, and the larger global framework established under the 1982 United Nations Convention on the Law of the Sea, by elaborating detailed provisions concerning various aspects of LBSA in the WIO Region. The LBSA Protocol also seeks to address the various LBSA causing pollution and degradation of the marine and coastal environment of the WIO Region, and in this regard provide for proper and sustainable control, precaution, prevention, reduction mitigation and, where feasible, complete elimination of various LBSA. As a whole, the LBSA Protocol is part of the legal framework to pursue protection and conservation of the marine and coastal environment of the WIO Region, including through cooperation and collaboration of the countries of the Region, various regional and global organizations, and communities. (LBSA Protocol, 2010, Preamble).

2.2: Key Terms, Geographical Scope, Application and Obligations

The LBSA Protocol to the Amended Nairobi Convention seeks to address comprehensively the various LBSA issues of concern in the WIO Region. It includes key definitions of LBSA terms, geographical scope and general obligations of the Contracting Parties (Part I). Among the key terms defined are: "land based sources and activities" which means sources and activities directly or indirectly causing or contributing to the pollution or degradation of the marine and coastal environment from the landward as opposed to the seaward side. "Point sources" and "non point sources" of pollution are also defined.

The geographical scope of the LBSA Protocol is the Eastern and Southern African region of the Western Indian Ocean as particularly defined in the Amended Nairobi Convention articles 1 and 2. It includes the riparian and internal waters constituting part of the natural river basins draining into the Western Indian Ocean, the marine and coastal environment including the watershed of that part of the Western Indian Ocean situated

within the Eastern and Southern African region and falling within the jurisdiction of the Contracting Parties to the Protocol. (*LBSA Protocol, Article 2*).

The LBSA Protocol applies to (a) activities within the territories of the Contracting Parties that may directly or indirectly affect the marine or coastal environment of the Protocol Area including developments which cause physical alteration of the natural state of the coastline or otherwise result in physical alteration or destruction of habitats; (b) discharges, releases or outflows originating from land-based point and diffuse sources and activities within the territories of the Contracting Parties that may directly or indirectly affect the marine or coastal environment of the Protocol Area; and (c) inputs of polluting substances transported through the atmosphere into marine and coastal environment of the Protocol Area from land-based sources and activities within or originating from the territory of any of the Contracting Parties. (*LBSA Protocol, Article 3*)

Among the key general obligations of the Contracting Parties include that they shall "individually or jointly take appropriate measures in conformity with international law and in accordance with the Convention and this Protocol, to prevent, reduce, mitigate, combat and to the extent possible, eliminate pollution or degradation of the Protocol Area from land-based sources and activities using, for this purpose, the best practicable means at their disposal, and in accordance with their respective capabilities." The Contracting Parties shall in this regard apply the precautionary and polluter pays principles; conduct environmental impact assessments, environmental audits and strategic environmental assessments as necessary; and designate hotspots and sensitive areas of regional, trans boundary or national importance. (*LBSA Protocol, Article 4*)

2.3: Categories of LBSA Pollution and Degradation

It defines pollution and other degrading activities and sources (Part II), including point and non-point/diffuse sources of pollution and transboundary pollution. "Point sources" are defined as a source of pollution where the discharge or release is introduced into the environment from a clearly discernable confined and discrete conveyance including but not limited to a pipe, outfall, channel, ditch, tunnel, conduit or well from which pollutants are or may be discharged. The Contracting Parties are obliged to ensure that the emission controls of point source discharges and releases of substances into water or air in the Protocol Area that reach and affect or may affect the marine and coastal environment are based on best available techniques, best environmental practice as established under Annex I to the Protocol. They are also to ensure that the emission controls of point source discharges and releases of substances into water or air in the Protocol Area are based on emission and discharge limit values taking into account the social, economic and technological capacity of the Parties as may be established under the Protocol.

Moreover, the Contracting Parties are to establish the permissible limits, environmental quality standards and environmental quality objectives, management practices and measures within a period of three years from the date of entry into force of the LBSA Protocol, as well as ensure that regulatory and administrative mechanisms are in place to authorise and regulate point source discharges and releases. Also, the Contracting Parties are to designate hotspots and shall establish the methodology to be used for such designation. (*LBSA Protocol, Article 5*)

Non point or diffuse sources are defined as a source of pollution other than a point source from which substances enter the environment as a result of land or surface run-off, precipitation, atmospheric deposition, drainage, seepage or by hydrological modification or destruction of habitats. The Contracting Parties are obliged to take all necessary measures to prevent, reduce, mitigate, combat or eliminate, as appropriate, the pollution load from diffuse sources, in particular, agricultural activities affecting the marine and coastal environment of the Protocol Area with a view to complying with environmental quality standards and environmental quality objectives as may be established under the Protocol. They shall also ensure that the controls of diffuse sources of land-based pollution affecting or having the potential to affect the marine or coastal environment of the Protocol Area are based on best environmental practice and best available techniques. (*LBSA Protocol, Article 6*).

With regard to "other harmful activities", the Contracting Parties shall endeavour to ensure that activities within their respective territories which cause physical alteration and destruction of habitats (PADH) in the marine and coastal environment of the Protocol Area and which are not covered under Articles 5 and 6 of the Protocol as point and diffuse sources respectively, are conducted on the basis of best available techniques and best environmental practices.

Regarding transboundary pollution, the concerned Contracting Party shall inform and consult with the affected Party and all other interested parties and cooperate in taking measures to reduce or prevent the effects or the likely effects of such pollution. Where discharges or releases to a watercourse or body which flows through or traverses the territories of two or more Contracting Parties or forms a boundary between them, cause or are likely to cause pollution of the marine and coastal environment of the Protocol Area, the Contracting Parties shall co-operate to ensure the Protocol's full application. Moreover, each Contracting Party shall endeavour to co-operate with non-Contracting Parties to prevent transboundary pollution into the Protocol Area so as to make possible the full application of the Protocol. (*LBSA Protocol, Article 8*)

2.4: Measures of Effective Implementation

The LBSA Protocol also has provisions for effective implementation (Part III). These include compliance and enforcement, common guidelines, standards and criteria, data collection, monitoring and evaluation, environmental impact assessment, public participation, educational and awareness programmes, and reporting, exchange of and access to information. Among others, the Contracting Parties are to develop, prioritise and adopt national and regional programmes or plans of actions based on source control and containing measures, designated hotspots and sensitive areas, where appropriate, with timeframes for their implementation and completion; develop and adopt procedures and mechanisms necessary to assess and promote compliance with and enforcement of the Protocol, including mechanisms for open exchange of information between the Contracting Parties.

The Contracting Parties are also to enforce and comply with the Protocol at the national level, including, in particular, by enacting relevant domestic legislation, establishing institutions and related measures; and provide for a system of regular monitoring and inspection by its competent national authorities to assess compliance with authorisations and regulations of substances into water or air, or activities through, *inter alia*, environmental impact assessments and audits as provided for under Article 13 of the

Protocol. Each Contracting Party is also to take appropriate measures to encourage compliance with authorisations and regulations and also ensure effective application and enforcement. (*LBSA Protocol, Articles 9 and 10*).

The Contracting Parties are also obliged to adopt common/regional guidelines, standards or criteria concerning the identification, prevention, reduction, mitigation or, where feasible, elimination of pollution or degradation of the marine and coastal environment of the Protocol Area on such issues as specific requirements concerning the quantities of the priority substances and activities listed in Annex II, their effluent concentration and their methods of discharge; special requirements for effluent necessitating separate treatment; quality of sea-water used for specific purposes that is necessary for the protection of human health, living resources and eco-systems; design considerations of pipelines for coastal outfalls, taking into account, in particular, the methods used for treatment of effluent; and control and progressive replacement of products, installations, industrial and other processes causing significant pollution or degradation of the marine and coastal environment. In addition, the Contracting Parties shall within a period of three years from the entry into force of the Protocol establish common emission limits and other values, environmental quality standards or environmental quality objectives, as well as timeframes for implementation. Moreover, each Contracting Party are obliged to designate a competent authority or authorities to be responsible for establishment, review or implementation of national emission limits, values, measures, standards and objectives and shall submit periodic reports in this regard to the Organisation. (*LBSA Protocol, Article 11*).

The Contracting Parties shall carry out monitoring and evaluation programmes and activities, if necessary in co-operation or consultation with competent regional and international organisations, in accordance with Annex III to the Protocol. They shall also co-operate and collaborate, if necessary with competent regional, sub-regional and international organisations, to establish comparable national monitoring and analytical quality control programmes to promote storage, retrieval and exchange of data and information. Lastly, each Contracting Party shall establish or designate a national focal institution to coordinate data collection, monitoring and evaluation programmes and activities under this Article and, consistent with Article 15 of the Convention, to form the nucleus of a regional network of national research centres and institutes. The nucleus of the regional network of national research centres and institutes shall assist in setting standards for data collection, monitoring, evaluation and information exchange. (*LBSA Protocol, Article 12*).

The Contracting Parties have committed to environmental impact assessments and environmental audits. In this regard, each Contracting Party shall establish by law or other binding procedure, requirements for environmental impact assessment or evaluation on the possible direct, indirect, immediate, long-term, cumulative or transboundary effect of the programmes, projects and activities being planned or undertaken, as appropriate, that are likely to pollute or degrade the marine or coastal environment of the Protocol Area. They are also to provide for, by law, regular and systematic environmental audits for on-going or existing development programmes, projects and activities with actual or potential polluting or degrading impact on the marine and coastal environment of the Protocol Area. Moreover, the Contracting Parties are to develop technical and other guidelines concerning the environmental assessment or environmental audit of the potential or actual environmental impacts of development programmes, projects and

activities, including those of a transboundary nature, and in accordance with Annex IV to the Protocol. (*LBSA Protocol, Article 13*).

Each Contracting Party shall co-operate in scientific and technological fields related to pollution from land-based sources and activities, particularly research on inputs, pathways and effects of pollutants and on the development of new methods for their treatment, reduction or elimination, and particularly endeavour to exchange scientific and technical information; co-ordinate their research programmes of common nature; and develop relevant scientific and technical capacities. They shall also co-operate with a view to formulate and implement programmes of assistance, particularly in the fields of training of scientific and technical personnel, acquisition, utilization, maintenance and production of appropriate equipment and facilities for the purpose of prevention, reduction, mitigation or, to the maximum extent possible elimination, of pollution or degradation from land-based sources and activities. (*LBSA Protocol, Article 14*).

The LBSA Protocol (Article 15) deals with public participation, educational and awareness programmes. In this regard, each Contracting Party is to enhance, facilitate and promote, to the widest possible extent, public access to relevant information and documentation concerning pollution and degradation of the Protocol Area from land-based sources and activities, as well as the opportunity for public participation in decision-making processes concerning the implementation of the Protocol. Others include provision of access to judicial and administrative remedies; development and implementation public programmes and activities on environmental education and awareness;; encouraging the participation of local communities and civil society in the process of making decisions that affect the marine and coastal environment or human livelihoods; making available to civil society and local communities information on the status of the marine and coastal environment of the Protocol Area and corresponding measures.

Each Contracting Party has reporting obligations to the Organization and exchange of information with other Contracting Parties. The reports are to include to the extent possible, data on the quantities of priority substances discharged from the territories of the Contracting Parties; data resulting from monitoring programmes and activities under the Protocol; information on legal and regulatory measures, programmes, action plans, and other steps taken for the implementation of this Protocol and other recommendations or actions adopted there under; information on results achieved in the prevention, control, reduction or elimination, as appropriate, of any hotspots and sensitive areas in the territory of the respective Contracting Party; information on priority substances and activities altering or destroying the coastline, or habitats within marine and coastal areas and related watersheds; and information on general results achieved and, as the case may be, difficulties encountered in the implementation of the Protocol. (*LBSA Protocol, Article 16*).

2.5: Institutional and Financial Arrangements

Part IV of the LBSA Protocol deals with institutional and financial arrangements, such as Secretariat and coordination mechanisms, meetings of the Contracting Parties, national focal points and financial arrangements. These are similar as for the Amended Nairobi Convention and the other protocols.

Finally, Part V contains final provisions such as inclusion of annexes, settlement of disputes, and signature, ratifications, accessions, amendments, and the like. The LBSA Protocol has **four annexes**, on best available techniques and best environmental

practice; priority substances and activities; data collection, monitoring and evaluation; and environmental impact assessments, evaluation and audit guidelines.

2.6: Legal and Institutional Implications and Potential Benefits for WIO Countries

From the foregoing highlights of the LBSA Protocol, it is clear that Contracting Parties have collectively and individually numerous obligations and commitments. Apart from the obvious procedural obligation to sign and ratify the LBSA Protocol, they have obligations to enact, review or re align their legal, institutional and policy frameworks in order to achieve the goals set out in the LBSA Protocol. In particular, the countries will need to achieve effective implementation by, among others development, prioritization and adoption of national and regional plans of action or programmes based on source control and containing measures, designated hotspots and sensitive areas and within time frames for implementation and completion. They also need LBSA Protocol consistent laws and institutional arrangements on compliance and enforcement, data collection, monitoring and evaluation, environmental impact assessments and environmental audit, scientific and technological cooperation and related aspects, public participation and related issues, as well as reporting, exchange of and access to information. The countries also need to adopt common guidelines, standards and criteria as set out in Article 11 of the Protocol.

At the moment the WIO Region is anticipating accession and ratification of the LBSA Protocol. The adoption and anticipated accession and ratification reflects growing consensus among the countries of the region concerning a collective approach to tackle the environmental problems of their coastal and marine zones. In this regard, a key potential benefit is that the LBSA Protocol will serve to consolidate the legal and institutional framework for the protection of the marine and coastal environment of the WIO Region as a whole, and for the individual countries.

It is anticipated that the development and finalization of the LBSA Protocol would catalyze and inspire the reform of relevant national and institutional frameworks to not only align them to the new protocol, but also to supply better coordination among relevant institutions. In this regard, as the WIO region moves towards implementation of the LBSA Protocol, much needed legal, institutional and policy reforms may be expected across all the Contracting Parties, which should bring better protection of the coastal and marine environment both in the region and in the individual countries.

Effective regional cooperation is important for the successful implementation of global and regional commitments concerning LBSA. The ratification and eventual implementation of the LBSA Protocol is expected to supply an important legal context and framework for the implementation of measures relevant to LBSA, including under global commitments such as the 1982 UN Law of the Sea Convention and the 1995 GPA.. Thus, as a potential benefit, there could be an important synergy between the Nairobi Convention framework and other frameworks. It is therefore critical that countries of the WIO region focus on its timely ratification and implementation.

For each of the countries of the region, enhancement of financial and technical capacity to ratify and implement the LBSA Protocol and related conventions and protocols is needed. Parts of these capacities arise from the sharing of experiences among the countries of the region, as well as the replication of experiences and best practices from other regions.

The concerted implementation of the LBSA Protocol could in due time benefit the WIO region and the countries through enhanced financial, technical and other capacities.

Finally, ratification and implementation of the LBSA Protocol provides an opportunity to not only bear upon the countries to ratify and/or implement other LBSA-relevant instruments, but also to keep in audit the performance and efficacy of those instruments as vehicles for dealing with LBSA environmental problems across the region. The LBSA Protocol an opportunity and mechanism for tracking the progress made in the ratification and implementation of other LBSA relevant conventions and protocols by the WIO countries. This accountability mechanism should encourage overall compliance and enforcement of legal obligations under the various LBSA relevant international instruments

It is expected that each of the countries will review its current national legal, institutional and policy grounding for the LBSA Protocol and related international conventions, agreements and protocols with a view to strengthening their capacities to effectively deal with ratification and/or implementation of the LBSA Protocol and related international instruments. This would include, among others, beefing up the capacities of the relevant focal points for the LBSA Protocol and related conventions and other instruments; and also improving the capacities of implementing and enforcement agencies and authorities, including secretariat and focal point support; training and equipping of key technical, scientific and management personnel; provision of budget support funds; and the establishment of inter-agency cooperation and coordination mechanisms; and legal reviews or development of new LBSA legislation.

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 of 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 2: 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 90-033);, 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 3: 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 Charte de le Environment Malagasy	1990
Mauritius	Environment Protection Act (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 4: 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 Of 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 sectoral 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, decision-making, 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 multi-sectoral 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: Options for Developing National LBSA Legislation in the WIO Region

4.1: Introduction

This chapter outlines options of LBSA legislation and provides elements which are integral to the comprehensive implementation of the LBSA Protocol by the WIO countries.

4.2: National LBSA Legislation: Country Scenarios

Based on the various reviews of national LBSA relevant legislation in the WIO region, it appears, firstly, that there is no single country that has an "LBSA Act" as such; secondly, that different scenarios exist in the various countries, based partly on the constitutional and legal systems; and thirdly, the WIO countries are at various levels of legal preparedness for ratification, implementation and enforcement of the LBSA Protocol to the Amended Nairobi Convention, as well as other relevant international instruments. A recent study by the UNEP/GEF WIO LaB Project found that the situation in all countries suggested different scenarios and pointed to possible options of developing national LBSA legislation. Aspects of that study report are replicated below. *(UNEP/NC/WIO LaB 2010a)*

The national studies in the various countries of the WIO region indicate a number of possibilities: the enactment of new laws and institutions on LBSA; and the harmonization or re alignment, through review, of existing laws, institutions and other instruments. The third possibility is a blend of the first two.

4.2.1: Kenya

The recent study by the UNEP/GEF WIO LaB Project indicated that in Kenya, the enactment of a unified national legislation on land-based sources and activities was recommended in addition to the enactment of the standards, regulations and guidelines envisaged under the framework Environmental Management and Coordination Act (EMCA) 1999. The enactment of a consolidated or unified land based national legislation may be necessary to articulate and implement the objectives of the proposed LBSA Protocol, although in several important respects Kenyan laws, policies and institutional frameworks already are consistent with the LBSA Protocol. The gaps in the sectoral policy, legal and institutional frameworks ought to be addressed as well so as to better anchor LBSA Protocol implementation.

The amendment or review of the said sectoral laws should be closely followed by institutional capacity building of the already established government agencies, municipal councils and state corporations, whose already existing administrative structures can combat marine pollution from LBSA. Most of these institutions are already able to integrate protection of the marine environment into their core functions in accordance with their statutory obligations.

It is envisaged that a new unified LBSA legislation for Kenya would provide also for the establishment of a body corporate in the form of a parastatal for the implementation and enforcement of the key objects of the Act. The establishment of such a body would be desirable for it to spearhead the implementation of a coastal zone survey, the evolving policy on integrated coastal zone and river basin management, and also for it to coordinate with NEMA on the issue of regulations and standards for the control of marine pollution and other degradation from LBSA. This institution would also be primarily

responsible for national level implementation and compliance with the LBSA Protocol to the Amended Nairobi Convention. To avoid duplication and overlapping of functions or mandates with other already existing institutions such as NEMA the objects of the proposed national LBSA authority should be concisely drafted.

4.2.2: Madagascar

According to the recent study by the UNEP/GEF WIO LaB Project, in Madagascar, two possibilities were envisioned: short term and long term. The first possibility, the short term, would entail a review of existing legislation that should result in a unified legislation, including the identification of all the legislative and statutory texts covered by the objectives of the Nairobi Convention framework. But this may not be effective and practical since these texts contain provisions that do not concern the sea environment and the coastal zones and particularly their protection and management. It would be necessary to identify these provisions and do an analysis to form a basis for unified codification.

The long term possibility would entail the enactment of a new legislation on LBSA, beginning with a new draft and going through the usual law making process. The new law will take into account developments in international laws and conventions. These may include such principles as polluter pays, precautionary principle, the sustainable use of coastal zone resources and integrated management.

However, there would be difficulties associated with these possibilities and these include: policy, material and financial and human capacities. The constraints also manifest in the organizational and institutional arrangements existing. The management of various activities in the coastal zones is typically in several sectors and matters, for example urban developments and settlements, public works, agriculture and rural development, tourism, and ports. This constitutes a serious problem whether in the short or long term.

Lack of or inadequacy of materials and equipment and budget allocations is also a serious limitation, as well as the availability of competent and qualified technical and professional human resources. Particularly important are lawyers appropriately skilled in LBSA laws, as well as marine and coastal zone scientists and practitioners.

4.2.3: The Seychelles

According to the UNEP/GEF WIO LaB study, in Seychelles, the preference seems to be the review, re alignment or amendment of existing legal, policy, regulatory and institutional frameworks. Possible actions envisaged include:

- Reviving the Environment Legislative Committee to include relevant stakeholders from outside the Ministry;
- Providing legal training for staff of the Ministry of Environment and Natural Resources (MENR);
- Looking into other regulatory approaches instead of the usual "command and control" approach;
- Capacity building for effective implementation of EIA legislation; effective enforcement of the EIA recommendations; improved auditing and monitoring framework to be put in place to ensure compliance with the EIA recommendations; adequate and reliable baseline environmental data that is area specific as well as analytical skills; EIA procedures to include cross-referencing; and reporting to be based on indicators.

- Making provisions under the Environment Protection (Standard) Regulations 1995 in relation to effluent standards for a more stage-wise approach to compliance, and also include pollution abatement costs in any redevelopment/extension project.
- Amending the Town and Country Planning Act, 1972 with capacity building necessary to further these initiatives and improved coordination in order to achieve environmental objectives;
- Covering extraction of sand from the bottom of the sea under the Removal of Sand and Gravel Act, 1982.
- Amending the Minerals Act, 1991 and particularly the definition of minerals to include coral, sand and sediments;
- Amending the criteria under the Land Reclamation Act, 1967 when objecting to reclamation to include all the environmental impacts or factors associated with land reclamation;
- Creating better mechanisms to implement EMPS;
- Taking steps to legalise the National Land Use Plan (Plan d'Amenagement du territoire, PAT) :
- Reviewing the Environmental Protection Act in order to assess its implementation and its shortcomings; and
- Attracting and retaining of (legal/EIA/etc.) specialists through various means including incentives and packages which would make working with government or other public authorities more appealing than in the private sector.

4.2.4: South Africa

The UNEP/GEF WIO LaB Project Study indicated that in South Africa a unified or consolidated national legislation on land-based sources and activities would in theory be recommended. However it has been argued that this would present practical problems especially in being passed and enacted. This is mainly because in South Africa the nature of the LBSA problems is diffused among a large number of government departments ranging from those charged with mining, planning, environment, water to provincial and local authorities. Most importantly LBSA falls between two key national authorities, the Department of Water Affairs and the Department of Environment. Finally there is no (semi) government agency to champion the LBSA cause along the lines of SAMSA which is responsible for ensuring "safe clean seas" from shipping and other sea based activities.

However, some progress has been made in South Africa in integrating the laws, implementation and administration of LBSA of marine pollution and degradation by including specific provisions and a chapter on marine and coastal pollution control in the draft Coastal Zone Management Bill. Rather than start from scratch and develop new legislation on LBSA it is suggested that this initiative be built on. Although the Bill had not been tabled in Parliament yet, (*Glazewski: South Africa National Legal Report, 2006*) it is noted that chapter 6 was devoted to institutions and chapter 9 to marine pollution. It is suggested that these provisions in particular be analysed and developed further to see to what extent the LBSA gaps and deficiencies identified could be addressed and what practical steps may be taken in this regard.

4.2.5: Mozambique

In Mozambique, where laws are essentially sector based like in the other countries of the Region, the UNEP GEF Wio LaB Project study found that the relevant legal and regulatory

instruments could be unified in one, as an environment code. But it must be acknowledged that there is yet some way to go, and there are many interests to be safeguarded with regard to the environment. Legislation on land based sources is not yet extensive and remains largely un developed. Thus unification of environmental legislation is not yet a necessity. As the competent legislative organs are undertaking efforts with a view to update the existing legislation and to create new ones, a substantial increase is expected. (*Mazivila: Mozambique National Legal Reports, 2007*). Moreover, the key problem at the moment is not only the gaps that exist in those instruments or even lack of legislation, but the process of implementation, enforcement and participation of different stakeholders. It may be difficult, but not impossible, to draft one code for all environmental issues relating to LBSA (ibid).

4.2.6: Tanzania

And finally, in Tanzania, the LBSA relevant laws remain generally fragmented and sector based. However, the country's framework legislation is quite recent (2004) and generally encompasses the key environmental issues, including those relating to the LBSA. The most outstanding issue, just like several of the other project countries, is the extent of implementation and enforcement. An LBSA specific legislation may not be forthcoming sooner.

4.3: Options of Developing National LBSA Legislation

Based on the foregoing summaries of national scenarios, the following models of LBSA legislation are proposed:

4.3.1: The Adoption Model: Unified LBSA Legislation

This model is described as "adoption" because it will entail whole or substantial adoption of the LBSA Protocol into national law. This may be through constitutional application, or an Act of Parliament which declares the provisions of the Protocol to be applicable as national law. It may also be that Parliament would elaborate a detailed Act/enactment which simply replicates the detailed provisions in the LBSA Protocol, including objectives of LBSA legislation, point and non point sources of pollution and degradation, and adds specific provisions concerning national institutions to implement the law, financial and other resources, dispute resolution, powers of the Minister, and the like. The WIO countries could follow this model depending on the peculiarities of their constitutional and legal systems.

The main challenge, as expressed elsewhere above, is the multi sectoral nature of LBSA issues and the inherent difficulties of placing all or even some of them under same legal, institutional and regulatory regimes. It may also be more politically problematic to surmount entrenched multi-sectoral institutional and bureaucratic arrangements and create space for an "LBSA Act" and the corresponding institutional and other arrangements.

4.3.2: The Adaptive Model: Repair and Refurbishment of Existing Instruments

In lieu of a single or unified "LBSA Act", the adaptive model would proceed on the basis of "repair and refurbishment" of existing laws, policies, institutions and other regulatory frameworks. This essentially entails detailed reviews, amendments, re-alignment and updating of existing frameworks, incorporating and integrating the provisions of the LBSA

Protocol in various sector frameworks. This model is adaptive in the sense that it seeks to maintain the multi-sectoral status quo while including and incorporating necessary changes to anchor various LBSA Protocol requirements. It would give additional or re-aligned mandates to existing institutions and authorities, and update relevant laws as necessary.

The main challenge for this model would be the complexity and cumbersome efforts at repairing and refurbishing so many different laws, institutions, policies and other regulatory framework. It may also lead to poor visibility and impact of the LBSA Protocol due to the possibility of “business as usual” among the existing legal, institutional, policy and other regulatory frameworks.

However, the adaptive model may be more politically and bureaucratically acceptable compared to the “adoption model” because it may not lead to radical changes of the prevailing *status quo*.

4.3.3: The Middle Ground Model: Adoption and Adaptation

The last model envisaged is a bit of adoption and a bit of adaptation. As both of the above models are not mutually exclusive, and certainly the legal systems are not exclusive, this model provides the most pragmatic and realistic approach to any challenges with either of the adoption or adaptive models.

While it is feasible, though definitely challenging, to adopt the LBSA Protocol into national legal systems, it is necessary to observe that a measure of adaptation, or repair and refurbishment of other laws, institutions, policy and regulatory frameworks is still necessary. This compromise model may be the least objectionable politically, but it is also expensive and cumbersome, and may be susceptible to less visibility and impact of the LBSA Protocol in the countries.

Whatever model is acceptable to each of the countries is a matter of sovereign choice. Countries may opt for framework legislation or sectoral legislation or both. They may also in addition, or in lieu thereof, use subsidiary legislation to incorporate some of the provisions of the LBSA Protocol into the national legislation. This would particularly apply to technical and scientific details such as the ones included in the annexes to the LBSA Protocol. In this regard, the example of the implementation framework for the Wider Caribbean LBSA Protocol comes to mind. In the Caribbean case one of the options is the creation of a regulatory framework for marine pollution, depending heavily on a Management Authority and subsidiary legislation to elaborate the technical details. The other options/models contain provisions for a framework Act to establish a coordinating entity for marine and coastal pollution, and the establishment of an Inter-sectoral Committee. The latter entails minimal if any legal changes, but provides an administrative coordination mechanism.

In enacting or reviewing legislation to incorporate LBSA Protocol requirements, countries may choose various management approaches: Command and control, market based, ecosystem based management or others. Each one of these management approaches may in turn influence the approach to enactment of legislation. Since the management approaches are not mutually exclusive, a combination of various approaches is perhaps the most pragmatic and feasible for any country.

There could be instances where no further legislative action is needed and where merely awareness, education or capacity building is needed. In such cases strong emphasis should be on policy, administrative and regulatory action to ensure that relevant legislation is implemented and enforced.

4.4: Key Elements of Model LBSA Legislation

While it may be difficult to prescribe what national legislations should look like without offending the sovereignty of the States, it is nevertheless conceivable to provide an indication of the key elements and topics which should be covered in national LBSA legislation, so as to help implement and enforce the LBSA Protocol in the WIO region.

The following is an indicative summary of such elements and topics:

4.4.1: Preliminary issues, such as preamble, key definitions of terms, objectives, scope of application

Preamble/Long Title

A brief preamble or "long title" of the national LBSA legislation is desirable to provide the spirit and inspiration for and core purpose of the law, and to express the need to domesticate the provisions of the LBSA Protocol. For example, the following statement may be taken as such: *"An Act of Parliament/Decree to provide for proper and sustainable control, precaution, prevention, reduction, mitigation and to the maximum extent possible, complete elimination of land-based sources and activities; for the protection and conservation of the marine and coastal environment of the country; for the establishment of responsible national institutions; for the incorporation of relevant provisions of the LBSA Protocol to the Nairobi Convention; and for related purposes".*

There should also be a statement concerning the "short title" of the Law. For example: *"This Act/Decree may be cited as "the LBSA Implementation Act", etc*

Statement of Key Definitions/Interpretation

There should be a clear and concise definition of terms, phrases or concepts used in the National Law, clearly consistent with and linked to or cross-referenced with the Nairobi Convention, the LBSA Protocol, other protocols, and other environmental instruments. Definition of key words and concepts helps in understanding the meaning and application of the LBSA law as a whole, and aids those who have responsibility to implement or enforce it as well as the general public. Such terms as "land based sources and activities", "Convention," "LBSA Protocol" "pollution", "coastal zone/area," "ecosystem based management" hotspot", "sensitive area" "point source" "diffuse source" "wetland", etc.

For example, *"land based sources and activities" means sources and activities, directly or indirectly causing or contributing to the pollution or degradation of the marine and coastal environment from the land-ward side as opposed to sources and activities from the sea-ward side"*

"Convention" means the Amended Nairobi Convention for the Protection, Management and Development of the Marine and Coastal Environment of the Western Indian Ocean

"LBSA Protocol" means the Land Based Sources and Activities Protocol to the Amended Nairobi Convention for the Protection, Management and Development of the Marine and Coastal Environment of the Western Indian Ocean

Statement of Key/Fundamental Objectives

The objectives of the LBSA Protocol are usually for the most part synonymous with any programme or other international legal instrument to control marine and coastal pollution and degradation. It requires national legislation to implement its provisions. The national LBSA law should specify the general and specific objectives to be achieved. The general objective should be flexible and sufficiently accommodating of the broadest range of LBSA issues, while the specific objectives should address particular issues. These may include the following:

- *"The general objective is to prevent and limit pollution from sources and activities based on land along the marine and coastal area of the country; establishment of legal bases for the protection, and conservation areas constituting public domain, maritime, lacustrine and fluvial, of the beaches and fragile ecosystems."*
Specific objectives could include the following:
 - i. *promotion of requirements for sustainable development activities in coastal and marine environments, including rights and duties;*
 - ii. *incorporation of provisions that create or establish an institutional framework for the protection of coastal and marine areas;*
 - iii. *recognition of provisions that facilitate access to environmental justice and environmental governance;*
 - iv. *amendment and consolidation of pre-existing sectoral environmental legislation;*
 - v. *regulation of potentially hazardous activities on the coast and the mitigation of their adverse environmental impacts through precautionary approaches;*
 - vi. *domestication and implementation of international legal instruments;*
 - vii. *provision of mechanisms for funding of environmental management activities;*
 - viii. *provision of mechanisms and procedures for the settlement of environmental conflicts and disputes;*
 - ix. *provision of mechanisms for compliance and enforcement of coastal and marine law;*
 - x. *regulating the conservation of biological resources;*
 - xi. *managing climate change;*
 - xii. *regulating coastal developments and the environmental impacts;*
 - xiii. *requiring permits;*
 - xiv. *requiring environmental assessments or environmental impact statements before allowing expansion or development of new aquaculture facilities;*
 - xv. *restricting exotic species aquaculture or requiring a review of species before allowing aquaculture for those species;*
 - xvi. *regulating pollution from aquaculture facilities including fish meal and animal waste;*
 - xvii. *restricting prophylactic use of antibiotics, anti-fungals, and other treatments;*
 - xviii. *prohibiting aquaculture in specified conservation areas or sensitive regions;*
 - xix. *economic instruments: licensing, fees and financing;*
 - xx. *options for institutional arrangements for coastal and marine protection;*
 - xxi. *providing for compliance and enforcement mechanisms.*

Statement of Scope of Application

It is necessary to define the scope and purpose of the legislative or administrative measure, for example, to introduce measures to prevent, control and reduce pollution from land-based sources and activities, develop plans, programmes and measures including regional and sub-regional plans. In this regard, identify the sources categories that are covered and associated pollutants of concern. Also establish activities that are excluded e.g. household discharges. Define which activities are covered, i.e. "point" and "non-point"

discharges into the marine and coastal environment including primary pollutants of concern.

For example, the following draft sample may be considered:

“This Act/Decree applies to the following:

- 1. Activities that may directly or indirectly affect the marine or coastal environment including developments which cause physical alteration of the natural state of the coastline or otherwise result in physical alteration or destruction of habitats;*
- 2. discharges, releases or outflows originating from land-based point and diffuse sources and activities that may directly or indirectly affect the marine or coastal environment; and*
- 3. inputs of polluting substances transported through the atmosphere into the marine and coastal environment from land-based sources and activities within or originating from the territory of any of the Contracting Parties;*
The Act does not apply to household discharges produced in the ordinary course of living and which are not connected to central sewerage systems”.

4.4.2: Declaration of application or domestication of the LBSA Protocol

The national LBSA law should have a statement to the effect that the LBSA Protocol shall have force of law in the country, except to any extent that that is specified in the said law, or the national Constitution.

The following is a sample draft: *“ The LBSA Protocol shall have the force of law in the country and shall bind all public and private authorities, entities and persons, except to the extent that may be otherwise provided in this law or in the national Constitution.*

4.4.3: Establishment of key national institutions

Any legislation, administrative or other measure must clearly set forth a competent ministry, department or agency to be responsible for controlling and monitoring discharges, to comply with the procedures to be followed under the Protocol. Countries may choose from a variety of administrative options taking into account such determining factors as availability of human resources, experience and existing institutional structures. Where a national LBSA authority is being established, the following draft provision may be useful:

“Establishment and Functions of [Authority]

- *Establishment of [Authority]*

The is hereby established an Authority to be known as (name of Authority) whose members

- *shall be appointed by [the Minister] consisting of the persons appointed in accordance with this*
- *section:-*
- *(a) a Chairman;*
- *(b) [insert number of members] members drawn from the governmental agencies and departments that discharge functions related to pollution control, pesticide control, agriculture, physical planning, water resources, environmental health, forestry, fisheries and tourism.*
- *(c) one member from the private sector; and*
- *(d) one member representing non-governmental organizations/civil society groups.*
- ***Functions of [Authority]***

- *The functions of the [Authority] shall be to –*
- *(a) control discharges to and marine and coastal areas;*
- *(b) promote public awareness of the marine and coastal environment and their importance to the social and economic life of the country;*
- *(c) advise the Minister on matters of general policy relating to the management and development of the marine environment; and*
- *(d) to perform such other functions pertaining to the control of marine and coastal area pollution as may be assigned to it by the Minister or by or under this Act or any other enactment.*

(2) In carrying out its functions under this Act the [Authority] shall, in relation to the control, prevention, and/or reduction of marine and coastal pollution and degradation –

- (a) coordinate the activities of entities that discharge functions to control water pollution;*
- (b) develop and implement plans, programmes, measures and standards including public education programmes;*
- (c) establish and monitor compliance with standards, criteria and programmes;*
- (d) encourage and develop scientific, technical and management-oriented research*
- (e) establish an adequate framework of laws and policies including policies and legal mechanisms directed towards the management of agricultural activities and the development of a plan to implement such modifications as may be necessary to achieve best management practices;*
- (f) promote the availability of information and the participation of members of the public;*
- (g) co-ordinate the establishment and maintenance of national marine parks and protected areas systems;*
- (h) take the necessary actions for the implementation of the international obligations of the Country;*
- (i) ensure that any developmental activity which may cause an adverse effect on the marine environment is assessed before such activity is commenced and that such adverse effect be taken into account in deciding whether or not such activity should be authorized;*
- (j) establish linkages with the Secretariat of the Amended Nairobi Convention and other relevant local, regional and international organizations;*
- (k) perform such other functions pertaining to the prevention and control of marine pollution as may be assigned to it by the Minister by or under this Act or any other law.”*

In lieu of a National Authority as above described, the concerned State could opt for a multi-sectoral Committee to bring together key sector Ministries, departments or agencies, as well as other stakeholders. In light of the Multi-sectoral nature of LBSA issues and the need for an integrated approach it is feasible that a multi-sectoral Committee be established as the focal point for LBSA issues. Such a model may be easier to achieve especially where it is deemed that an LBSA Authority is not feasible for various reasons. Such administrative arrangement may need legal amendment of the relevant law, which may be the framework environment legislation of the State. A sample provision is provided below:

(1) There is hereby established a Committee to be known as the (insert suitable name of Multi-sectoral Committee) which shall be appointed by the Minister consisting of the persons appointed in accordance with this section –

(a) a Chairman;

(b) [number of members] members drawn from the governmental agencies and departments that discharge functions related to pollution control, pesticides management, agriculture, physical planning, water resources, environmental health, forestry, fisheries and tourism;

(c) one member from the private sector; and

(d) one member representing non-governmental organisation.

(2) In carrying out its functions under this Act the Committee shall, in relation to the control of

Marine and coastal pollution –

(a) coordinate the activities of entities that discharge functions for the control of water pollution;

(b) develop and implement plans, programmes, measures and standards including public education programmes;

(c) monitor compliance with standards, criteria and programmes;

(d) encourage and develop scientific, technical and management-oriented research;

(e) establish an adequate framework of laws and policies including policies and legal mechanisms directed toward the management of agricultural non-point sources and the development of a plan to implement such modifications as may be necessary to achieve best management practices;

(f) promote the availability of information and the participation of members of the public;

(g) co-ordinate the establishment and maintenance of national marine parks and protected

areas systems;

(h) take the necessary actions for the implementation of the relevant international obligations

of the State

(i) ensure that any developmental activity which may cause an adverse effect on the marine and coastal

environment is assessed before such activity is commenced and that such adverse effect be

taken into account in deciding whether or not such activity should be authorized;

(j) establish linkages with the Secretariat of the Amended Nairobi Convention and other relevant

local, regional and international organizations;

(k) perform such other functions pertaining to the control of marine pollution as may be assigned to it by the Minister by or under this Act or any other law.

4.4.4: Definition of key national obligations concerning various sources and activities

The key generic obligations of the concerned State should be adequately elaborated so that the State knows the full extent and nature of its obligations and legal commitments under the protocol. Such statements of obligation form the overall basis upon which several other more specific obligations are set out in the National Law. Among the key national obligations are those relating to the taking of measures to prevent, reduce, mitigate, combat and to the extent possible, eliminate pollution or degradation of the Protocol Area from land-based sources and activities, and to apply important principles of environmental law, such as precautionary principle, polluter pays principle, ecosystem based management and others. Also included are obligations to undertake environmental impact assessments (EIA) environmental audit(EA) and strategic environmental

assessment(SEA), as well as designate hotspots and sensitive areas of national importance.

Examples of draft provisions in this regard are as below:

Diffuse Sources

"1) Where it appears to the [Agency] that any inland or coastal waters have been or are likely to be polluted in consequence of the conduct of agricultural activities, lawn management (fertilizer/herbicide applications), construction and sediment release or any other non-process activity, the [Authority] may, in consultation with the Minister responsible for agriculture, serve on the occupier of the land where the act or omission took place, a notice requesting him to stop or prevent acts or omissions of that kind.

(2) The [Authority] may at any time after the commencement of these Regulations, direct by notice a person who engages in any of the activities specified in paragraph (1) to submit an application to the [Authority] for a permit."

EIA/EA

"(1) The [Authority] may by notice in writing require an applicant for a permit or the person responsible for undertaking in a prescribed area, any enterprise, construction or development

(a) to furnish to the [Authority] such documents or information as the [Authority] thinks fit; or

(b) where it is of the opinion that the activities of such enterprise, construction or development are discharging or are likely to discharge a pollutant, to submit to the [Authority] in respect of the enterprise, construction or development, an environmental impact assessment containing such information as may be prescribed, and the applicant or, as the case may be, the person responsible shall comply with the requirement.

(2) A notice issued pursuant to subsection (1) shall state the period within which the documents, information or assessment, as the case may be, shall be submitted to the [Authority].

(3) Where the [Authority] issues a notice under subsection(1), it shall inform any agency or department of Government having responsibility for the issue of any licence, permit, approval or consent in connection with any matter affecting the environment that a notice has been

issued, and such agency or department shall not grant such licence, permit, approval or consent as aforesaid unless it has been notified by the [Agency] that the notice has been complied with and that the [Authority] has issued or intends to issue a permit.

(4) Any person who, not being an applicant for a permit, refuses or fails to submit an EIA as required by the [Authority] shall be guilty of an offence and shall be liable on summary conviction to a fine of [insert fine]."

4.4.5: Financial and resource issues for implementation of LBSA issues

There is need to provide adequate and sustainable financing mechanisms for the implementation of various aspects of LBSA legislation and the LBSA Protocol itself. This part will contain the usual powers with regard to finance, expenditure, borrowing and investment powers, staffing etc. of Authority. These provisions are crucial to the Authority's capability in discharging its functions and are one of the limiting factors regarding this choice option for marine pollution control.

A sample of a provision on financing implementation of LBSA issues may be as hereunder:

"The funds and assets of the [Authority] shall consist of—

(a) such monies as may be appropriated by Parliament for the purposes of the [Authority];

(b) any monies or property which may in any manner accrue or vest in the [Authority] in the course of the exercise of its functions under this Act;

(c) such monies as may become payable to the [Authority] by way of fees in respect of services rendered by or through the [Authority]; and

(d) all monies from any other sources provided, donated or lent to the [Authority]"

4.4.6: Powers of the Minister or other administrative authorities regarding rules and regulations

Finally, there should also be regulatory power vested in a responsible authority, usually the Minister, to make rules and regulations on a variety of operational, scientific and technical LBSA issues. The draft sample below captures some of the issues:

"Power to make regulations.

The Minister may make regulations for the purpose of giving effect to the provisions of this Act,

and in particular but without prejudice to the generality of the foregoing, such regulations may contain

provisions in relation to-

(a) discharge standards and codes of practice with respect to the control of marine pollution;

(b) the quantity, condition or concentration of pollutants substances that may be released into internal and coastal waters;

(c) the design, construction, operation, maintenance and monitoring of facilities for the control of water pollution and the disposal of waste;

(d) the conservation of marine resources;

(e) the form and manner of, and the fees payable in connection with, an application for any permit that may be granted by the Authority under this Act;

(f) the grant, refusal, revocation or suspension of any permit that may be issued by the Authority and the terms, conditions or restrictions subject to which a permit may be granted;

(g) the fees or charges payable to the Authority for services rendered by the Authority, its servants or agents in carrying out the provisions of any enactment under which the Authority exercises functions;

(h) any other matter required by this Act to be prescribed."

4.5: Conclusion

The above brief discussion has covered the national scenarios concerning LBSA legislation and the possible models and elements of LBSA. The discussion is by no means conclusive, and it is necessary for the countries to engage more internally and regionally, especially on the models that are more suitable to their respective situations. The important point is that implementation and enforcement of the LBSA Protocol, as it happens, should find acceptable and accommodating national legal, institutional, policy and regulatory frameworks.

Chapter 5: Monitoring and Evaluation Framework for the Effective Implementation of the LBSA Protocol.

5.1: Introduction

This chapter provides a detailed monitoring and evaluation (M&E) framework for the WIO region to assist countries in the region in the ratification, implementation and enforcement of the protocol. The framework will provide clear indicators, methodology for assessment of indicators, key milestones and deliverables, and national reporting structure including a reporting tool.

5.2: What is Monitoring and Evaluation?

Monitoring in this context may be described as a systematic collection and analysis of information or data as a programme, project or activity progresses. It is usually aimed at improving the efficiency and effectiveness of a programme, project or even organization. Monitoring is based on targets set and activities planned during the planning phases of work. Monitoring provides a good basis for evaluation. (www.civicus.org).

Evaluation in this context means the process of examining a programme, project, activity or process in relation to its goals by means of result, and where appropriate, impact indicators. Evaluation is the comparison of actual programme, project, activity or organizational impact against agreed strategic plans. It usually focuses on what was set out to be done, what was accomplished and how it was accomplished. Evaluation may be "formative", i.e. taking place during the life of a programme, project, activity or organization, or it may be "summative", i.e. post the programme, project, activity or organization. The former may be regarded as a "check-up" while the latter as an "autopsy". (www.civicus.org).

In this framework both monitoring and evaluation are used concurrently, thus "M&E", and are deemed to be primarily focused on helping achieve efficiency, effectiveness and impact of programmes, projects, activities or even organizations.

In the present case M&E is brought to bear on the signature, ratification, implementation and enforcement of the LBSA Protocol to the Amended Nairobi Convention. What is being monitored is the extent to which all Contracting Parties to the Nairobi Convention sign, ratify or accede to the LBSA Protocol to the Amended Nairobi Convention in the shortest

time possible; all Contracting Parties undertake the necessary processes, steps, inputs and outputs to facilitate in a timely manner (outstanding) signatures, ratification, accession, implementation and enforcement of the LBSA Protocol; and all Contracting Parties begin to implement and enforce the LBSA Protocol as soon as the same comes into force. The overall goal is to secure the full ratification and implementation of the LBSA Protocol in the WIO Region.

“Ratification” in the present context means the formal process by which a Head of State or appropriate governmental official or authority signs a document which signals the consent of the State to become a Party to the LBSA Protocol once the Protocol has entered into force and to be bound by its provisions. *(UNEP Guidelines 2006)*. Although “signature” and “accession” have specific technical meanings, they are loosely regarded as being part of the broad concept of ratification.

“Implementation” means, with regard to the LBSA Protocol, the process of adopting all relevant policies, laws and regulations, and undertaking all necessary actions to meet its obligations under the Protocol. National implementation of the LBSA Protocol is at the core of its effectiveness, and it is necessary to monitor the relevant processes. Some of the key elements of national implementation, which should be monitored, include review or enactment of relevant laws, institutional and policy instruments; mobilization of financial, technical and human resources; and public awareness campaigns. *(UNEP Guidelines 2006)*.

“Enforcement” means, in relation to the LBSA Protocol, the range of procedures and actions taken by a State and its competent authorities to ensure that persons or organizations failing to comply with laws or regulations relevant to LBSA, or the Protocol itself, are brought back into compliance or punished through appropriate action. *(UNEP Guidelines 2006)*. Environmental enforcement depends primarily on national action. Effective national enforcement frameworks include well developed laws and regulations, sufficient institutional framework, national coordination, training to enhance enforcement capabilities, and public environmental awareness and education.

5.3: The Need for M&E Framework For LBSA Protocol Ratification and Implementation

An M&E framework is needed to assist WIO countries in the ratification, implementation and enforcement of the LBSA Protocol. Fortunately, the LBSA Protocol itself has provisions concerning M&E, including an annex which details requirements for data, various assessments and evaluations, and tools such as measurable indicators.

The LBSA Protocol was only recently adopted, and it is not yet in force as ratification has not happened. Moreover, some of the countries did not sign the Protocol at the time of its adoption. While signature of the LBSA Protocol by “any Contracting Party to the (Amended Nairobi) Convention” is time bound (1 April 2010 to 1 April 2011) *(LBSA Protocol, Article 26)*, there are no such fixed time lines set for ratification and accession to happen as that is ordinarily left to the sovereign discretion of the Contracting Parties. According to the Amended Nairobi Convention, Article 30, concerning ratification:

“This Convention and its protocols shall be subject to ratification, acceptance or approval by the States and organizations referred to in article 29. Instruments of

ratification, acceptance or approval shall be deposited with the Government of the Republic of Kenya, which will assume the functions of Depositary."

With regard to accession, the Amended Nairobi Convention provides as follows (Article 31(1)):

"The Convention and its protocols shall be open for accession by the States and organizations referred to in article 29 as from the day following the date on which the Convention or the protocol concerned is closed for signature."

According to the LBSA Protocol, Article 26(2), concerning accession,

"This Protocol shall be open for accession by any non-Contracting Party to the Convention or organizations contemplated by Article 26 of the Convention, and in accordance with the provisions of Article 28 of the Convention, provided that such acceding State or organization has been duly invited by the Organization upon prior approval by the Contracting Parties."

Article 29 of the Amended Nairobi Convention outlines the States and other organizations that are entitled to sign the Convention and its protocols. It provides that the Convention shall be open for signature by *"by any Contracting Party and any non-contracting party that has been invited to the Conference of Plenipotentiaries. It shall also be open for signature between the same dates by any regional intergovernmental integration organization exercising competence in fields covered by the Convention and such protocols and having at least one member State which belongs to the Convention area, provided that such regional organization has been invited to participate in the Conference of Plenipotentiaries."*

Therefore, for one year as from adoption on 1 April 2010, the LBSA Protocol is still open for signature by those Contracting Parties to the Amended Nairobi Convention that have not yet signed. It is also open, indefinitely, for ratification by any of the Contracting Parties that have already signed. On the other hand, Contracting Parties who may not sign by 1 April 2011 may accede to the Protocol thereafter, while accession is also open indefinitely from the date of adoption, to non Contracting Parties who have been duly invited by the Organization subject to prior approval by the Contracting Parties.

Signature, ratification, accession, and even implementation and enforcement are ultimately national processes. As these various national processes happen within the Contracting Parties, it is necessary to provide an M&E framework which will help to benchmark the processes and hopefully assist the countries to effect the said processes more efficiently, expeditiously and uniformly.

Moreover, as the next section will show, the LBSA Protocol itself has provisions both in the Articles and in the annex concerning M&E. The M&E framework proposed herein is a logical entry point towards a fuller implementation of the M&E provisions of the LBSA Protocol in the coming years.

5.4: The LBSA Protocol Provisions on M&E

The Contracting Parties are obliged to carry out M&E programmes and activities, if necessary in co-operation or consultation with competent regional and international organisations, in accordance with Annex III to the Protocol. (*LBSA Protocol, Article 12*) They shall also co-operate and collaborate, if necessary with competent regional, sub-

regional and international organisations, to establish comparable national monitoring and analytical quality control programmes to promote storage, retrieval and exchange of data and information. Lastly, each Contracting Party shall establish or designate a national focal institution to coordinate data collection, M&E programmes and activities and, consistent with Article 15 of the Convention, to form the nucleus of a regional network of national research centres and institutes. The nucleus of the regional network of national research centres and institutes shall assist in setting standards for data collection, monitoring, evaluation and information exchange. (*LBSA Protocol, Article 12*).

Annex III to the LBSA Protocol is entitled "Data collection, Monitoring and Evaluation" and seeks to elaborate further the provisions of Article 12 of the Protocol. It provides that "*the Contracting Parties shall carry out monitoring programmes and evaluation activities as follows:*

- (a) Collect data on the conditions and features of the marine and coastal environment of the Protocol Area as regards its physical, biological and chemical characteristics;*
- (b) Collect data, prepare and regularly maintain an inventory of inputs of priority substances and activities including information on distribution of sources and activities and the quantities and qualities of such substances and activities introduced into the marine and coastal environment;*
- (c) Systematically assess the levels of pollution or other degradation in the internal and territorial waters of the Contracting Parties, in particular with regard to the substances that may have a potentially significant impact on the marine and coastal environment and, in this respect, periodically report to the Organisation;*
- (d) Systematically assess the state of the marine and coastal environment;*
- (e) Evaluate the effectiveness of programmes, action plans, authorisations, measures and activities adopted and implemented to prevent, reduce, control, mitigate or eliminate to the maximum extent possible, pollution or degradation of the marine and coastal environment from land-based sources and activities;*
- (f) Develop measurable indicators to assess the effectiveness of the measures under paragraphs (c), (d), and (e) of this Annex; and*
- (g) Evaluate the effectiveness of any other measures taken to meet the various environmental objectives set out in this Protocol."*

Thus the concept and requirements for M&E are firmly embedded in the LBSA Protocol. While most aspects of the foregoing provisions will apply in the actual implementation and enforcement of the LBSA Protocol, some of the aspects will apply, at least in principle, to the present situation where an M&E framework is proposed to guide signature, ratification and accession and thereafter full implementation and enforcement. The foregoing provisions therefore provide important context and inspiration for the current M&E framework.

5.5: Key Components and Features of M&E

The M&E framework will outline the core objectives, key components including activities, outputs, outcomes and impacts; indicators and tools for (outstanding) signatures, ratification, accession, implementation and enforcement of the LBSA Protocol. It is expected that the M&E framework will be agreed upon and endorsed by the Contracting Parties. It is also expected that this M&E framework will engender continuity and adaptation in the various processes concerning the LBSA Protocol.

5.5.1: Statement of Core Objectives

There is need to elaborate a set of core objectives as part of the M&E framework for (outstanding) signatures, ratification, implementation and enforcement of the LBSA Protocol. As part of the "hierarchy of objectives", the core objectives may also have, in addition, sub-objectives and or "measure objectives", which provide further details on the core objectives. Conventionally, core objectives are a limited number, rather generic but sufficiently specific, strategic, achievable and measurable.

The following are proposed **core objectives and sub-objectives under them:**

Objective No I: Ensuring that all Contracting Parties to the Nairobi Convention sign, ratify or accede to the LBSA Protocol to the Amended Nairobi Convention in the shortest time possible (by...date, e.g December 2012).

The sub-objectives under this core objective are as follows:

- i. To follow up with and encourage the Contracting Parties which have not signed the LBSA Protocol to do so before 1 April 2011;
- ii. To follow up and encourage all Contracting Parties to ratify or accede to the LBSA Protocol by December 2012;

Objective No II: Ensuring that all Contracting Parties undertake the necessary processes, steps, inputs and outputs to facilitate in a timely manner (outstanding) signatures, ratification, accession, implementation and enforcement of the LBSA Protocol;

The sub-objectives under this Core Objective are as follows:

- i. To follow up and encourage all Contracting Parties to undertake all necessary internal processes, steps, inputs and outputs to secure signature by 01 April 2011, and ratification or accession of the LBSA Protocol by December 2012;
- ii. To follow up and encourage all Contracting Parties to put in place all necessary national measures of implementation and compliance with the LBSA Protocol by December 2012.

Objective No III: Ensuring that all Contracting Parties begin to implement and enforce the LBSA Protocol as soon as the same comes into force.

The sub-objectives under this Core Objective are as follows:

- i. To encourage and support each Contracting Party to establish or review as appropriate all necessary national measures of implementation and compliance of the LBSA Protocol by December 2012;
- ii. To encourage and support each Contracting Party to establish or review as appropriate all necessary national measures of enforcement of the LBSA Protocol by December 2012;

5.5.2: Statement of Core Indicators

This framework specifies a limited number of core indicators for each of the core objectives. Core indicators are also called baseline indicators. These reflect the situation at the beginning of the set period of programme, activity or process and trends over time. There are two categories of baseline indicators, namely: "Objective related baseline indicators" and "Context related baseline indicators." Apart from the baseline indicators, there are also other categories, such as "impact indicators," "output indicators", "result indicators". "Impact indicators" refer to benefits of the programme, activity or process beyond immediate effects.

In the so-called “intervention logic”, the “hierarchy of common/baseline indicators” start from the inputs- for example the financial and administrative resources which will generate the outputs of programmes, activities or processes. The subsequent results from the inputs are the immediate effects of interventions, which will contribute to specific objectives. Impacts should contribute to reaching the overall objectives of the programme, activity or process, which should usually correspond to the previously identified needs.

Indicators are used as tools to assess how far the expected objectives have been achieved by particular measures or whole programmes, activities or processes. The assessment of impact, the extent to which a programme, activity or process has achieved its strategic objectives is built up from the outputs and results of individual measures through the “hierarchy of objectives.”

Indicators should be specific, measurable, achievable/available in a cost effective way, relevant for the particular programme, activity or process, and available in a timely manner. In other words, indicators should be “SMART”. Indicators are generally defined and filled with quantitative statistical data, and quantification itself is an essential element in effective M&E. All indicators should therefore be quantified and appropriate targets set in cases where the indicators lend themselves to quantification. However, where indicators cannot be statistically quantified, qualitative assessments or logical assumptions should be made. Thus, where quantified data is not available, qualitative data should be used. In this framework both quantitative and qualitative indicators are proposed.

The following is a set of **core indicators, matched against the core objectives**

Table 5: Core Indicators matched against core Objectives

Core Objective	Core/Baseline Indicators
Core Objective No I: Ensuring that all Contracting Parties to the Nairobi Convention sign, ratify or accede to the LBSA Protocol to the Amended Nairobi Convention in the shortest time possible (by...date, e.g December 2012);	<ol style="list-style-type: none"> 1. Number of countries that sign LBSA Protocol by 01 April 2011 2. Number of countries that ratify the LBSA Protocol by December 2012 3. Number of countries that accede to the LBSA Protocol by December 2012 4. Dates or time taken to sign, ratify, accede by each Contracting Party
Core Objective No II: Ensuring that all Contracting Parties undertake the necessary processes, steps, inputs and outputs to facilitate in a timely manner (outstanding) signatures, ratification, accession,	<ol style="list-style-type: none"> 1. Number and type of policy, legislative, institutional, regulatory and other instruments made, reviewed or amended by December 2012; 2. Amount of financial, administrative and other resources set aside or deployed

implementation and enforcement of the LBSA Protocol;	for the purpose by December 2012; 3. Time taken for inputs, outputs and outcomes
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5.5.3: Statement of Methodology and Approach, Data collection and Management

Choice of methodology and approach is important in an M&E framework such as the present one. A combination of methodologies could be employed to achieve maximum effect: self M&E, participatory M&E, rapid participatory appraisals and external evaluations. Various data collection and management methods and tools could be used, including case studies, focus groups, sample surveys, systematic review of relevant official statistics and records, one –on-one interviews, structured questionnaires, and others. In addition, reporting formats, recording formats, storage and retrieval of information are critical components of the process.

The responsibilities for data provision and management ordinarily lie on the various management authorities, in this case relevant government Ministries, departments or agencies at the national level, and the Nairobi Convention Secretariat or its dedicated units at the regional level. Management authorities are usually responsible for the collection and transmission of data regarding financial monitoring and output indicators. Management authorities are also responsible for providing data on baseline indicators.

It is proposed that the Management authorities at the national and regional levels determine and agree on methodological, data collection and management issues.

5.5.4: Key Milestones and Deliverables

Under the present M&E framework, the following are deemed to be key milestones and deliverables:

1. Full signature, ratification, accession and entry into force of the LBSA Protocol by a set time(December 2012)
2. Instruments of ratification or accession transmitted to the Depository by a set time (December 2012)
3. Number of Laws, regulations, policy instruments, and institutions enacted/established/reviewed or amended to comply with LBSA Protocol by December 2012
4. Actual implementation and enforcement of LBSA Protocol by the Contracting Parties.

5.5.5: National Reporting Structure

There is need for a reporting structure to assist the Contracting Parties to report both internally and regionally. The obligation to report regionally is provided both in the Amended Nairobi Convention (Article 24) and the LBSA Protocol (Article 16). In the LBSA Protocol, the regularity for reporting to the Organization is two years, which coincides with the bi-annual Conference of Parties (COP). This national reporting structure may be complimented by internal national reporting obligations imposed by law or policy instruments, such as Ministerial reports to Parliament, intra-governmental reporting,

annually, bi-annually, etc. A reporting template or tool will be elaborated as annex to this M&E framework.

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Chapter 6: Conclusions and Recommendations

6.1: Conclusions

It is apparent that in each of the WIO countries, the coastal and marine environment is very important, especially from a socio-economic point of view. It is even more so in the island and archipelagic states, some of which depend heavily on LBSA related sectors such as coastal tourism, forestry, ports, 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 countries also 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 also have numerous sectoral legislations, 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 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 LBSA 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 LBSA 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 inadequate financial and material resources, as well as technical and professional human resources to carry forward the intent of the various legal, policy, regulatory and institutional frameworks. The shortage 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 policy 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 LBSA in the WIO 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 new LBSA protocol in the various countries may differ considerably depending on each country. Nevertheless, each of the countries will definitely need assistance in order to create an enabling environment for the effective domestication and implementation of the LBSA Protocol.

It is also noted that the ratification process for the new 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 new LBSA Protocol and the revised Nairobi Convention.

6.2: Recommendations

From the foregoing study there is need for the Contracting Parties to the Amended Nairobi Convention to sign and or ratify or accede to, domesticate, implement and enforce the LBSA Protocol. In this regard any necessary national measures of implementation or enforcement should be undertaken. The Contracting Parties should, among other things, strengthen and implement environmental impact assessment (EIA) regulations, nationally and regionally, and provide specific prohibitions of certain degrading activities and practices such as beach sand mining, mangrove harvesting and disposal of raw sewage into the ocean.

The Contracting Parties should also intensify efforts towards better implementation and enforcement of existing LBSA relevant laws and policies. This has been identified as a major weakness across the region. It is strongly recommended that the countries, individually and as a region, seek more sustainable funding mechanisms including the establishment of strategic partnerships, grants and long term low interest credit facilities.

The Nairobi Convention Secretariat should take measures to assist the Contracting Parties to expedite the ratification, domestication and implementation of the LBSA Protocol nationally and regionally; the establishment and strengthening of EIA regulations, as well as those prohibiting certain degrading activities and practices such as disposal of raw sewage into the sea and sand mining; strengthening the implementation and enforcement of existing requirements; and the establishment of sustainable funding and strategic partnerships.

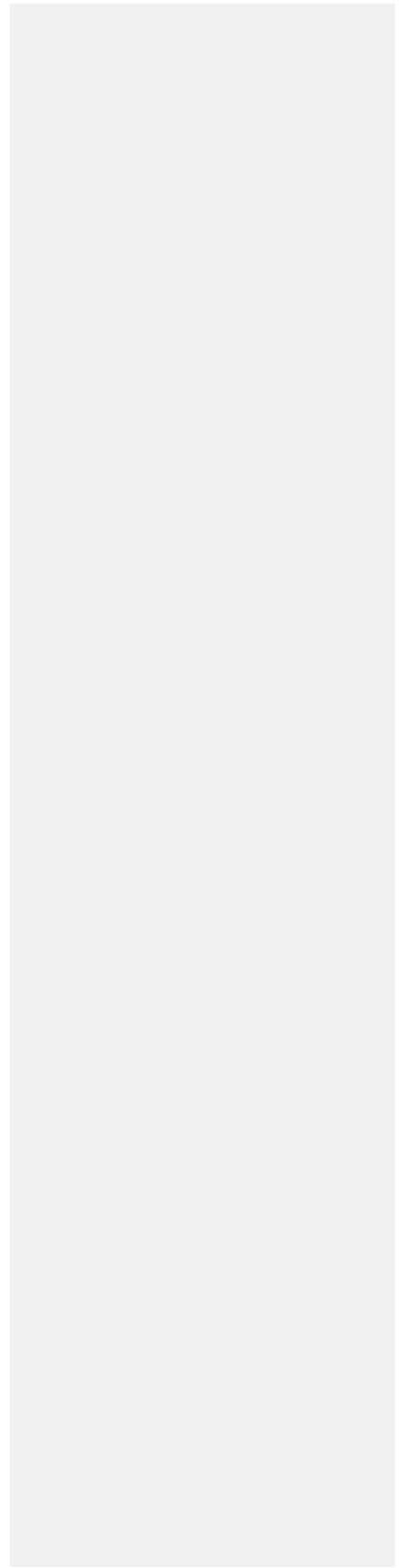
Whatever the options for national LBSA legislation, each of the countries should move towards necessary reviews or enactments so as to anchor the LBSA Protocol and achieve implementation and compliance.

Finally, with regard to M&E, the Contracting Parties through the Amended Nairobi Convention Secretariat should implement the framework proposed herein. Each of the

countries should in turn adapt as necessary and implement the M&E framework so as to ratify and better implement the LBSA Protocol.

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Appendices

- a) *Report methodology (outlining how the report was compiled, sources and selection of information etc)*
- b) *Information sources (where to source reports, maps and other information, and how to contact experts; list relevant websites, mailing lists, networks, notice boards, posting of meetings, etc)*
- c) *Maps*
- d) *Policies, laws and regulations (if the actual documents are included, otherwise the references should be clearly stated in the reference section)*
- e) *Other appendices (other relevant information and data that does not fit in the actual report)*

[to be added]